NCC Tender File #	LW072
Project Description	Roof Replacements
Site Visit	Not applicable
Closing Date and Time	November 7, 2017 at 3pm Ottawa time
Public Tender Opening	A public tender opening will be held on November 7, 2017 at 3:00pm Ottawa Time at 40 Elgin Street, Ottawa, ON at the Security Office on the 2nd Floor

NCC CCN Canada

INVITATION TO TENDER & ACCEPTANCE FORM

RETURN TENDERS TO:	National Capital Commission 40 Elgin Street, Security Office on the 2nd floor Ottawa, ON K1P 1C7	**NCC Tender Number** **LW072**
TENDER CLOSING DATE AND TIME:	**November 7, 2017** **at 3:00 p.m., Ottawa time**	**NCC Contract Number**

DESCRIPTION OF WORK: **Roof Replacements**

1. BUSINESS NAME AND ADDRESS OF BIDDER

Name: _____

Address: _____

_____

Telephone number: _____ **Fax number:** _____

E-mail address: _____

2. THE OFFER

The Bidder offers to the National Capital Commission (NCC) to perform and complete the work for the above mentioned project in accordance with the tender documents for the total tender amount (to be expressed in numbers only) of:

Lump sum price 1 – Roof Area 2 $ _____

Lump sum price 2 – Roof Area 20 $ _____

Lump sum price 3 – Roof Area 21 $ _____

Sub Total $ _____

OHST – 13% $ _____

TOTAL **$** _____

3. TENDER VALIDITY PERIOD

The TENDER shall not be withdrawn for a period of 60 days following the date and time of tender closing.

4. CONTRACT DOCUMENTS

1. The following are the contract documents:
   (a) Invitation to Tender & Acceptance Form when signed by the NCC;
   (b) Duly completed Invitation to Tender & Acceptance Form and any Appendices attached thereto;
   (c) Drawings and Specifications;
   (d) General Conditions (GC1 to GC10);
   (e) Supplementary Conditions, if any;
   (f) Insurance Terms;
   (g) Occupational Health and Safety Requirements;
   (h) Addenda
   (i) Any amendments issued or any allowable tender revision received before the date and time set for tender closing;
   (j) Any amendment incorporated by mutual agreement between the NCC and the Contractor before acceptance of the tender; and
   (k) Any amendment or variation of the contract documents that is made in accordance with the General Conditions;
   (l) Security Requirements.

2. The language of the contract documents shall be the language of the Invitation to Tender & Acceptance Form submitted.

5. APPENDICES

The tender includes Appendix(ces) Nos I and II to the Invitation to Tender & Acceptance Form.

6. ACCEPTANCE AND CONTRACT

Upon acceptance of the Contractor's offer by the NCC, a binding Contract shall be formed between the NCC and the Contractor. The documents forming the Contract shall be the contract documents referred to in 4 – CONTRACT DOCUMENTS.

7. CONSTRUCTION TIME

The Contractor shall perform and complete the Work by December 15, 2017.

8. TENDER SECURITY

1. The Bidders shall enclose tender security with its tender in accordance with GI08 TENDER SECURITY REQUIREMENTS.

2. If the security furnished does not comply fully with the requirements referred to in paragraph 1) herein, the tender shall be disqualified.

3. If a security deposit is furnished as tender security, it shall be forfeited in the event that the tender is accepted by the NCC and the Contractor fails to provide Contract Security in accordance with GC9 CONTRACT SECURITY, provided that the NCC may, if it is in the public interest, waive the forfeiture of the security deposit.

9. BASIS OF AWARD

The basis of award is low total to the Commission including all taxes for lump sum 1, lump sum 2 and lump sum 3 combined (STEP 1). If all compliant bids for lump sum 1, lump sum 2 and lump sum 3 exceed the Commission's budget, then the basis of award will be the lowest total cost to the Commission including all taxes for lump sum 1 and lump sum 2 only (STEP 2).

10. ADDENDUM

I/We acknowledge receipt of the following addenda _____
(Bidder to ender number of addenda issued, if any)and have included for the requirement of it/them in my/our tendered price.

11. NOTE

Item SI06 (Negotiations in Special Instructions to Bidders) will only come into effect after lump sum 3 is removed and compliant bidders get re-ranked on the total of lump sum 1 and lump sum 2 (STEP 2). Refer to item 9 of the Invitation to Tender & Acceptance Form.

We hereby offer to supply to the NCC in accordance with the terms and conditions set out herein, the construction work listed above and on any attached sheets at the submitted price(s).

Name and title of person authorized to sign on behalf of Bidder (please print or type)	Signature	Date

Your tender is accepted to supply to the NCC, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the construction services listed herein and on any attached sheets at the price(s) set out therefore.

Name and title of the person authorized to sign on behalf of the NCC (please print or type)	Signature	Date

12. INVOICING

Send the original invoice and 1 copy to:

Accounts Payable
National Capital Commission
202-40 Elgin Street
Ottawa, ON K1P 1C7

Or by email at the following address: **payables@ncc-ccn.ca**

To ensure prompt payment, please prepare your invoice in accordance with the prices quoted. Errors in invoicing can cause delay of payment. Submit your invoice to the address shown above and clearly indicate the Purchase Order number.

13. SECURITY REQUIREMENTS

The NCC reserves the right to not award the Contract until such time as the contractor's personnel core employees, as well as any recurring subcontractors, have obtained the required level of security screening as identified by the NCC's Corporate Security.
All visits to site shall be approved and coordinated through NCC Corporate Security.

SPECIAL INSTRUCTIONS TO BIDDERS

SI01 TENDER DOCUMENTS

1) The following are the tender documents:

   (a) Invitation to Tender & Acceptance Form and any Appendices attached thereto;

   (b) Special Instructions to Bidders; and

   (c) General Instructions to Bidders.

   Submission of a tender 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 tender must be submitted in writing to the following: Sr. Contract Officer, Lana Wilson by e-mail at Lana.Wilson@ncc-ccn.ca as early as possible within the solicitation period. Except for the approval of alternative materials as described in GI15 of the General Instructions to Bidders, enquiries should be received no later than five (5) calendar days prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may result in an answer not being provided.

2) To ensure consistency and quality of the information provided to Bidders, the Sr. Contract 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 tender sent throughout the solicitation period are to be directed ONLY to the Sr. Contract Officer named above. Non-compliance with this requirement during the solicitation period can, for that reason alone, result in disqualification of a tender.

SI03 SITE VISIT

1) Not applicable

SI04 REVISION OF TENDER

1) A tender may be revised by letter or facsimile in accordance with GI10 of the General Instructions to Bidders. The facsimile number for receipt of revisions is 613-239-5012.

SI05 TENDER RESULTS

1) Following solicitation closing, tender results may be obtained by sending an e-mail request to : Lana.Wilson@ncc-ccn.ca .

SI06 NEGOTIATIONS

1) In the event that the lowest compliant tender exceeds the amount of funding the NCC has allocated for the construction phase of the work:

   (a) by 15% or less, the NCC, at its sole discretion, shall either:

      (i) cancel the invitation to tender; or

      (ii) obtain additional funding and, subject to the provisions of GI11 and GI09 of the General Instructions to Bidders, award the Contract to the Bidder submitting the lowest compliant tender; or

      (iii) revise the scope of the work accordingly and negotiate, with the Bidder submitting the lowest compliant tender, a corresponding reduction in its tender price.

   (b) by more than 15%, the NCC, at its sole discretion, shall either:

      (i) cancel the invitation to tender; or

      (ii) obtain additional funding and, subject to the provisions of GI11 and GI09 of the General Instructions to Bidders, award the Contract to the Bidder submitting the lowest compliant tender; or

      (iii) revise the scope of the work accordingly and invite those who submitted compliant tenders at the original invitation to tender to re-tender the work.

2) If negotiations or a re-tender are undertaken as is contemplated in subparagraphs 1)(a)(iii) or 1)(b)(iii) above, Bidders shall retain the same subcontractors and suppliers as they carried in their original tenders.

3) If the NCC elects to negotiate a reduction in the tender price as is contemplated in subparagraph 1)(a)(iii) herein and the negotiations fail to reach an agreement, the NCC shall then exercise either of the options referred to subparagraphs 1)(a)(i) or 1)(a)(ii).

SI07 TENDER VALIDITY PERIOD

1) The NCC reserves the right to seek an extension to the tender validity period prescribed in 3 of the Invitation to Tender & Acceptance Form. Upon notification in writing from the NCC, 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 tenders, then the NCC shall continue immediately with the evaluation of the tenders 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 tenders then the NCC shall, at its sole discretion, either:

   (a) continue to evaluate the tenders 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 the NCC's rights in law or under GI11 of the General Instructions to Bidders.

SI08 CONSTRUCTION DOCUMENTS

1) The successful contractor will be provided with one paper copy of the sealed and signed plans, the specifications and the amendments upon acceptance of the offer. Additional copies, may be available free of charge upon request by the contractor. If not, obtaining more copies shall be the responsibility of the contractor including costs.

SI09 PUBLIC TENDER OPENING

1) A public tender opening will be held on November 7, 2017 at 3:00pm Ottawa time at 40 Elgin Street, Ottawa, ON beside the Security office on the 2nd floor.

SI10 SECURITY REQUIREMENTS

Since the National Capital Commission (NCC) complies with the provisions of the Policy on Government Security, the Contractor shall ensure that none of the Employees of the Contractor and others for whom the Contractor is responsible and who are to perform the Contractor's obligations under this Contract constitute a security risk and shall, at the request of the NCC, ensure that all Employees of the Contractor and others for whom the Contractor is responsible who are to perform the Contractor's obligations under this Contract complete the NCC's security screening process in order that the NCC may obtain a security assessment of that person before accessing any site included in this Contract.

For this contract, it was determined that the NCC shall require **Reliability**. A credit check can be performed when the duties or task to be performed require it or in the event of a criminal record based on this type of offence.

GI01 Completion of Tender

1) The tender shall be:

   (a) submitted on the Invitation to Tender and Acceptance Form provided through the Government Electronic Tendering Service (GETS) or on a clear and legible reproduced copy of such Invitation to Tender and Acceptance Form that must be identical in content and format to the Invitation to Tender and Acceptance Form provided through GETS;

   (b) based on the Tender 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) tender 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 tender.

2) Subject to paragraph 6) of GI11, any alteration to the pre-printed or pre-typed sections of the Invitation to Tender and Acceptance Form, or any condition or qualification placed upon the tender shall be cause for disqualification. Alterations, corrections, changes or erasures made to statements or figures entered on the Invitation to Tender and Acceptance Form by the Bidder shall be initialled by the person or persons signing the tender. Initials shall be original(s). Alterations, corrections, changes or erasures that are not initialled shall be deemed void and without effect.

3) Unless otherwise noted elsewhere in the Tender Documents, facsimile copies of tenders are not acceptable.

GI02 Identity or Legal Capacity of the Bidder

1) In order to confirm the authority of the person or persons signing the tender 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 the NCC prior to award of contract, provide satisfactory proof of:

(a) such signing authority; and

(b) the legal capacity under which it carries on business.

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 tender 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.

GI03 Goods and Services Tax / Harmonized Sales Tax

1) The National Capital Commission (NCC) is a Crown Corporation subject to the Goods and Services Tax (GST), the Ontario Provincial Sales Tax (OST) and the Quebec Sales Tax (QST). The rates quoted are exclusive of the GST and the OST/QST. The successful firm will be required to indicate separately, on all invoices or requests for payments, the amount of Goods and Services Sales Tax (GST), the amount of Ontario Sales Tax (OST) and the amount of Quebec Sales Tax (QST), to the extent applicable, that the Commission must pay. These amounts will be paid to the successful Bidder who is required to make the appropriate remittances to Revenue Canada and the respective provincial governments.

Pursuant to paragraph 221 (1)(d) of the Income Tax Act, payments made by Crown Corporations under applicable service contracts (including contracts involving a mix of goods and services) must be reported on a "T1204" slip. To comply with this requirement, the Bidder is required to provide the following information on the "Supplier – Direct Payment and Tax Information Form" (see Appendix 11).

By signing this form, the Bidder/Proponent certifies that he/she has examined the information provided on the form and that it is correct, complete, and fully discloses the identification of the Contractor.

This "Supplier – Direct Payment and Tax Information Form" must be completed and returned to the Commission prior to any contract being awarded to your firm (see Appendix 11).

GI04 Quebec Sales Tax

1) See GI03.

GI05 Capital Developement 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 tender 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, if applicable, and this certificate must accompany the tender. 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 shall be required to submit as part of the tender, the Bidder submitting the lowest acceptable tender shall, within 24 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 may result in the disqualification of its tender.

GI08 Tender Security Requirements

1) The Bidder shall submit tender security with the tender in the form of a bid bond or a security deposit in an amount that is equal to not less than 10% of the tender amount including all applicable taxes.

   The maximum amount of tender security required with any tender is $2,000,000.00.

2) A bid bond shall be in an approved form, properly completed, with original signature(s) and issued by an approved company whose bonds are acceptable to the NCC either at the time of solicitation closing or as identified on the list displayed at the following Website:

   http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12027

   The approved form for the bid bond is enclosed at the end of this section.

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 payable to the NCC;

   (b) bonds of, or unconditionally guaranteed as to principal and interest by, the Government of Canada; or

4) A bill of exchange, bank draft or money order referred to in subparagraph 3)(a) of GI08 shall be certified by or drawn on:

   (a) a corporation or institution that is a member of the Canadian Payments Association;

   (b) a corporation that accepts public deposits and repayment of the deposits is unconditionally guaranteed by Her Majesty in right of a province;

   (c) a corporation that accepts deposits that are insured by the Canada Deposit Insurance Corporation or the "Régie de l'assurance-dépôts du Québec" to the maximum permitted by law;

   (d) 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)(b) of the *Income Tax Act*; or

   (e) Canada Post Corporation.

5) If a bill of exchange, bank draft or money order is 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 paragraph 4) of GI08, either by letter or by a stamped certification on the bill of exchange, bank draft, or money order.

6) For the purposes of this section, 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 time, a certain sum of money to, or to the order of, the NCC.

7) 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 NCC 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 NCC pursuant to the Domestic Bonds of Canada Regulations.

8) As an alternative to a security deposit an irrevocable standby letter of credit is acceptable to the NCC and the amount shall be determined in the same manner as a security deposit referred to above.

9) 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 NCC as the beneficiary;

(ii) is to accept and pay bills of exchange drawn by the NCC;

(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 NCC by way of the financial institution's draft against presentation of a written demand for payment signed by the NCC Contract Administrator 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 for Documentary Credits, 2007 Revision, ICC Publication No. 600;

(g) clearly specify that it is irrevocable or deemed to be irrevocable pursuant to article 6 c) of the International Chamber of Commerce (ICC) Uniform Customs and Practice for Documentary Credits, 2007 Revision, ICC Publication No. 600; and

(h) 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.

10) Tender security shall lapse or be returned as soon as practical following:

(a) the solicitation closing date, for those Bidders submitting non-compliant tenders; and

(b) the administrative tender review, for those Bidders submitting compliant tenders ranked fourth to last on the schedule of tenders; and

(c) the award of contract, for those Bidders submitting the second and third ranked tenders; and

(d) the receipt of contract security for the successful Bidder; or

(e) the cancellation of the solicitation, for all Bidders.

11) Notwithstanding the provisions of paragraph 10) of GI08 and provided more than three (3) compliant tenders have been received, if one or more of the tenders ranked third to first is withdrawn or rejected for whatever reason, then the NCC reserves the right to hold the security of the next highest ranked compliant tender in order to retain the tender security of at least three (3) valid and compliant tenders.

GI09 Submission of Tender

1) The Invitation to Tender and Acceptance Form, duly completed with the bid security, 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 of the Invitation to Tender and Acceptance Form for the receipt of tenders.

2) Unless otherwise specified in the Special Instructions to Bidders:

(a) the tender 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 tender, the Bidder shall ensure that the following information is clearly printed or typed on the face of the tender envelope:

(a) Solicitation Number;

(b) Name of Bidder.

5) Timely and correct delivery of the tender is the sole responsibility of the Bidder. The tender must be received on or before the date and time set for solicitation closing. Late tenders shall be disqualified.

GI10 Revision of Tender

1) A tender submitted in accordance with these instructions may be revised by letter or facsimile (fax number only 613-239-5012 provided the revision is received at the office designated for the receipt of tenders, on or before the date and time set for the closing of the solicitation. The letter or facsimile shall:

(a) be on the Bidder's letterhead or bear a signature that identifies the Bidder;

(b) for the Total Bid Amount, clearly identify the amount of the current revision. The total aggregate sum of all revisions submitted, including the current revision, shall be shown separately; and

(c) for the Price per unit portion of a tender, clearly identify the current revision(s) to the Price(s) per unit and the specific item(s) to which each revision applies. If a revision is to be applied to a specific Item that was previously amended then, in addition to the amount of the current

revision, the total aggregate sum of all revisions submitted, including the current revision, for that Item shall be shown separately.

2) A letter or facsimile submitted to confirm an earlier revision shall be clearly identified as "CONFIRMATION ONLY", for each contemplated change.

3) Failure to comply with any of the above provisions shall result in the rejection of the non-compliant revision(s) only. The tender shall be evaluated based on the original tender submitted and all other compliant revision(s).

GI11 Acceptance of Tender

1) The NCC may accept any tender, whether it is the lowest or not, or may reject any or all tenders.

2) Without limiting the generality of paragraph 1) of GI11, the NCC may reject a tender if any of the following circumstances are present:

(a) the Bidder, or any employee or subcontractor included as part of the tender, have been convicted under section 121 ("Frauds on the government" & "Contractor subscribing to election fund"), 124 ("Selling or purchasing office"), 380 (Fraud committed against Her Majesty) or 418 ("Selling defective stores to Her Majesty") of the Criminal Code of Canada, or under 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;

(b) the Bidder's bidding privileges are suspended or are in the process of being suspended;

(c) the bidding privileges of any employee or subcontractor included as part of the tender are suspended or are in the process of being suspended, which suspension or pending suspension would render that employee or subcontractor ineligible to tender on the Work, or the portion of the Work the employee or subcontractor is to perform;

(d) with respect to current or prior transactions with the NCC

(i) the Bidder is bankrupt or if, for whatever reason, its activities are rendered inoperable for an extended period;

(ii) evidence, satisfactory to the NCC, 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 tender;

(iii) the NCC 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 tender; or

(iv) the NCC determines that the Bidder's performance on other contracts is sufficiently poor to jeopardize the successful completion of the requirement being tendered on.

3). In assessing the Bidder's performance on other contracts pursuant to subparagraph 2)(d)(iv) of GI11, the NCC 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 NCC 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, the NCC may reject any based on an unfavourable assessment of the:

(a) adequacy of the tender price to permit the work to be carried out and, in the case of a tender 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) If the NCC intends to reject a tender pursuant to a provision of paragraphs 1), 2), 3) or 4) of GI11, other than subparagraph 2)(b)of GI11, the NCC shall so inform the Bidder and provide the Bidder ten (10) days within which to make representation, prior to making a final decision on the tender rejection.

6) The NCC may waive informalities and minor irregularities in tenders received, if the NCC determines that the variation of the tender from the exact requirements set out in the Tender Documents can be corrected or waived without being prejudicial to other Bidders.

GI12 Procurement Business Number

1) Not applicable.

GI13 Bid Depository

1) If the solicitation advertisement states that a Bid Depository shall be used, the Bidder shall obtain bids in accordance with local Bid Depository rules and procedures.

GI14 Compliance with Applicable Laws

1) By submission of a tender, 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 tender and entry into any ensuing contract for the performance of the work.

2) For the purpose of validating the certification in paragraph 1) of GI14, 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 said request.

3) Failure to comply with the requirements of paragraph 2) of GI14 shall result in the disqualification of the tender.

GI15 Approval of Alternative Materials

1) When materials are specified by trade names or trademarks, or by manufacturers' or suppliers' names, the tender 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 seven (7) calendar days, unless otherwise noted in the Tender documents, prior to the solicitation closing date. If the alternative materials are approved for the purposes of the tender, an addendum to the tender 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 the NCC. 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. Contractor Evaluation Report Form is enclosed at the end of this section.

BID BOND

Bond Number _____

Amount $ _____

KNOW ALL MEN BY THESE PRESENTS, that _____ as Principal, hereinafter called the Principal, and _____ as Surety, hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto the National Capital Commission as Obligee, hereinafter called the NCC, In the amount of _____ dollars ($ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____ , _____ . WHEREAS, the Principal has submitted a written tender to the NCC, dated the _____ day of _____ , _____ , for: _____ .

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that if:

(a) The Principal, should his tender be accepted within the period be specified by the NCC, or, if no period be specified, within sixty (60) days after closing date of the tender:

1. does execute within a period specified by the NCC, or, if no period be specified therein, within fourteen (14) days after the prescribed forms are presented to him for signature, execute such further contractual documents, if any, as may be required by the terms of the tender as accepted; and does

2. furnish a Performance Bond and a Labour and Material Payment Bond, each in the amount of 50% of the Contract price and satisfactory to the NCC, or other security acceptable to the NCC; or

(b) the Principal does pay to the NCC the difference between the amount of the Principal's tender and the amount of the Contract entered into by the NCC for the work, supplies and services which were specified in the said tender, if the latter amount be in excess of the former,

then, this obligation shall be void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that the Surety and the Principal shall not be liable to the NCC for an amount greater than the amount specified in the bond.

PROVIDED FURTHER that the Surety shall not be subject to any suit or action unless such suit or action is instituted and process therefore served upon the Surety at its Head Office in Canada, within twelve (12) months from the date of this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal _____

Witness _____

Surety _____

Note: Affix Corporate seal if applicable.

NCC CCN Canada

CONTRACTOR PERFORMANCE EVALUATION REPORT FORM
FORMULAIRE - RAPPORT D'ÉVALUATION DU RENDEMENT DE L'ENTREPRENEUR

Date	Contract no. / No du contrat
Description of work / Description des travaux	
Contractor's business name / Nom de l'entreprise de l'entrepreneur	Contractor's site superintendent / Contremaître de l'entrepreneur
Contractor's business address / Adresse de l'entreprise de l'entrepreneur	

NCC representative / Représentant de la CCN

Name / Nom	Telephone no. / N°. de téléphone	E-mail address / Adresse électronique

Contract information / Information sur le contrat

Contract award amount / Montant du marché adjugé	Contract award date / Date de l'adjudication du marché
Final amount / Montant final	Actual contract completion date / Date réelle d'achèvement du contrat
Number of change orders / Nombre d'ordres de changement	Final certificate date / Date du certificat final

Quality of workmanship / Qualité des travaux exécutés	Category / Catégorie	Scale / Échelle	Points / Pointage
This is the rating of the quality of the workmanship. At final completion the quality of the materials and equipment incorporated in the work must meet the requirements set out in the plans and specifications. Il s'agit de l'évaluation de la qualité des travaux exécutés. À l'achèvement des travaux, la qualité des matériaux et de l'équipement doit satisfaire les exigences établies dans les plans et devis.	Unacceptable / Inacceptable Not satisfactory / Non-satisfaisant Satisfactory / Satisfaisant Superior / Supérieur	0 – 5 6 – 10 11 – 16 17 - 20	
Time / Délai d'exécution			
This is the rating of the timeliness of completion considering the actual completion date compared with the original (or amended) contract completion date and allowing for conditions beyond the control of the contractor. Il s'agit de l'évaluation du délai d'exécution des travaux en prenant en considération la date actuelle d'achèvement des travaux par rapport à la date originale (ou modifiée) et en tenant compte des conditions indépendantes de la volonté de l'entrepreneur.	Unacceptable / Inacceptable Late / En retard On time / À temps Ahead of schedule / En avance sur le calendrier	0 – 5 6 – 10 11 – 16 17 - 20	
Project management / Gestion de projet			
This is the rating of how the project, as described in the drawings and specifications, was managed including co-ordination, quality control, effective schedule development and implementation. Voici l'évaluation de la façon dont le projet décrit dans les documents contractuels a été géré, y compris la coordination, le contrôle de la qualité, l'élaboration d'un calendrier efficace et la mise en œuvre.	Unacceptable / Inacceptable Not satisfactory / Non-satisfaisant Satisfactory / Satisfaisant Superior / Supérieur Criteria not applicable / Critère non-applicable	0 – 5 6 – 10 11 – 16 17 - 20	☐ N/A / S/O
Contract management / Gestion de contrat			
This is the rating of how the contract was administered in accordance with the provisions expressed in the "front end" portion of the documents. Voici l'évaluation de la façon dont le contrat a été administré conformément aux dispositions comprises dans la partie « prioritaire » des documents.	Unacceptable / Inacceptable Not satisfactory / Non-satisfaisant Satisfactory / Satisfaisant Superior / Satisfaisant Criteria not applicable / Critère non-applicable	0 – 5 6 – 10 11 – 16 17 - 20	☐ N/A / S/O
Health and safety / Santé et sécurité			
This is the rating of the effectiveness of how the occupational health and safety provisions (whether identified in the contract or those of provincial legislation or those otherwise applicable) were managed and administered. Voici l'évaluation de l'efficacité avec laquelle les dispositions relatives à la santé et à la sécurité au travail (dans le contrat, dans les règlements provinciaux ou dans tout autre document) ont été gérées et administrées.	Unacceptable / Inacceptable Not satisfactory / Non-satisfaisant Satisfactory / Satisfaisant Superior / Satisfaisant	0 – 5 6 – 10 11 – 16 17 - 20	
		Total points / Pointage total	**/100**

Comments / Commentaires

Name / Nom	Title / Titre	Signature	Date

INSTRUCTIONS AND ADDITIONAL INFORMATION (Contractor Performance Evaluation Report)
INSTRUCTIONS ET RENSEIGNEMENTS SUPPLÉMENTAIRES (Rapport d'évaluation du rendement de l'entrepreneur)

QUALITY OF WORKMANSHIP – QUALITÉ DES TRAVAUX EXÉCUTÉS

The NCC representative is to consider how the workmanship compares with:

- the norms in the area in which the work was carried out
- the contractor's compliance with any quality provisions outlined in the drawings and specification
- the quality of workmanship provided by other contractors on similar projects in the same facility/facilities

Le représentant de la CCN doit évaluer la qualité de l'exécution en fonction de ce qui suit :

- le respect des normes s'appliquant aux travaux réalisés
- la conformité de l'entrepreneur aux exigences de qualité comprises dans les dessins et dans les devis
- la qualité de l'exécution des travaux accomplis par d'autres entrepreneurs dans le cadre de projets similaires réalisés dans la même installation ou dans des installations semblables.

TIME / DÉLAIS D'EXÉCUTION

For the purpose of evaluation the contractor's time performance, consideration must be given to conditions beyond the contractor's control including NCC / Consultant / Client performance.

Consider conditions beyond the contractor's control, e.g.,

- availability of, and access to the site
- changes in soil or site conditions
- weather extremes
- strikes
- material / equipment supply problems originating from manufacturers/suppliers
- quality of plans and specifications
- major change(s) in scope
- cumulative effect of changes
- was the NCC able to meet its obligations?
- timely decisions, clarifications, approvals, payments in due time
- delays caused by other contractors in the same facility

Afin d'évaluer le rendement de l'entrepreneur en matière de délai d'exécution, on doit prendre en considération les conditions indépendantes de la volonté de l'entrepreneur, y compris le rendement de la CCN, de l'expert-conseil et du client.

Prendre en considération les conditions indépendantes de la volonté de l'entrepreneur, par exemple :

- disponibilité du chantier et accès au chantier
- modifications des conditions du sol ou du chantier
- température
- grèves
- problèmes d'approvisionnement en matériel et en équipement provenant des manufacturiers/fournisseurs
- qualité des plan et devis
- modifications importantes à l'étendue des travaux
- effets cumulatifs des modifications
- la CCN a-t-elle été capable de remplir ses obligations?
- décisions, clarifications, approbations, paiements en temps opportun
- les retards occasionnés par d'autres entrepreneurs travaillant dans la même installation.

The NCC representative's estimate of a reasonable maximum time allowance resulting from conditions beyond the contractor's control is
L'estimation, par le représentant de la CCN, du temps maximum alloué pour les conditions indépendantes de la volonté de l'entrepreneur est ►

The period of delay attributable to the contractor is
La période de retard attribuable à l'entrepreneur est ►

Did the contractor make an effective effort / Est-ce que l'entrepreneur s'est efforcé :

- to meet the schedule / de respecter l'échéancier des travaux ► ☐ Yes / Oui ☐ No / Non
- to clean up deficiencies in a reasonable time / de corriger les vices dans un délai raisonnable ► ☐ Yes / Oui ☐ No / Non

Have you recommended assessments and damages for late completion under the contract?
Avez-vous recommandé des dédommagements pour retard d'exécution aux termes du marché? ► ☐ Yes / Oui ☐ No / Non

PROJECT MANAGEMENT / GESTION DU PROJET

The extent to which the contractor takes charge of and effectively manages the work has a direct effect on the inputs required of the NCC.

Consideration should be given to: Did the contractor

- employ a knowledgeable site superintendent
- required additional input from the NCC staff above that which is normal for a project of similar size and nature
- promptly commence the work
- provide realistic schedules and updates in accordance with the terms of the contract
- provide a comprehensive work plan and adhere to its milestones
- order material promptly and in such a way as to expedite the progress of the work
- provide shop drawings promptly and were they of sufficient detail

La mesure dans laquelle l'entrepreneur assume efficacement la gestion des travaux a une incidence directe sur les services qu'on attend de la CCN.

Il faut examiner si l'entrepreneur a :

- fait appel aux services d'un surintendant de chantier expérimenté
- demandé au personnel de la CCN une plus grande contribution que ce qui est normal pour un projet de cette importance et de cette nature
- commencé les travaux dans les plus brefs délais
- fourni un calendrier réaliste et des mises à jour conformément aux modalités du contrat
- présenté un plan de travail complet et a respecté les échéances
- commandé le matériel rapidement et de façon à accélérer l'avancement des travaux.
- fourni rapidement des dessins d'atelier comprenant suffisamment de détails

PROJECT MANAGEMENT (cont'd) / GESTION DU PROJET (suite)

- effectively manage and complete all Division 1 work site activities

- promptly provide reasonable quotations for changes to the original scope of work
- cooperate when issued directions by the NCC representative
- interpret the contract documents accurately
- establish effective quality control procedures
- effectively coordinate and manage the work of its subcontractors

- promptly correct defective work as the project progressed
- promptly clean-up all deficiencies and incomplete work after issuance of the Interim Certificate of Completion
- satisfactorily clean the work site periodically and at the completion of the project

- géré et achevé efficacement toutes les activités sur le chantier de la Division 1
- proposé rapidement des prix raisonnables pour les modifications à l'énoncé des travaux initial
- accepté les directives du représentant de la CCN
- interprété les documents contractuels avec exactitude
- mis en place des procédures de contrôle de la qualité efficaces
- coordonné et géré efficacement les travaux confiés à des sous-traitants
- corrigé promptement le travail défectueux en cours de projet
- corrigé rapidement les travaux non acceptables et terminé les travaux incomplets après réception du certificat provisoire d'achèvement
- nettoyé de façon satisfaisante le chantier périodiquement ainsi qu'à la fin du projet.

CONTRACT MANAGEMENT / GESTION DU CONTRAT

The effectiveness of the contractor to administer the contract in accordance with the provisions expressed in the "front end" portion of the contract documents.

Consideration should be given to: Did the contractor

- in the time frame specified, provide its contract security, Insurance Certificate fully executed and WSIB form where applicable
- submit progress claims in the correct format, accurately representing the work successfully completed and material delivered to the site but not yet installed for each payment period
- submit a Statutory Declaration correctly completed with each progress claim
- submit an updated Schedule if so specified
- pay subcontractors and suppliers in a timely fashion in accordance with the terms and conditions of its subcontracts
- promptly appoint a competent site superintendent
- notify the NCC representative of all its subcontracting activities

- apply for, obtain and pay for all necessary permits, licenses and certificates
- cooperate with other contractors sent onto the site of the work

- remove a superintendent or unsuitable worker when requested by the NCC representative to do so
- effectively protect the work and the contract documents provided by the NCC
- comply with all warranty provisions up to the date of the Contractor Performance Evaluation Report Form (CPERF)

- effectively manage the site during a suspension or termination of the work to mitigate any additional costs to the NCC

- deal promptly with any claims from creditors

- maintain complete records of the project
- provide information promptly when requested to do so
- expedite and co-operate in the settlement of all disputes

Efficacité avec laquelle l'entrepreneur a administré le contrat conformément aux dispositions continues dans la partie « prioritaire » des documents contractuels.

Il faut examiner si l'entrepreneur a :

- fourni, dans le délai prescrit, une garantie contractuelle, un certificat d'assurance dûment signés et le formulaire de la CSST, le cas échéant
- présenté des réclamations périodiques dans le bon format, en décrivant avec précision les travaux exécutés et le matériel livré sur le chantier mains non encore installé, pour chaque période de paiement
- présenté une déclaration solennelle correctement remplie avec chaque réclamation périodique
- fourni un calendrier à jour, sur demande
- payé rapidement les sous-traitants et les fournisseurs conformément aux conditions des contrats de sous-traitance
- désigné dans les plus brefs délais un surintendant de chantier qualifié
- tenu au courant le représentant de la CCN de toutes les activités de sous-traitance
- demandé, obtenu et payé tous les permis, licences et certificats nécessaires
- collaboré avec les autres entrepreneurs envoyés sur le lieu des travaux
- remplacé un surintendant ou un travailleur inapte à la demande du représentant de la CCN
- protégé efficacement les travaux et les documents relativement aux travaux et au contrat fournis par la CCN
- respecté toutes les dispositions de garantie jusqu'à la date du Formulaire Rapport d'évaluation du rendement de l'entrepreneur (FRERE)
- géré efficacement le chantier pendant une suspension des travaux ou lors de leur achèvement, afin de limiter tout coût supplémentaire pour la CCN
- traité dans les plus brefs délais les demandes de paiement des créanciers
- tenu des dossiers complets sur le projet
- fourni promptement les renseignements demandés
- accélère et coopère dans le règlement des différends

HEALTH AND SAFETY / SANTÉ ET SÉCURITÉ

The effectiveness to which the contractor managed and administered the occupational health and safety provisions as stipulated in the contract documents and those required by provincial legislation or those that would otherwise be applicable to the site of the work.

Consideration should be given to: Did the contractor

- provide the NCC with a copy of its health and safety program prior to award of contract
- provide the NCC with a copy of its site specific hazardous assessment prior to award of contract
- apply for and obtain the provincial Notice of Project prior to commencement of the work
- apply for and obtain the Building Permit prior to commencement of the work
- provide a competent superintendent who
  - is qualified in health and safety matters because of her/his knowledge, training and experience
  - is familiar with the OH&S Act and its Regulations that apply to the site of the work
  - remedies any potential or actual danger of health and safety to those employed at the work site
- respond in a timely manner to any non-compliance safety issues noted by the NCC or a representative of the authority having jurisdiction
- implement its safety program in a proactive manner

Efficacité avec laquelle l'entrepreneur a géré et administré les dispositions relatives à la santé et à la sécurité au travail telles que stipulées dans les documents contractuels et dans les règlements provinciaux ou ceux s'appliquant normalement au lieu des travaux.

Il faut examiner si l'entrepreneur a :

- fourni à la CCN une copie de son programme en matière de santé et de sécurité avant l'octroi du contrat
- fourni à la CCN une copie de son évaluation des dangers pouvant survenir sur les lieux avant l'octroi du contrat
- demandé et obtenu l'avis de projet provincial avant le début des travaux
- demandé et obtenu le permis de construction avant le début des travaux
- engagé un surintendant qui :
  - est qualifié en matière de santé et de sécurité de par ses connaissances, sa formation et son expérience
  - connaît bien les dispositions de la Loi sur la santé et la sécurité au travail et de son règlement qui s'applique sur le lieu des travaux
  - remédie à tout danger possible ou réel en matière de santé et de sécurité pouvant toucher toutes les personnes travaillant sur le lieu des travaux
- traité rapidement tous les problèmes de non-conformité à la sécurité relevés par la CCN ou par un représentant de l'autorité qui a juridiction
- mis en œuvre son programme de sécurité de façon proactive

GC1.1 INTERPRETATION

GC1.1.1 Headings and References

1) The headings in the contract documents, other than those in the drawings and specifications, form no part of the Contract but are inserted for convenience of reference only.

2) A reference made to a part of the Contract by means of numbers preceded by letters is a reference to the particular part of the Contract that is identified by that combination of letters and numbers and to any other part of the Contract referred to therein.

3) A reference to a paragraph or subparagraph followed by an identifying number, letter or combination thereof is, unless specifically stated otherwise, a reference to the paragraph or subparagraph that forms part of the clause within which the reference is made.

GC1.1.2 Terminology

1) In the Contract

"Contract" means the contract documents referred to as such therein and every other document specified or referred to in any of them as forming part of the Contract, all as amended by agreement of the parties;

"Contract Amount" means the amount set out in the Contract to be payable to the Contractor for the Work, subject to the terms and conditions of the Contract;

"Contract Security" means any security given by the Contractor to the NCC in accordance with the Contract;

"Contractor" means the person contracting with the NCC to provide or furnish all labour, Material and Plant for the execution of the Work under the Contract, and includes the Contractor's superintendent as designated in writing to the NCC;

"Certificate of Completion" means a certificate issued by the NCC when the Work reaches Completion;

"Certificate of Measurement" means a certificate issued by the NCC certifying the correctness of the final quantities, prices per unit and values of labour, Plant and Material performed, used and supplied by the Contractor for the construction of the part of the Work to which a Unit Price Arrangement applies;

"Certificate of Substantial Performance" means a certificate issued by the NCC when the Work reaches Substantial Performance;

"NCC Representative" means the person designated in the Contract, or by written notice to the Contractor, to act as the NCC Representative for the purposes of the Contract, and includes a person, designated and authorized in writing by the NCC Representative to the Contractor;

"herein", "hereby", "hereof", "hereunder" and similar expressions refer to the Contract as a whole and not to any particular section or part thereof;

"Lump Sum Arrangement" means that part of the Contract that prescribes a lump sum as payment for performance of the Work to which it relates;

"Material" includes all commodities, articles, machinery, equipment, fixtures and things required to be furnished in accordance with the Contract for incorporation into the Work;

"NCC" means the National Capital Commission;

"Person" also includes, unless there is an express stipulation in the Contract to the contrary, any partnership, proprietorship, firm, joint venture, consortium or corporation;

"Plant" includes all tools, implements, machinery, vehicles, structures, equipment, articles and things that are necessary for the performance of the Contract, other than Material and those tools customarily provided by a tradesperson in practicing a trade;

"Security screening" is a generic term that applies to all types and levels of personnel security screening including Reliability Status, Site Access, and CONFIDENTIAL, SECRET and TOP SECRET security clearances conducted by the NCC;

"Sensitive Information and Assets" means information or assets that have been identified by the NCC as TOP SECRET, SECRET, CONFIDENTIAL or protected;

"Subcontractor" means a person having a direct contract with the Contractor, subject to GC3.6 SUBCONTRACTING, to perform a part or parts of the Work, or to supply Material customized for the Work;

"Superintendent" means the employee or representative of the Contractor designated by the Contractor to act pursuant to GC2.6 SUPERINTENDENT;

"Supplementary Conditions" means the part of the Contract that amends or supplements the General Conditions;

"Supplier" means a person having a direct contract with the Contractor to supply Plant or Material not customized for the Work;

"Unit Price Arrangement" means that part of the Contract that prescribes the product of a price per unit of measurement multiplied by a number of units of measurement for performance of the Work to which it relates;

"Unit Price Table" means the table of prices per unit set out in the Contract;

"Work" means, subject only to any express stipulation in the Contract to the contrary, everything that is necessary to be done, furnished or delivered by the Contractor to perform the Contract in accordance with the contract documents; and

"Working Day" means a day other than a Saturday, Sunday, or a statutory holiday that is observed by the construction industry in the area of the place of the Work.

GC1.1.3 Application of Certain Provisions

1) Any provisions of the Contract that are expressly stipulated to be applicable only to a Unit Price Arrangement are not applicable to any part of the Work to which a Lump Sum Arrangement applies.

2) Any provisions of the Contract that are expressly stipulated to be applicable only to a Lump Sum Arrangement are not applicable to any part of the Work to which a Unit Price Arrangement applies.

GC1.1.4 Substantial Performance

1) The Work shall be considered to have reached Substantial Performance when:

   (a) the Work or a substantial part thereof has passed inspection and testing and is, in the opinion of the NCC, ready for use by the NCC or is being used for the intended purposes; and

   (b) the Work is, in the opinion of the NCC, capable of completion or correction at a cost of not more than

      (i) 3% of the first $500,000;

      (ii) 2% of the next $500,000; and

      (iii) 1% of the balance

      of the Contract Amount at the time this cost is calculated.

2) Where the Work or a substantial part thereof is ready for use or is being used for the purposes intended and:

   (a) the remainder of the Work or a part thereof cannot be completed by the time specified in the Contract, or as amended in accordance with GC6.5 DELAYS AND EXTENSION OF TIME, for reasons beyond the control of the Contractor; or

   (b) the NCC and the Contractor agree not to complete a part of the Work within the specified time;

the cost of that part of the Work that was either beyond the control of the Contractor to complete or the NCC and the Contractor have agreed not to complete by the time specified, shall be deducted from the value of the Contract referred to in subparagraph 1)(b) of GC1.1.4, and the said cost shall not form part of the cost of the Work remaining to be done in determining Substantial Performance.

GC1.1.5 Completion

1) The Work shall be deemed to have reached Completion when all labour, Plant and Material required have been performed, used or supplied, and the Contractor has complied with the Contract and all orders and directions made pursuant thereto, all to the satisfaction of the NCC.

GC1.2 CONTRACT DOCUMENTS

GC1.2.1 General

1) The contract documents are complementary, and what is required by any one shall be as binding as if required by all.

2) References in the contract documents to the singular shall be considered to include the plural as the context requires.

3) Nothing contained in the contract documents shall create a contractual relationship between the NCC and any Subcontractor or Supplier, their subcontractors or suppliers, or their agents or employees.

GC1.2.2 Order of Precedence

1) In the event of any discrepancy or conflict in the contents of the following documents, such documents shall take precedence and govern in the following order:

   (a) any amendment or variation of the contract documents that is made in accordance with the General Conditions;

   (b) any amendment issued prior to tender closing;

   (c) Supplementary Conditions;

   (d) General Conditions;

   (e) the duly completed Invitation to Tender and Acceptance Form when accepted;

   (f) drawings and specifications.

   later dates shall govern within each of the above categories of documents.

2) In the event of any discrepancy or conflict in the information contained in the drawings and specifications, the following rules shall apply:

   (a) specifications shall govern over drawings;

   (b) dimensions shown in figures on a drawings shall govern where they differ from dimensions scaled from the same drawing; and

   (c) drawings of larger scale govern over those of smaller scale.

GC1.2.3 Security and Protection of Documents and Work

1) The Contractor shall guard and protect all sensitive contract information (TOP SECRET, SECRET, CONFIDENTIAL and PROTECTED) including printed and digital documents, drawings, information, models, copies thereof and processing systems, whether supplied by the NCC or the Contractor, against loss or compromise and damage from any cause.

2) The Contractor shall limit access to sensitive NCC information only to those with a "need-to-know" and who have been successfully security screened to at least the level of sensitivity of the information.

3) The Contractor shall ensure all contract information indicated in paragraph 1) is guarded and protected by any subcontractors, agents or suppliers and access limited only to those with a "need-to-know" and who have been successfully security screened to at least the level of sensitivity of the information.

4) The Contractor shall keep confidential all information provided to the Contractor by or on behalf of the NCC in connection with the Work, and all information developed by the Contractor as part of the Work, and shall not disclose any such information to any person without the written permission of the NCC, except that the Contractor may disclose to a subcontractor, authorized in accordance with the Contract, information necessary to the performance of a subcontract. This section does not apply to any information that:

   (a) is publicly available from a source other than the Contractor; or

   (b) is or becomes known to the Contractor from a source other than the NCC, except any source that is known to the Contractor to be under an obligation to the NCC not to disclose the information.

5) When the Contract, the Work, or any information referred to in paragraph 4) is identified as TOP SECRET, SECRET, CONFIDENTIAL or PROTECTED by the NCC, the Contractor shall, at all times, take all measures reasonably necessary for the safeguarding of the material so identified, including such measures as may be further specified elsewhere in the Contract or provided, in writing, from time to time by the NCC.

6) Without limiting the generality of paragraphs 4) and 5) of GC1.2.3, when the Contract, the Work, or any information referred to in paragraph 4) is identified as TOP SECRET, SECRET, CONFIDENTIAL or PROTECTED by the NCC, the NCC shall be entitled to inspect the Contractor's premises and the premises of its subcontractors or suppliers and any other person at any tier, for security purposes at any time during the term of the Contract, and the Contractor shall comply with, and ensure that any such subcontractors or suppliers comply with all written instructions issued by the NCC dealing with the material so identified, including any requirement that employees of the Contractor and its subcontractors and suppliers and any other person at any tier execute and deliver declarations relating to reliability status, site access security clearances and other procedures.

7) The Contractor shall report any suspected or actual security incidents immediately to the NCC involving loss, compromise or damage of NCC information or assets.

8) The Contractor shall safeguard the Work and the Contract, the specifications, drawings and any other information provided by the NCC to the Contractor, and shall be liable to the NCC for any loss or damage from any causes.

GC1.3 STATUS OF THE CONTRACTOR

1) The Contractor is engaged under the Contract as an independent contractor.

2) The Contractor, its subcontractors and suppliers and any other person at any tier and their employees are not engaged by the Contract as employees, servants or agents of the NCC.

3) For the purposes of the contract the Contractor shall be solely responsible for any and all payments and deductions required to be made by law including those required for Canada or Quebec Pension Plans, Employment Insurance, Worker's Compensation, provincial health or insurance plans, and Income Tax.

GC1.4 RIGHTS AND REMEDIES

1) Except as expressly provided in the Contract, the duties and obligations imposed by the Contract and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

GC1.5 TIME OF THE ESSENCE

1) Time is of the essence of the Contract.

GC1.6 INDEMNIFICATION BY CONTRACTOR

1) The Contractor shall pay all royalties and patent fees required for the performance of the Contract and, at the Contractor's expense, shall defend all claims, actions or proceedings against the NCC charging or claiming that the Work or any part thereof provided or furnished by the Contractor to the NCC infringes any patent, industrial design, copyright trademark, trade secret or other proprietary right enforceable in Canada.

2) The Contractor shall indemnify and save the NCC harmless from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings by any third party, brought or prosecuted and in any manner based upon, arising out of, related to, occasioned by, or attributable to the activities of the Contractor, its subcontractors and suppliers and any other person at any tier, in performing the Work.

3) For the purposes of paragraph 2) of GC1.6, "activities" means any act improperly carried out, any omission to carry out an act and any delay in carrying out an act.

GC1.7 INDEMNIFICATION BY THE NCC

1) Subject to the Crown Liability and Proceedings Act, the Patent Act, and any other law that affects the NCC's rights, powers, privileges or obligations, the NCC shall indemnify and save the Contractor harmless from and against all claims, demands, losses, costs, damage, actions, suits or proceedings arising out of the Contractor's activities under the Contract that are directly attributable to:

   (a) a lack of or a defect in the NCC's title to the Work site if owned by the NCC, whether real or alleged; or

   (b) an infringement or an alleged infringement by the Contractor of any patent of invention or any other kind of intellectual property occurring while the Contractor was performing any act for the purposes of the Contract employing a model, plan or design or any other thing related to the Work that was supplied by the NCC to the Contractor.

GC1.8 LAWS, PERMITS AND TAXES

1) The Contractor shall comply with all federal, provincial and municipal laws and regulations applicable to the performance of the Work or any part thereof including, without limitation, all laws concerning health and labour conditions and the protection of the environment, and shall require compliance therewith by all of its subcontractors and suppliers at any tier as if the Work were being performed for an owner other than the NCC. The Contractor shall furnish evidence of compliance with such laws and regulations to the NCC at such times as the NCC may reasonably request.

2) Unless stipulated otherwise in the Contract, the Contractor shall obtain and maintain all permits, certificates, licences, registrations and authorizations required for the lawful performance of the Work.

3) Prior to the commencement of the Work at the site, the Contractor shall tender to a municipal authority an amount equal to all fees and charges that would be lawfully payable to that municipal authority in respect of building permits as if the Work were being performed for an owner other than the NCC.

4) Within 10 days of making a tender pursuant to paragraph 3) of GC1.8, the Contractor shall notify the NCC of the amount properly tendered and whether or not the municipal authority has accepted that amount.

5) If the municipal authority has not accepted the amount tendered, the Contractor shall pay that amount to the NCC within 6 days after the time stipulated in paragraph 4) of GC1.8.

6) For the purposes of this clause, "municipal authority" means any authority that would have jurisdiction respecting permission to perform the Work if the owner were not the NCC.

7) Notwithstanding the residency of the Contractor, the Contractor shall pay any applicable tax arising from or related to the performance of the Work under the Contract.

8) In accordance with the Statutory Declaration referred to in paragraph 4) of GC5.5 SUBSTANTIAL PERFORMANCE OF THE WORK, a Contractor who has neither residence nor place of business in the province or territory in which work under the Contract is being performed shall provide the NCC with proof of registration with the provincial sales tax authorities in the said province.

9) For the purpose of the payment of any applicable tax or the furnishing of security for the payment of any applicable tax arising from or related to the performance of the Work, and notwithstanding the provision that all Material, Plant and interest of the Contractor in all real property, licences, powers and privileges, become the property of the NCC after the time of purchase in accordance with GC3.10 MATERIAL PLANT AND REAL PROPERTY BECOME PROPERTY OF THE NCC, the Contractor shall be liable, as a user or consumer, for the payment or for the furnishing of security for the payment of any applicable tax payable, at the time of the use or consumption of that Material, Plant or interest of the Contractor in accordance with the relevant legislation.

GC1.9 WORKERS' COMPENSATION

1) Prior to award of contract, at the time of submitting its first progress claim, at the time of Substantial Performance of the Work, and prior to issuance of the Certificate of Completion, the Contractor shall provide evidence of compliance with workers' compensation legislation applicable to the place of the Work, including payments due thereunder.

2) At any time during the term of the Contract, when requested by the NCC, the Contractor shall provide such evidence of compliance by the Contractor, its subcontractors and any other person at any tier and any other person performing part of the Work who is required to comply with such legislation.

GC1.10 NATIONAL SECURITY

1) If the NCC determines that the Work is of a class or kind that involves national security, the NCC may order the Contractor to:

(a) provide the NCC with any information concerning persons employed or to be employed by the Contractor for purposes of the Contract; and

(b) remove any person from the site of the Work if, in the opinion of the NCC, that person may be a risk to the national security;

and the Contractor shall comply with the order.

2) In all contracts with persons who are to be employed in the performance of the Contract, the Contractor shall make provision for the performance of any obligation that may be imposed upon the Contractor under paragraph 1) of GC1.10.

GC1.11 UNSUITABLE WORKERS

1) The NCC shall instruct the Contractor to remove from the site of the Work any person employed by the Contractor for purposes of the Contract who, in the opinion of the NCC, is incompetent or is guilty of improper conduct, and the Contractor shall not permit a person who has been removed to return to the site of the Work.

GC1.12 PUBLIC CEREMONIES AND SIGNS

1) The Contractor shall not permit any public ceremony in connection with the Work without the prior consent of the NCC.

2) The Contractor shall not erect nor permit the erection of any sign or advertising on the Work or its site without the prior consent of the NCC.

GC1.13 CONFLICT OF INTEREST

1) It is a term of the Contract that no individual, for whom the post-employment provisions of the Conflict of Interest and Post-Employment Code for Public Office Holders or the Values and Ethics Code for the Public Service apply, shall derive a direct benefit from the Contract unless that individual is in compliance with the applicable post-employment provisions.

GC1.14 AGREEMENTS AND AMENDMENTS

1) The Contract constitutes the entire and sole agreement between the parties with respect to the subject matter of the Contract and supersedes all previous negotiations, communications and other agreements, whether written or oral, relating to it, unless they are incorporated by reference in the Contract. There are no terms, covenants, representations, statements or conditions binding on the parties other than those contained in the Contract.

2) The failure of either party at any time to require performance by the other party of any provision hereof shall not affect the right thereafter to enforce such provision. Nor shall the waiver by either

party of any breach of any covenant, term or condition hereof be taken to be held to be a waiver of any further breach of the same covenant, term or condition.

3) The Contract may be amended only as provided for in the Contract.

GC1.15 SUCCESSION

1) The Contract shall inure to the benefit of and be binding upon the parties hereto and their lawful heirs, executors, administrators, successors and, subject to GC1.16 ASSIGNMENT, permitted assigns.

GC1.16 ASSIGNMENT

1) The Contractor shall not make any assignment of the Contract, either in whole or in part, without the written consent of the NCC.

GC1.17 NO BRIBE

1) The Contractor represents and covenants that no bribe, gift, benefit, nor other inducement has been nor shall be paid, given, promised or offered directly or indirectly to any official or employee of the NCC or to a member of the family of such a person, with a view to influencing the entry into the Contract or the administration of the Contract.

GC1.18 CERTIFICATION - CONTINGENCY FEES

1) In this clause:

(a) "contingency fee" means any payment or other compensation that is contingent upon or is calculated upon the basis of a degree of success in soliciting or obtaining a Government contract or negotiating the whole or any part of its terms;

(b) "employee" means a person with whom the Contractor has an employer/employee relationship; and

(c) "person" includes an individual or a group of individuals, a corporation, a partnership, an organization and an association and, without restricting the generality of the foregoing, includes any individual who is required to file a return with the registrar pursuant to section 5 of the Lobbyists Registration Act R.S.C. 1985 c.44 (4th Supplement) as the same may be amended from time to time.

2) The Contractor certifies that it has not directly or indirectly paid nor agreed to pay and covenants that it shall not directly or indirectly pay nor agree to pay a contingency fee for the solicitation, negotiation or obtaining of the Contract to any person other than an employee acting in the normal course of the employee's duties.

3) All accounts and records pertaining to payments of fees or other compensation for the solicitation, obtaining or negotiation of the Contract shall be subject to the accounts and audit provisions of the Contract.

4) If the Contractor certifies falsely under this section or is in default of the obligations contained therein, the NCC may either take the Work out of the Contractor's hands in accordance with the provisions of the Contract or recover from the Contractor by way of reduction to the Contract Amount or otherwise, the full amount of the contingency fee.

GC1.19 INTERNATIONAL SANCTIONS

1) Persons and companies in Canada, and Canadians outside of Canada are bound by economic sanctions imposed by the Government of Canada. As a result, the the NCC cannot accept delivery of goods or services that originate, either directly or indirectly, from the countries or persons subject to economic sanctions.
Details on existing sanctions can be found at:
http://www.dfait-maeci.gc.ca/trade/sanctions-en.asp.

2) It is a condition of the Contract that the Contractor not supply to the NCC any goods or services which are subject to economic sanctions.

3) By law, the Contractor must comply with changes to the regulations imposed during the life of the Contract. During the performance of the Contract should the imposition of sanctions against a country or person or the addition of a good or service to the list of sanctioned goods or services cause an impossibility of performance for the Contractor, the Contractor may request that the Contract be terminated in accordance with GC7.3 TERMINATION OF CONTRACT.

GC2 ADMINISTRATION OF THE CONTRACT

GC2.1 NCC REPRESENTATIVE'S AUTHORITY

1) The NCC shall designate an NCC Representative and shall notify the Contractor of the name, address and telephone number of the NCC Representative.

2) The NCC Representative shall perform the NCC's duties and functions under the contract.

3) The NCC Representative shall be authorized to issue notices, instructions and directions to the Contractor and to accept on behalf of the NCC any notice, order or other communication from the contractor relating to the Work.

4) The NCC Representative shall, within a reasonable time, review and respond to submissions made by the Contractor in accordance with the requirements of the Contract.

GC2.2 INTERPRETATION OF CONTRACT

1) If, at any time before the NCC has issued a Certificate of Completion, any question arises between the parties about whether anything has been done as required by the Contract or about what the Contractor is required by the Contract to do, and in particular but without limiting the generality of the foregoing, about:

   (a) the meaning of anything in the drawings and specifications;

   (b) the meaning to be given to the drawings and specifications in case of any error therein, omission therefrom, or obscurity or discrepancy in their wording or intention;

   (c) whether or not the quality or quantity of any Material or workmanship supplied or proposed to be supplied by the Contractor meets the requirements of the Contract;

   (d) whether or not the labour, Plant or Material performed, used and supplied by the Contractor for performing the Work and carrying out the Contract are adequate to ensure that the Work shall be performed in accordance with the Contract and that the Contract shall be carried out in accordance with its terms;

   (e) what quantity of any of the Work has been completed by the Contractor; or

   (f) the timing and scheduling of the various phases of the performance of the Work as specified in the Contract;

   the question shall be decided, subject to the provisions of GC8 DISPUTE RESOLUTION, by the NCC.

2) The Contractor shall perform the Work in accordance with any decisions of the NCC that are made under paragraph 1) of GC2.2 and in accordance with any consequential directions given by the NCC.

3) If the Contractor fails to comply with any instruction or direction issued by the NCC pursuant to the Contract, the NCC may employ such methods as the NCC deems advisable to do what the Contractor failed to do, and the Contractor shall, on demand, pay the NCC an amount that is equal to the aggregate of all costs, expenses and damages incurred or sustained by the NCC by reason of the Contractor's failure to comply with such instruction or direction, including the cost of any methods employed by the NCC in doing what the Contractor failed to do.

GC2.3 NOTICES

1) Subject to paragraph 3) of GC2.3, any notice, order or other communication may be given in any manner, and if required to be in writing, shall be addressed to the party to whom it is intended at the address in the Contract or at the last address of which the sender has received written notice in accordance with this section.

2) Any notice, order or other communication given in writing in accordance with paragraph 1) of GC2.3 shall be deemed to have been received by either party:

   (a) if delivered personally, on the day that it was delivered;

   (b) if forwarded by mail, on the earlier of the day it was received or the sixth day after it was mailed; and

   (c) if forwarded by facsimile or electronic mail, 24 hours after it was transmitted.

3) A notice given under GC7.1 TAKING THE WORK OUT OF THE CONTRACTOR'S HANDS, GC7.2 SUSPENSION OF WORK, and GC7.3 TERMINATION OF CONTRACT shall be given in writing and, if delivered personally, shall be delivered, if the Contractor is a sole proprietor, to the Contractor or, if the Contractor is a partnership or corporation, to an officer thereof.

GC2.4 SITE MEETINGS

1) In consultation with the NCC, the Contractor shall arrange site meetings at regular intervals, with all involved parties who are to attend, in order to ensure, among other things, the proper co-ordination of the Work.

GC2.5 REVIEW AND INSPECTION OF WORK

1) The NCC shall review the Work to determine if it is proceeding in conformity with the Contract and to record the necessary data to make an assessment of the value of Work completed. The NCC shall measure and record the quantities of labour, Plant and Material performed, used or supplied by the Contractor in performing the Work or any part thereof that is subject to a Unit Price Arrangement and, on request, shall inform the Contractor of those measurements, and permit the Contractor to inspect any records pertaining thereto.

2) The NCC shall reject Work or Material which in the NCC's opinion does not conform to the requirements of the Contract, and shall require inspection or testing of Work, whether or not such Work is fabricated, installed, or completed. If such Work is not in accordance with the requirements of the Contract, the Contractor shall correct the Work and shall pay the NCC, on demand, all reasonable costs and expenses that were incurred by the NCC in having the examination performed.

3) The Contractor shall provide the NCC with access to the Work and its site at all times, and at all times shall provide sufficient, safe, and proper facilities for the review and inspection of the Work by persons authorized by the NCC and any representatives of those authorities having jurisdiction. If parts of the Work are in preparation at locations other than the site of the Work, the NCC shall be given access to such Work whenever it is in progress.

4) The Contractor shall furnish the NCC with such information respecting the performance of the Contract as the NCC may require, and render every possible assistance to enable the NCC to verify that the Work is performed in accordance with the Contract, carry out any other duties and exercise any powers in accordance with the Contract.

5) If Work is designated for tests, inspections, or approvals in the Contract or by the NCC's instructions, or by laws or ordinances of the place of the Work, the Contractor shall give the NCC reasonable notice of when such Work shall be ready for review and inspection. The Contractor shall arrange for and shall give the NCC reasonable notice of the date and time of inspections, tests or approvals.

6) If the Contractor covers, or permits to be covered, Work that has been designated for tests, inspections or approvals before such tests, inspections or approvals are made, completed or given, the Contractor shall, if so directed by the NCC, uncover such Work, have the inspections, tests or approvals satisfactorily made, completed or given and make good the covering of the Work at the Contractor's expense.

GC2.6 SUPERINTENDENT

1) Prior to commencing the Work, the Contractor shall designate a Superintendent and shall notify the NCC of the name, address and telephone number of the Superintendent. The Contractor shall keep the Superintendent at the Work site during working hours until the Work has reached completion.

2) The Superintendent shall be in full charge of the operations of the Contractor during the performance of the Work and shall be authorized to accept on behalf of the Contractor any notice, order or other communication given to the Superintendent or the Contractor relating to the Work.

3) Upon request of the NCC, the Contractor shall remove any Superintendent who, in the opinion of the NCC, is incompetent or has been guilty of improper conduct, and shall forthwith designate another Superintendent who is acceptable to the NCC.

4) The Contractor shall not substitute a Superintendent without the written consent of the NCC. If a Superintendent is substituted without such consent, the NCC shall be entitled to refuse to issue any documentation or certification relating to progress payments, Substantial Performance or Completion of the Work until the Superintendent has returned to the Work site or another Superintendent who is acceptable to the NCC has been substituted.

GC2.7 NON-DISCRIMINATION IN HIRING AND EMPLOYMENT OF LABOUR

1) For the purposes of this clause, “persons" include the Contractor, its subcontractors and suppliers at any tier and their respective employees, agents, licensees or invitees and any other individual involved in the performance of the Work or granted access to the Work site. A “person” includes any partnership, proprietorship, firm, joint venture, consortium and corporation.

2) Without restricting the provisions of paragraph 3) of GC2.6, SUPERINTENDENT, the Contractor shall not refuse to employ and shall not discriminate in any manner against any person because:

   (a) of that person's race, national origin, colour, religion, age, sex or marital status;

   (b) of the race, national origin, colour, religion, age, sex, or marital status of any person having any relationship or association with that person; or

   (c) a complaint has been made or information has been given by or in respect of that person relating to an alleged failure by the Contractor to comply with subparagraphs 2)(a) and 2)(b) of GC2.7.

3) Within two Working Days immediately following receipt of a written complaint pursuant to paragraph 2) of GC2.7, the Contractor shall:

(a) cause to have issued a written direction to the person or persons named by the complainant to cease all actions that form the basis of the complaint;

(b) forward a copy of the complaint to the NCC by registered mail or courier service; and

(c) when the Labour Conditions are applicable under the circumstances of the complaint, forward a copy of the complaint to HRSDC - Labour to the attention of the appropriate Director as described in the Labour Conditions ("HRSDC - Labour" means the labour component of the federal Department of Human Resources and Skills Development).

4) Within twenty four (24) hours immediately following receipt of a direction from the NCC to do so, the Contractor shall cause to have removed from the site of the Work and from the performance of Work under the Contract, any person or persons whom the NCC believes to be in breach of the provisions of paragraph 2) of GC2.7.

5) No later than thirty (30) days after receipt of the direction referred to in paragraph 4) of GC2.7, the Contractor shall cause the necessary action to be commenced to remedy the breach described in the direction.

6) If a direction is issued pursuant to paragraph 4) of GC2.7, the NCC may withhold from monies that are due and payable to the Contractor or setoff pursuant to GC5.9 RIGHT OF SETOFF, whichever is applicable, an amount representing the sum of the costs and payment referred to in paragraph 8) of GC2.7.

7) If the Contractor fails to proceed in accordance with paragraph 5) of GC2.7, the NCC shall take the necessary action to have the breach remedied, and shall determine all supplementary costs incurred by the NCC as a result.

8) The NCC may make a payment directly to the complainant from monies that are due and payable to the Contractor upon receipt from the complainant of:

(a) a written award issued pursuant to the federal Commercial Arbitration Act, R.S.C. 1985, c. 17 (2nd Supp.);

(b) a written award issued pursuant to the Canadian Human Rights Act, RS.C. 1985, c. H-6;

(c) a written award issued pursuant to provincial or territorial human rights legislation; or

(d) a judgement issued by a court of competent jurisdiction.

9) If the NCC is of the opinion that the Contractor has breached any of the provisions of this clause, the NCC may take the Work out of the Contractor's hands pursuant to GC7.1 TAKING THE WORK OUT OF THE CONTRACTOR'S HANDS.

10) Subject to paragraph 7) of GC3.6 SUBCONTRACTING, the Contractor shall ensure that the provisions of this clause are included in all agreements and contracts entered into as a consequence of the Work.

GC2.8 ACCOUNTS AND AUDITS

1) The Contractor shall, in addition to the requirements expressed in paragraph 6) of GC3.4 EXECUTION OF THE WORK, maintain full records of the Contractor's estimated and actual cost of the Work together with all tender calls, quotations, contracts, correspondence, invoices, receipts and vouchers relating thereto, and shall make them available on request to audit and inspection by the NCC or by persons designated to act on behalf of the NCC.

2) The Contractor shall allow any of the persons referred to in paragraph 1) of GC2.8 to make copies of and take extracts from any of the records and material, and shall furnish such persons or entities with any information those persons or entities may require from time to time in connection with such records and material.

3) The Contractor shall maintain and keep the records intact until the expiration of two years after the date that a Certificate of Completion has been issued or until the expiration of such other period of time as the NCC may direct.

4) The Contractor shall cause all subcontractors at any tier and all other persons directly or indirectly controlled by or affiliated with the Contractor and all persons directly or indirectly having control of the Contractor to comply with the requirements of this clause as if they were the Contractor.

GC3.1 PROGRESS SCHEDULE

1) The Contractor shall:

   (a) prepare and submit to the NCC, prior to the submission of the Contractor's first progress claim, a progress schedule in accordance with the requirements set out in the Contract;

   (b) monitor the progress of the Work relative to the schedule and update the schedule as stipulated by the contract documents;

   (c) advise the NCC of any revisions to the schedule required as the result of any extension of time for completion of the Contract that was approved by the NCC; and

   (d) prepare and submit to the NCC, at the time of issuance of an Certificate of Substantial Performance, an update of any schedule clearly showing a detailed timetable that is acceptable to the NCC for the completion of any unfinished Work and the correction of all listed defects.

GC3.2 ERRORS AND OMISSIONS

1) The Contractor shall report promptly to the NCC any errors, discrepancies, or omissions the Contractor may discover when reviewing the contract documents. In making a review, the Contractor does not assume any responsibility to the NCC for the accuracy of the review. The Contractor shall not be liable for damage or costs resulting from such errors, discrepancies, or omissions in the contract documents prepared by or on behalf of the NCC that the Contractor did not discover.

GC3.3 CONSTRUCTION SAFETY

1) Subject to GC3.7 CONSTRUCTION BY OTHER CONTRACTORS OR WORKERS, the Contractor shall be solely responsible for construction safety at the place of the Work and for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Work. In any emergency, the Contractor shall either, stop the Work, make changes or order extra work to ensure the safety of life and the protection of the Work and neighbouring property.

2) Prior to commencing the Work, the Contractor shall notify the authorities having jurisdiction for construction safety at the site of the Work with respect to the intended commencement of the Work, and shall provide such authority with whatever additional information may be required by that authority.

GC3.4 EXECUTION OF THE WORK

1) The Contractor shall perform, use or supply and pay for, all labour, Plant, Material, tools, construction machinery and equipment, water, heat, light, power, transportation and other facilities and services necessary for the performance of the Work in accordance with the Contract.

2) The Contractor shall, at all times, perform the Work in a proper, diligent and expeditious manner as is consistent with construction industry standards and in accordance with the progress schedule prepared pursuant to GC3.1 PROGRESS SCHEDULE and shall provide sufficient personnel to fulfil the Contractor's obligations in accordance with that schedule.

3) Subject to paragraph 4) of GC3.4, the Contractor shall have complete care, custody and control of the Work and shall direct and supervise the Work so as to ensure compliance with the Contract. The Contractor shall be responsible for construction means, methods, techniques, sequences and procedures and for co-ordinating the various parts of the Work.

4) When requested in writing by the NCC, the Contractor shall make appropriate alterations in the method, Plant or workforce at any time the NCC considers the Contractor's actions to be unsafe or damaging to either the Work, existing facilities, persons at the site of the Work or the environment.

5) The Contractor shall have sole responsibility for the design, erection, operation, maintenance and removal of temporary structures and other temporary facilities and for the construction methods used in their erection, operation, maintenance and removal. The Contractor shall engage and pay for registered professional engineering personnel, skilled in the appropriate discipline to perform these functions if required by law or by the Contract, and in all cases when such temporary facilities and their methods of construction are of such a nature that professional engineering skill is required to produce safe and satisfactory results.

6) The Contractor shall keep at least one copy of current contract documents, submittals, reports, and records of meetings at the site of the Work, in good order and available to the NCC.

7) Except for any part of the Work that is necessarily performed away from or off the site of the Work, the Contractor shall confine Plant, storage of Material, and operations of employees to limits indicated by laws, ordinances, permits or the contract documents.

GC3.5 MATERIAL

1) Unless otherwise specified in the Contract, all Material incorporated in the Work shall be new.

2) Subject to paragraph 3) of GC3.5, if a specified reused, refurbished, or recycled item of Material is not available, the Contractor shall apply to the NCC to substitute a similar item for the one specified.

3) If the NCC agrees that the Contractor's application for substitution of a reused, refurbished or recycled item is warranted, and that the substitute item is of acceptable quality and value to that specified and is suitable for the intended purpose, the NCC may approve the substitution, subject to the following:

   (a) the request for substitution shall be made in writing to the NCC and shall be substantiated by information in the form of the manufacturer's literature, samples and other data that may be required by the NCC;

   (b) the Contractor shall make the request for substitution in a manner that shall not negatively affect the progress schedule of the Contract and well in advance of the time the item of Material must be ordered;

(c) substitution of Material shall be permitted only with the prior written approval of the NCC, and any substituted items that are supplied or installed without such approval shall be removed from the site of the Work at the expense of the Contractor, and specified items installed at no additional cost to the NCC; and

(d) the Contractor shall be responsible for all additional expenses incurred by the NCC, the Contractor, its subcontractors and suppliers at any tier due to the Contractor's use of the substitute.

GC3.6 SUBCONTRACTING

1) Subject to the provisions of this clause, the Contractor may subcontract any part of the Work but not the whole of the Work.

2) The Contractor shall notify the NCC in writing of the Contractor's intention to subcontract.

3) A notification referred to in paragraph 2) of GC3.6 shall identify the part of the Work and the Subcontractor with whom the Contractor intends to subcontract.

4) The NCC may for reasonable cause, object to the intended subcontracting by notifying the Contractor in writing within six (6) days of receipt by the NCC of a notification referred to in paragraph 2) of GC3.6.

5) If the NCC objects to a subcontracting, the Contractor shall not enter into the intended subcontract.

6) The Contractor shall not change, nor permit to be changed, a Subcontractor engaged by the Contractor, in accordance with this clause, without the written consent of the NCC.

7) The Contractor shall ensure that all the terms and conditions of the Contract that are of general application shall be incorporated in every other contract issued as a consequence of the Contract, at whatever tier, except those contracts issued solely to suppliers at any tier for the supply of Plant or Material.

8) Neither a subcontracting nor the NCC's consent to a subcontracting shall be construed to relieve the Contractor from any obligation under the Contract or to impose any liability upon the NCC.

GC3.7 CONSTRUCTION BY OTHER CONTRACTORS OR WORKERS

1) The NCC reserves the right to send other contractors or workers, with or without Plant and Material, onto the site of the Work.

2) When other contractors or workers are sent on to the site of the Work, the NCC shall:

(a) enter into separate contracts, to the extent it is possible, with the other contractors under conditions of contract that are compatible with the conditions of the Contract;

(b) ensure that the insurance coverage provided by the other contractors is co-ordinated with the insurance coverage of the Contractor as it affects the Work; and

(c) take all reasonable precautions to avoid labour disputes or other disputes arising from the work of the other contractors or workers.

3) When other contractors or workers are sent on to the site of the Work, the Contractor shall:

(a) co-operate with them in the carrying out of their duties and obligations;

(b) co-ordinate and schedule the Work with the work of the other contractors and workers;

(c) participate with other contractors and workers in reviewing their construction schedules when directed to do so;

(d) where part of the Work is affected by or depends upon the work of other contractors or workers for its proper execution, promptly report to the NCC in writing and prior to proceeding with that part of the Work, any apparent deficiencies in such work. Failure by the Contractor to so report shall invalidate any claims against the NCC by reason of the deficiencies in the work of other contractors or workers except those deficiencies that are not then reasonably discoverable; and

(e) when designated as being responsible for construction safety at the place for work, in accordance with the applicable provincial or territorial laws, carry out its duties in that role and in accordance with those laws.

4) If, when entering into the Contract, the Contractor could not have reasonably foreseen nor anticipated the sending of other contractors or workers on to the site of the Work and provided the Contractor:

(a) incurs extra expense in complying with the requirements of paragraph 3) of GC3.7; and

(b) gives the NCC written notice of a claim for that extra expense within thirty (30) days of the date that the other contractors or workers were sent onto the Work or its site,

the NCC shall pay the Contractor the cost of the extra labour, Plant and Material that was necessarily incurred, calculated in accordance with GC6.4 DETERMINATION OF PRICE.

GC3.8 LABOUR

1) The Contractor shall maintain good order and discipline among the Contractor's employees and workers engaged in the Work shall not employ, on the site of the Work, anyone not skilled in the tasks assigned.

GC3.9 TRUCK HAULAGE RATES

CANCELLED

GC3.10 MATERIAL, PLANT AND REAL PROPERTY BECOME PROPERTY OF THE NCC

1) Subject to paragraph 9) of GC1.8 LAWS PERMITS AND TAXES, all Material and Plant and the interest of the Contractor in all real property, licences, powers and privileges purchased, used or consumed by the Contractor for the Work shall, immediately after the time of their purchase, use or consumption be the property of the NCC for the purposes of the Work and they shall continue to be the property of the NCC:

(a) in the case of Material, until the NCC indicates that the Materials shall not be required for the Work; and

(b) in the case of Plant, real property, licences, powers and privileges, until the NCC indicates that the interest vested in the NCC therein is no longer required for the purposes of the Work.

2) Material or Plant, that is the property of the NCC by virtue of paragraph 1) of GC3.10, shall not be taken away from the site of the Work nor used nor disposed of except for the purposes of the Work without the written consent of the NCC.

3) The NCC is not liable for loss of nor damage from any cause to the Material or Plant referred to in paragraph 1) of GC3.10, and the Contractor is liable for such loss or damage notwithstanding that the Material or Plant is the property of the NCC.

GC3.11 DEFECTIVE WORK

1) The Contractor shall promptly remove from the site of the Work and replace or re-execute defective Work whether or not the defective Work has been incorporated in the Work and whether or not the defect is the result of poor workmanship, use of defective Material, or damage through carelessness or other act or omission of the Contractor.

2) The Contractor, at the Contractor's expense, shall promptly make good other work destroyed or damaged by such removals or replacements.

3) If, in the opinion of the NCC, it is not expedient to correct defective Work or Work not performed as provided for in the Contract documents, the NCC may deduct from the amount otherwise due to the Contractor the difference in value between the Work as performed and that called for by the Contract documents.

4) The failure of the NCC to reject any defective Work or Material shall not constitute acceptance of the defective Work or Material.

GC3.12 CLEANUP OF SITE

1) The Contractor shall maintain the Work and its site in a tidy condition and free from an accumulation of waste material and debris.

2) Before the issue of a Certificate of Substantial Performance, the Contractor shall remove waste material and debris, and all Plant and Material not required for the performance of the remaining Work and, unless otherwise stipulated in the Contract Documents, shall cause the Work and its site to be clean and suitable for occupancy by the NCC.

3) Before the issue of a Certificate of Completion, the Contractor shall remove all surplus Plant and Materials and any waste products and debris from the site of the Work.

4) The Contractor's obligations described in paragraphs 1) to 3) of GC3.12 do not extend to waste products and other debris caused by the NCC's servants, or by other contractors and workers referred to in GC3.7 CONSTRUCTION BY OTHER CONTRACTORS OR WORKERS.

GC3.13 WARRANTY AND RECTIFICATION OF DEFECTS IN WORK

1) Without restricting any warranty or guarantee implied or imposed by law or contained in the Contract, the Contractor shall, at the Contractor's expense:

   (a) rectify and make good any defect or fault that appears in the Work or comes to the attention of the NCC with respect to those parts of the Work accepted in connection with the Certificate of Substantial Performance within 12 months from the date of Substantial Performance; and

   (b) rectify and make good any defect or fault that appears in or comes to the attention of the NCC in connection with those parts of the Work described in the Certificate of Substantial Performance within 12 months from the date of the Certificate of Completion;

   (c) transfer and assign, to the NCC, any subcontractor, manufacturer or supplier extended warranties or guarantees implied or imposed by law or contained in the Contract covering periods beyond the 12 months stipulated above. Extended warranties or guarantees referred to

herein shall not extend the 12-month period whereby the Contractor, except as may be provided elsewhere in the Contract, must rectify and make good any defect or fault that appears in the Work or comes to the attention of the NCC;

(d) provide, to the NCC prior to the issuance of the Certificate of Completion, a list of all extended warranties and guarantees referred to in paragraph (c) above.

2) The NCC may direct the Contractor to rectify and make good any defect or fault referred to in paragraph 1) of GC3.13 or covered by any other expressed or implied warranty or guarantee and the Contractor shall rectify and make good such defect within the time stipulated in the direction.

3) A direction referred to in paragraph 2) GC3.13 shall be in writing and shall be given to the Contractor in accordance with GC2.3 NOTICES.

GC4.1 PROTECTION OF WORK AND PROPERTY

1) The Contractor shall protect the Work and its site against loss or damage from any cause and shall similarly protect all Material, Plant and real property under the Contractor's care, custody and control whether or not such Material, Plant and real property are supplied by the NCC to the Contractor.

2) The Contractor shall provide all facilities necessary for the purpose of maintaining security, and shall assist any person authorized by the NCC to inspect or to take security measures in respect of the Work and its site.

3) The NCC may direct the Contractor to do such things and to perform such work as the NCC considers reasonable and necessary to ensure compliance with or to remedy a breach of paragraphs 1) or 2) of GC4.1, and the Contractor, shall comply with such direction.

GC4.2 PRECAUTIONS AGAINST DAMAGE, INFRINGEMENT OF RIGHTS, FIRE AND OTHER HAZARDS

1) The Contractor shall do whatever is necessary to ensure that:

   (a) no person, property, right, easement nor privilege is injured, damaged or infringed upon by reasons of the Contractor's activities in performing the Work;

   (b) pedestrian and other traffic on any public or private road or waterway is not unduly impeded, interrupted nor endangered by the performance or existence of the Work, Material or Plant;

   (c) fire hazards in or about the site of the Work are eliminated and any fire is promptly extinguished;

   (d) the health and safety of all persons employed in the performance of the Work is not endangered by the methods nor means of their performance;

   (e) adequate medical services are available to all persons employed on the Work or its site at all times during the performance of the Work;

   (f) adequate sanitation measures are taken in respect of the Work and its site; and

   (g) all stakes, buoys and marks placed on the Work or its site by the NCC are protected and are not removed, defaced, altered nor destroyed.

2) The NCC may direct the Contractor to do such things and to perform such work as the NCC considers reasonable and necessary to ensure compliance with or to remedy a breach of paragraph 1) of GC4.2, and the Contractor shall comply with the direction of the NCC.

GC4.3 MATERIAL, PLANT AND REAL PROPERTY SUPPLIED BY THE NCC

1) Subject to paragraph 2) of GC4.3, the Contractor is liable to the NCC for any loss of or damage to Material, Plant or real property that is supplied or placed in the care, custody and control of the Contractor by the NCC for use in connection with the Contract, whether or not that loss or damage is attributable to causes beyond the Contractor's control.

2) The Contractor is not liable to the NCC for any loss or damage to Material, Plant or real property referred to in paragraph 1) of GC4.3 if that loss or damage results from and is directly attributable to reasonable wear and tear.

3) The Contractor shall not use any Material, Plant or real property supplied by the NCC except for the purpose of performing the Contract.

4) When the Contractor fails to make good any loss or damage for which the Contractor is liable under paragraph 1) within a reasonable time, the NCC may cause the loss or damage to be made good at the Contractor's expense, and the Contractor shall thereupon be liable to the NCC for the cost thereof and shall, on demand, pay to the NCC an amount equal to that cost.

5) The Contractor shall keep records of all Material, Plant and real property supplied by the NCC as the NCC requires and shall satisfy the NCC, when requested, that such Material, Plant and real property are at the place and in the condition in which they ought to be.

GC4.4 CONTAMINATED SITE CONDITIONS

1) For the purposes of GC4.4, a contaminated site condition exists when a solid, liquid, gaseous, thermal or radioactive irritant or contaminant, or other hazardous or toxic substance or material, including moulds and other forms of fungi, is present at the site of the Work to an extent that constitutes a hazard, or potential hazard, to the environment, property, or the health or safety of any person.

2) If the Contractor encounters a contaminated site condition of which the Contractor is not aware or about which the Contractor has not been advised, or if the Contractor has reasonable grounds to believe that such a site condition exists at the site of the Work, the Contractor shall:

   (a) take all reasonable steps, including stopping the Work, to ensure that no person suffers injury, sickness or death, and that neither property nor the environment is injured or destroyed as a result of the contaminated site condition;

   (b) immediately notify the NCC of the circumstances in writing; and

   (c) take all reasonable steps to minimize additional costs that may accrue as a result of any work stoppage.

3) Upon receipt of a notification from the Contractor, the NCC shall promptly determine whether a contaminated site condition exists, and shall notify the Contractor in writing of any action to be taken, or work to be performed, by the Contractor as a result of the NCC's determination.

4) If the Contractor's services are required by the NCC, the Contractor shall follow the direction of the NCC with regard to any excavation, treatment, removal and disposal of any polluting substance or material.

5) The NCC, at the NCC's sole discretion, may enlist the services of experts and specialty contractors to assist in determining the existence of, and the extent and treatment of contaminated site conditions, and the Contractor shall allow them access and co-operate with them in the carrying out of their duties and obligations.

6) Except as may be otherwise provided for in the Contract, the provisions of GC6.4 DETERMINATION OF PRICE shall apply to any additional work made necessary because of a contaminated site condition.

GC5.1 INTERPRETATION

In these Terms of Payment

1) The "payment period" means a period of 30 consecutive days or such other longer period as may be agreed between the Contractor and the NCC.

2) An amount is "due and payable" when it is due and payable by the NCC to the Contractor according to GC5.4 PROGRESS PAYMENT, GC5.5 SUBSTANTIAL PERFORMANCE OF THE WORK or GC5.6 FINAL COMPLETION.

3) An amount is overdue when it remains unpaid on the first day following the day upon which it is due and payable.

4) The "date of payment" means the date of the negotiable instrument of an amount due and payable by the NCC.

5) The "Bank Rate" means the rate of interest established by the Bank of Canada as the minimum rate at which it makes short term advances to members of the Canadian Payments Association.

6) The "Average Bank Rate" means the simple arithmetic mean of the Bank Rate in effect at 4:00 p.m. Ottawa Time each day during the calendar month which immediately precedes the calendar month in which payment is made.

GC5.2 AMOUNT PAYABLE

1) Subject to any other provisions of the Contract, the NCC shall pay the Contractor, at the times and in the manner hereinafter set out, the amount by which the amounts payable by the NCC to the Contractor in accordance with the Contract exceed the amounts payable by the Contractor to the NCC, and the Contractor shall accept that amount as payment in full satisfaction for everything furnished and done by the Contractor in respect of the Work to which the payment relates.

2) When making any payment to the Contractor, the failure of the NCC to deduct an amount payable to the NCC by the Contractor shall not constitute a waiver of the right to do so, or an admission of lack of entitlement to do so in any subsequent payment to the Contractor.

3) No payment other than a payment that is expressly stipulated in the Contract, shall be made by the NCC to the Contractor for any extra expense or any loss or damage incurred or sustained by the Contractor.

GC5.3 INCREASED OR DECREASED COSTS

1) The Contract Amount shall not be increased nor decreased by reason of any increase or decrease in the cost of the Work that is brought about by an increase or decrease in the cost of labour, Plant, Material or any wage adjustment arising pursuant to the Labour Conditions.

2) Notwithstanding paragraph 1) of GC5.3, if any change, including a new imposition or repeal, of any tax, customs or other duty, charge, or any similar imposition that is imposed under sales, customs or excise tax legislation of the Government of Canada or any Provincial or Territorial legislation, affects the cost of the Work to the Contractor, and occurs:

   (a) after the date of submission by the Contractor of its tender; or

   (b) after the date of submission of the last revision, if the Contractor's tender was revised,

   the Contract Amount shall be adjusted in the manner provided in paragraph 3) of GC5.3.

3) If a change referred to in paragraph 2) of GC5.3 occurs, the Contract Amount shall be increased or decreased by an amount established by an examination by the NCC of the relevant records of the Contractor referred to in GC2.8 ACCOUNTS AND AUDITS to be the increase or decrease in the cost incurred by the Contractor that is directly attributable to that change.

4) For the purpose of paragraph 2) of GC5.3, if a tax is changed after the tender closing, but public notice of the change has been given by the Minister of Finance or the corresponding Provincial or Territorial authority before that closing, the change shall be deemed to have occurred before the solicitation closing.

5) Notwithstanding paragraphs 2) to 4) of GC5.3, no adjustment to the Contract Amount in respect of the Work or a part thereof shall be made for a change in any imposition referred to in this section that occurs after the date required by the Contract for completion of the Work or that part of the Work.

GC5.4 PROGRESS PAYMENT

1) On the expiration of a payment period, the Contractor shall deliver to the NCC:

   (a) a written progress claim in a form acceptable to the NCC that fully describes any part of the Work that has been completed, and any Material that was delivered to the Work site but not incorporated into the Work, during that payment period: and

   (b) a completed and signed statutory declaration containing a declaration that, up to the date of the progress claim, the Contractor has complied with all lawful obligations with respect to the Labour Conditions and that, in respect of the Work, all lawful obligations of the Contractor to its Subcontractors and Suppliers, referred to collectively in the declaration as "subcontractors and suppliers", have been fully discharged.

2) Within 10 days of receipt of a progress claim and statutory declaration from the Contractor, the NCC shall inspect, or cause to have inspected, the part of the Work and the Material described in the progress claim, and shall issue a progress report to the Contractor, that indicates the value of the part of the Work and the Material described in the progress claim that, in the opinion of the NCC:

   (a) is in accordance with the Contract; and

   (b) was not included in any other progress report relating to the Contract.

3) Subject to GC5.2 AMOUNT PAYABLE, and paragraph 5) of GC5.4, the NCC shall pay the Contractor an amount that is equal to:

   (a) 95% of the value that is indicated in the NCC's progress report if a labour and material payment bond has been furnished by the Contractor; or

   (b) 90% of the value that is indicated in the NCC's progress report if a labour and material payment bond has not been furnished by the Contractor.

4) Subject to GC5.2, "Amount Payable", and paragraph 5) of GC5.4, the NCC shall pay the Contractor an amount that is equal to 90% of the value that is indicated in the NCC's progress report

5) In the case of the Contractor's first progress claim, it is a condition precedent to the NCC's obligation under paragraph 3) of GC5.4 that the Contractor has provided all necessary documentation required by the Contract for the first progress claim and has provided evidence of compliance with workers' compensation legislation applicable to the place of the Work in accordance with GC1.9 WORKERS' COMPENSATION.

GC5.5 SUBSTANTIAL PERFORMANCE OF THE WORK

1) If, at any time before the issuance of a Certificate of Completion, the NCC determines that the Work has reached Substantial Performance as described in subparagraph 1) (b) of GC1.1.4 SUBSTANTIAL PERFORMANCE, the NCC shall issue a Certificate of Substantial Performance to the Contractor. The Certificate of Substantial Performance shall state or describe:

   (a) the date of Substantial Performance;

   (b) the parts of the Work not completed to the satisfaction of the NCC; and

   (c) all things that must be done by the Contractor before a Certificate of Completion is issued and before the 12-month warranty period referred to in GC3.13 WARRANTY AND RECTIFICATION OF DEFECTS IN WORK commences for the said parts and all the said things.

2) The issuance of a Certificate of Substantial Performance does not relieve the Contractor from the Contractor's obligations under GC3.11 DEFECTIVE WORK.

3) Subject to GC5.2 AMOUNT PAYABLE and paragraph 4) of GC5.5, the NCC shall pay the Contractor the amount referred to in paragraph 1) of GC5.2 AMOUNT PAYABLE, less the aggregate of:

   (a) the sum of all payments that were made pursuant to GC5.4 PROGRESS PAYMENT;

   (b) an amount that is equal to the NCC's estimate of the cost to the NCC of rectifying defects described in the Certificate of Substantial Performance; and

   (c) an amount that is equal to the NCC's estimate of the cost to the NCC of completing the parts of the Work described in the Certificate of Substantial Performance other than defects listed therein.

4) The NCC shall pay the amount referred to in paragraph 3) of GC5.5 not later than:

   (a) 30 days after the date of issue of a Certificate of Substantial Performance, or

   (b) 15 days after the Contractor has delivered to the NCC:

(i) a statutory declaration containing a declaration by the Contractor that up to the date of the Certificate of Substantial Performance, the Contractor has complied with all lawful obligations with respect to the Labour Conditions, discharged all its lawful obligations to its Subcontractors and Suppliers in respect of the work under the Contract, and discharged its lawful obligations referred to in GC1.8 LAWS, PERMITS AND TAXES;

(ii) evidence of compliance with workers' compensation legislation in accordance with GC1.9 WORKERS' COMPENSATION; and

(iii) an update of the progress schedule in accordance with the requirements of GC3.1 PROGRESS SCHEDULE;

whichever is later.

GC5.6 FINAL COMPLETION

1) When the NCC is of the opinion that the Contractor has complied with the Contract and all orders and directions made pursuant thereto, and that the Work has been completed as described in GC1.1.5 COMPLETION, the NCC shall issue a Certificate of Completion to the Contractor and, if the Work or a portion of the Work is subject to a Unit Price Arrangement, the NCC shall issue a Certificate of Measurement that shall, subject to GC8, be binding upon and conclusive between the NCC and the Contractor as to the quantities referred to therein.

2) Subject to GC5.2 AMOUNT PAYABLE and paragraph 3) of GC5.6, the NCC shall pay the Contractor the amount referred to in GC5.2 AMOUNT PAYABLE, less the aggregate of the sum of all payments that were made pursuant to GC5.4 PROGRESS PAYMENT and GC5.5 SUBSTANTIAL PERFORMANCE OF WORK.

3) The NCC shall pay the amount referred to in paragraph 2) of GC5.6 not later than:

(a) 60 days after the date of issue of a Certificate of Completion; or

(b) 15 days after the Contractor has delivered to the NCC:

(i) a statutory declaration which contains a declaration by the Contractor that all of the Contractor's lawful obligations and any lawful claims against the Contractor that arose out of the performance of the Contract have been discharged and satisfied; and

(ii) evidence of compliance with workers' compensation legislation in accordance with GC1.9 WORKERS' COMPENSATION;

whichever is later.

GC5.7 PAYMENT NOT BINDING ON NCC

1) Neither acceptance of a progress claim or progress report, nor any payment made by the NCC under the Contract, nor partial or entire use or occupancy of the Work by the NCC shall constitute an acceptance by the NCC of any portion of the Work or Material that is not in accordance with the requirements of the Contract.

GC5.8 CLAIMS AND OBLIGATIONS

1) The Contractor shall discharge all the Contractor's lawful obligations and shall satisfy all lawful claims against the Contractor arising out of the performance of the Work at least as often as the Contract requires the NCC to pay the Contractor.

2) Whenever requested to do so by the NCC, the Contractor shall make a statutory declaration declaring to the existence and condition of any obligations and claims against the Contractor arising out of the performance of the Work.

3) In order to discharge lawful obligations of and satisfy lawful claims against the Contractor or its Subcontractors arising out of the performance of the Contract, the NCC may pay an amount that is due and payable to the Contractor directly to the claimant. Such payment is, to the extent of the payment, a discharge of the NCC's liability to the Contractor under the Contract and may be deducted from any amount payable to the Contractor under the Contract.

4) For the purposes of paragraph 3) of GC5.8, and subject to paragraph 6) of GC5.8, a claim or obligation shall be considered lawful when it is so determined by:

   (a) a court of legal jurisdiction;

   (b) an arbitrator duly appointed to arbitrate the claim; or

   (c) the written consent of the Contractor authorizing payment of the claim or obligation.

5) If a claim or obligation would have been subject to the provisions of Provincial or Territorial lien legislation or, in the Province of Quebec, the law relating to legal hypothecs had the Contractor been performing the Work for an entity other than the NCC:

   (a) such amount as may be paid by the NCC pursuant to paragraphs 3) and 4) of GC5.8 shall not exceed the amount that the Contractor would have been obliged to pay had the provisions of such legislation or law been applicable to the Work;

   (b) a claimant need not comply with the provisions of such legislation, setting out the steps by way of notice, registration or otherwise as might have been necessary to preserve or perfect any claim for lien or privilege which the claimant might have had; and

   (c) for the purposes of determining the entitlement of a claimant, the notice required by paragraph 8) of GC5.8 shall be deemed to replace the registration or provision of notice after the performance of work as required by any applicable legislation and no claim shall be deemed to have expired, become void or unenforceable by reason of the claimant not commencing any action within the time prescribed by such legislation.

6) The Contractor shall, at the request of any claimant, submit to binding arbitration those questions that need to be answered to establish the entitlement of the claimant to payment. The arbitration shall have as parties to it any Subcontractor or Supplier to whom the claimant supplied Material, performed work or rented equipment should such Subcontractor or Supplier wish to be adjoined, and the NCC shall not be a party to such arbitration. Subject to any agreement between the Contractor and the claimant, the arbitration shall be conducted in accordance with the governing Provincial or Territorial legislation applicable to the site of the Work.

7) Paragraph 3) of GC5.8 shall apply only to claims and obligations:

   (a) the notification of which has set forth the amount claimed to be owing and the person who by contract is primarily liable and has been received by the NCC in writing before final payment is made to the Contractor pursuant to GC5.6 FINAL COMPLETION, and within 120 days of the date on which the claimant:

(i) should have been paid in full under the claimant's contract with the Contractor, its Subcontractor or Supplier if the claim is for money that was lawfully required to be held back from the claimant; or

(ii) performed the last of the services, work or labour, or furnished the last of the Material pursuant to the claimant's contract with the Contractor or its Subcontractor or Supplier where the claim is for money not lawfully required to be held back from the claimant; and

(b) the proceedings to determine the right to payment of which, pursuant to paragraph 5) of GC5.8, shall have commenced within one year from the date that the notification required by subparagraph 7)(a) of GC5.8 was received by the NCC.

8) Upon receipt of a notice of claim, the NCC may withhold, from any amount that is due and payable to the Contractor pursuant to the Contract, the full amount of the claim or any portion thereof.

9) The NCC shall notify the Contractor in writing in a timely manner of receipt of any claim and of the intention of the NCC to withhold funds. At any time thereafter and until payment is made to the claimant, the Contractor may be entitled to post, with the NCC, security in a form acceptable to the NCC in an amount equal to the value of the claim, and upon receipt of such security the NCC shall release to the Contractor any funds that would be otherwise payable to the Contractor, that were withheld pursuant to the provisions of this clause in respect of the claim of any claimant for whom the security stands.

GC5.9 RIGHT OF SETOFF

1) Without limiting any right of setoff or deduction given or implied by law or elsewhere in the Contract, the NCC may set off any amount payable to the NCC by the Contractor under the Contract, or under any current contract, against any amount payable to the Contractor under the Contract.

2) For the purposes of paragraph 1) of GC5.9, "current contract" means a contract between the NCC and the Contractor:

(a) under which the Contractor has an undischarged obligation to perform or supply work, labour or material; or

(b) in respect of which the NCC has, since the date of the Contract, exercised any right to take the work that is the subject of that contract out of the Contractor's hands.

GC5.10 ASSESSMENTS AND DAMAGES FOR LATE COMPLETION

1) For the purposes of this clause:

(a) the Work shall be deemed to be completed on the date of the Certificate of Completion; and

(b) the "period of delay" means the number of days commencing on the day fixed for completion of the Work and ending on the day immediately preceding the day on which the Work is completed but does not include any day within a period of extension granted pursuant to GC6.5 DELAYS AND EXTENSION OF TIME and any other day on which, in the opinion of the NCC, completion of the Work was delayed for reasons beyond the control of the Contractor.

2) If the Contractor does not complete the Work by the day fixed for its completion but completes it thereafter, the Contractor shall pay the NCC an amount equal to the aggregate of:

(a) all salaries, wages and travelling expenses incurred by the NCC in respect of persons overseeing the performance of the Work during the period of delay;

(b) the cost incurred by the NCC as a result of the inability to use the completed Work for the period of delay; and

(c) all other expenses and damages incurred or sustained by the NCC during the period of delay as a result of the Work not being completed by the day fixed for its completion.

3) The NCC may waive the right of the NCC to the whole or any part of the amount payable by the Contractor pursuant to paragraph 2) of GC5.10 if, in the opinion of the NCC, it is in the public interest to do so.

GC5.11 DELAY IN MAKING PAYMENT

1) Notwithstanding GC1.5 TIME OF THE ESSENCE, any delay by the NCC in making any payment when it is due pursuant to GC5 TERMS OF PAYMENT, shall not be a breach of the Contract by the NCC.

2) Subject to paragraph 3) of GC5.11, the NCC shall pay to the Contractor simple interest at the Average Bank Rate plus 3 percent per annum on any amount that is overdue pursuant to paragraph 3) of GC5.1 INTERPRETATION, and the interest shall apply from and include the day such amount became overdue until the day prior to the date of payment.

3) Interest shall be paid, on demand by the Contractor, except that:

(a) in respect of amounts that are less than 15 days overdue, no interest shall be paid in respect of payment made within such 15 days; and

(b) interest shall not be payable or paid on overdue advance payments, if any.

GC5.12 INTEREST ON SETTLED CLAIMS

1) For the purposes of this clause, a claim means a disputed amount subject to negotiation between the NCC and the Contractor under the Contract.

2) A claim is deemed to have been settled when an agreement in writing is signed by the NCC and the Contractor setting out the amount of the claim to be paid by the NCC and the items of work for which the said amount is to be paid.

3) A settled claim is deemed to be outstanding from the day immediately following the date the said claim would have been due and payable under the Contract had it not been disputed.

4) The NCC shall pay to the Contractor simple interest on the amount of a settled claim at the Average Bank Rate plus 3 per cent per annum from the date the settled claim was deemed to be outstanding until the day prior to the date of payment.

GC5.13 RETURN OF SECURITY DEPOSIT

1) After a Certificate of Substantial Performance has been issued, and if the Contractor is not in breach of nor in default under the Contract, the NCC shall return to the Contractor all or any part of a Security Deposit that, in the opinion of the NCC, is not required for the purposes of the Contract.

2) After a Certificate of Completion has been issued, the NCC shall return to the Contractor the remainder of any security deposit unless the Contract stipulates otherwise.

3) If the security deposit was paid to the NCC, the NCC shall pay interest thereon to the Contractor at a rate established pursuant to section 21(2) of the Financial Administration Act.

GC6.1 CHANGES IN THE WORK

1) At any time before issuance of a Certificate of Completion, Canada may issue orders for additions, deletions or other changes to the Work, or changes in the location or position of the whole or any part of the Work, if the addition, deletion, change or other revision is deemed by Canada to be consistent with the general intent of the Contract.

2) An order referred to in paragraph 1) of GC6.1 shall be in writing and given to the Contractor in accordance with GC2.3 NOTICES.

3) Upon receipt of an order, the Contractor shall promptly perform the work in accordance with the order as if the order had appeared in and been part of the original Contract.

4) If anything done or omitted by the Contractor pursuant to an order increases or decreases the cost of the Work to the Contractor, payment for the work shall be made in accordance with GC6.4 DETERMINATION OF PRICE.

GC6.2 CHANGES IN SUBSURFACE CONDITIONS

1) If, during the performance of the Work, the Contractor encounters subsurface conditions that are substantially different from the subsurface conditions described in the tender documents supplied to the Contractor, or a reasonable assumption of fact based thereon, the Contractor shall give notice to Canada immediately upon becoming aware of the situation.

2) If the Contractor is of the opinion that the Contractor may incur or sustain any extra expense or any loss or damage that is directly attributable to the changed subsurface conditions, the Contractor shall within 10 days of the date the changed subsurface conditions were encountered, give Canada written notice of intention to claim for that extra expense, loss or damage.

3) If the Contractor has given a notice referred to in paragraph 2) of GC6.2, the Contractor shall give Canada a written claim for extra expense, loss or damage no later than 30 days after the date that a Certificate of Substantial Performance is issued.

4) A written claim referred to in paragraph 3) of GC6.2 shall contain a sufficient description of the facts and circumstances of the occurrence that is the subject of the claim to enable Canada to determine whether or not the claim is justified, and the Contractor shall supply such further and other information for that purpose as Canada requires.

5) If Canada determines that a claim referred to in paragraph 3) of GC6.2 is justified, Canada shall make an extra payment to the Contractor in an amount that is calculated in accordance with GC6.4 DETERMINATION OF PRICE.

6) If, in the opinion of Canada, the Contractor effects a saving of expenditure that is directly attributable to a substantial difference between the information relating to subsurface conditions at the site of the Work that is contained in the tender documents, or a reasonable assumption of fact based thereon, and the actual subsurface conditions encountered by the Contractor, the Contract Amount shall be reduced by the amount of the saving of expenditure determined in accordance with GC6.4 DETERMINATION OF PRICE.

7) If the Contractor fails to give a notice referred to in paragraph 2) of GC6.2 and a claim referred to in paragraph 3) of GC6.2 within the times stipulated, an extra payment shall not be made to the Contractor in respect of the occurrence.

8) Canada does not warrant the content expressed in any subsurface report available for the perusal of the Contractor that does not form part of the tender and contract documents.

GC6.3 HUMAN REMAINS, ARCHAEOLOGICAL REMAINS AND ITEMS OF HISTORICAL OR SCIENTIFIC INTEREST

1) For the purposes of this clause

   (a) "human remains" means the whole or any part of a deceased human being, irrespective of the time of death;

   (b) "archaeological remains" are items, artefacts or things made, modified or used by human beings in antiquity and may include, but not be limited to, stone, wood or iron structures or monuments, dump deposits, bone artefacts, weapons, tools, coins, and pottery; and

   (c) "items of historical or scientific interest" are naturally occurring or manufactured objects or things of any age that are not archaeological remains but may be of interest to society because of their historical or scientific significance, value, rarity, natural beauty, or other quality.

2) If, during the course of the Work, the Contractor encounters any object, item or thing which is described in paragraph 1) of GC6.3 or which resembles any object, item or thing described in paragraph 1) of GC6.3, the Contractor shall

   (a) take all reasonable steps, including stopping work in the affected area, to protect and preserve the object, item or thing;

   (b) immediately notify Canada of the circumstances in writing; and

   (c) take all reasonable steps to minimize additional costs that may accrue as a result of any work stoppage.

3) Upon receipt of a notification in accordance with subparagraph 2)(b) of GC6.3, Canada shall promptly determine whether the object, item or thing is one described in, or contemplated by paragraph 1) of GC6.3, and shall notify the Contractor in writing of any action to be performed, or work to be carried out, by the Contractor as a result of Canada's determination.

4) Canada may, at any time, enlist the services of experts to assist in the investigation, examination, taking of measurements or other such recordings, placing of permanent protection around or removing of the object, item or thing encountered by the Contractor, and the Contractor shall, to the satisfaction

of Canada, allow them access and co-operate with them in the carrying out of their duties and obligations.

5) Human remains, archaeological remains and items of historical or scientific interest encountered at the site of the Work shall be deemed to be the property of Canada.

6) Except as may be otherwise provided for in the Contract, the provisions of GC6.4 DETERMINATION OF PRICE and GC6.5 DELAYS AND EXTENSION OF TIME shall apply.

GC6.4 DETERMINATION OF PRICE

GC6.4.1 Price Determination Prior to Undertaking Changes

1) If a Lump Sum Arrangement applies to the Contract or a part thereof, the price of any change shall be the aggregate estimated cost of labour, Plant and Material that is required for the change as agreed upon in writing by the Contractor and Canada plus an allowance for supervision, co-ordination, administration, overhead, margin and the risk of undertaking the work within the stipulated amount, which allowance shall be equal to

   (a) 20% of the aggregate costs referred to herein for that portion of the Work done by the Contractor's own forces, if the aggregate cost of the Work does not exceed $50,000;

   (b) 15% of the aggregate costs referred to herein for that portion of the Work that is done by subcontract, if the aggregate cost of the Work does not exceed $50,000; or

   (c) a negotiated percentage of the aggregate costs referred to herein or a negotiated amount

      (i) if the aggregate cost of the Work exceeds $50,000; or

      (ii) if the Contractor and Canada agree in writing.

2) If a Unit Price Arrangement applies to the Contract or a part thereof, the Contractor and Canada may, by agreement in writing, add items, units of measurement, estimated quantities and prices per unit to the Unit Price Table.

3) A price per unit referred to in paragraph 2) of GC6.4.1 shall be determined on the basis of the aggregate estimated cost of labour, Plant and Material that is required for the additional item as agreed upon by the Contractor and Canada, plus an allowance determined in accordance with paragraph 1) of GC6.4.1.

4) To facilitate approval of the price of the change or the additional price per unit as applicable, the Contractor shall submit a cost estimate breakdown identifying, as a minimum, the estimated cost of labour, Plant, Material, each subcontract amount, and the amount of the allowance.

5) If no agreement is reached as contemplated in paragraph 1) of GC6.4.1, the price shall be determined in accordance with GC6.4.2.

6) If no agreement is reached, as contemplated in paragraphs 2) and 3) of GC6.4.1, Canada shall determine the class and the unit of measurement of the item of labour, Plant or Material and the price per unit shall be determined in accordance with GC6.4.2.

GC6.4.2 Price Determination Following Completion of Changes

1) If it is not possible to predetermine, or if there is failure to agree upon the price of a change in the Work, the price of the change shall be equal to the aggregate of

(a) all reasonable and proper amounts actually expended or legally payable by the Contractor in respect of the labour, Plant and Material that fall within one of the classes of expenditure described in paragraph 2) of GC6.4.2, that are directly attributable to the performance of the Contract;

(b) an allowance for profit and all other expenditures or costs, including overhead, general administration costs, financing and interest charges, in an amount that is equal to 10% of the sum of the expenses referred to in subparagraph 1)(a) of GC6.4.2; and

(c) interest on the amounts determined under subparagraphs 1)(a) and 1)(b) of GC6.4.2 calculated in accordance with GC5.12 INTEREST ON SETTLED CLAIMS;

2) The cost of labour, Plant and Material referred to in subparagraph 1)(a) of GC6.4.2 shall be limited to the following categories of expenditure:

(a) payments to Subcontractors and Suppliers;

(b) wages, salaries, bonuses and, if applicable, travel and lodging expenses of employees of the Contractor located at the site of the Work and that portion of wages, salaries, bonuses and, if applicable, travel and lodging expenses of personnel of the Contractor generally employed at the head office or at a general office of the Contractor provided they are actually and properly engaged on the Work under the Contract;

(c) assessments payable under any statutory authority relating to workers' compensation, employment insurance, pension plan or holidays with pay, provincial health or insurance plans, environmental reviews, and GST / HST collection costs;

(d) rent that is paid for Plant, or an amount equivalent to the said rent if the Plant is owned by the Contractor, that is necessary for and used in the performance of the Work, if the rent or the equivalent amount is reasonable and use of that Plant has been approved by Canada;

(e) payments for maintaining and operating Plant necessary for and used in the performance of the Work, and payments for effecting repairs thereto that, in the opinion of Canada, are necessary for the proper performance of the Contract, other than payments for any repairs to the Plant arising out of defects existing before its allocation to the Work;

(f) payments for Material that is necessary for and incorporated in the Work, or that is necessary for and consumed in the performance of the Contract;

(g) payments for preparation, delivery, handling, erection, installation, inspection, protection and removal of the Plant and Material necessary for and used in the performance of the Contract; and

(h) any other payments made by the Contractor with the approval Canada that are necessary for the performance of the Contract in accordance with the Contract Documents.

GC6.4.3 Price Determination - Variations in Tendered Quantities

1) Except as provided in paragraphs 2), 3), 4) and 5) of GC6.4.3, if it appears that the final quantity of labour, Plant and Material under a price per unit item shall exceed or be less than the estimated tendered quantity, the Contractor shall perform the Work or supply the Plant and Material required to complete the item and payment shall be made for the actual Work performed or Plant and Material supplied at the price per unit set out in the Contract.

2) If the final quantity of the price per unit item exceeds the estimated tendered quantity by more than 15%, either party to the Contract may make a written request to the other party to negotiate an

amended price per unit for that portion of the item which exceeds 115% of the estimated tendered quantity, and to facilitate approval of any amended price per unit, the Contractor shall, on request, provide Canada with

(a) detailed records of the actual cost to the Contractor of performing or supplying the tendered quantity for the price per unit item up to the time the negotiation was requested; and

(b) the estimated unit cost of labour, Plant and Material required for the portion of the item that is in excess of 115% of the tendered quantity.

3) If agreement is not reached as contemplated in paragraph 2) of GC6.4.3, the price per unit shall be determined in accordance with GC6.4.2.

4) If it appears that the final quantity of labour, Plant and Material under a price per unit item shall be less than 85% of the estimated tendered quantity, either party to the Contract may make a written request to the other party to negotiate a change to the price per unit for the item if

(a) there is a demonstrable difference between the unit cost to the Contractor of performing or supplying the estimated tendered quantity and the unit cost to the Contractor for performing or supplying the final quantity; and

(b) the difference in unit cost is due solely to the decrease in quantity and not to any other cause.

5) For the purposes of the negotiation referred to in paragraph 4) of GC6.4.3

(a) the onus of establishing, justifying and quantifying a proposed change lies with the party making the request for negotiation; and

(b) in no event shall the total price for an item that has been amended as a result of a reduction in quantity pursuant to paragraph 4) of GC6.4.3 exceed the amount that would have been payable to the Contractor had 85% of the tendered quantity actually been performed or supplied.

GC6.5 DELAYS AND EXTENSION OF TIME

1) Upon application of the Contractor made before the date first fixed for completion of the Work or before any other date previously fixed under this clause, Canada may extend the time for completion of the Work by fixing a new date if Canada determines that causes beyond the control of the Contractor have delayed its completion.

2) The Contractor's application shall be accompanied by the written consent of the bonding company whose bond forms part of the Contract Security.

3) Subject to paragraph 4) of GC6.5, no payment, other than a payment that is expressly stipulated in the Contract, shall be made by Canada to the Contractor for any extra expense, loss or damage incurred or sustained by the Contractor due to delay, whether or not the delay is caused by circumstances beyond the control of the Contractor.

4) If the Contractor incurs or sustains any extra expense or any loss or damage that is directly attributable to any neglect or delay that occurs after the date of the Contract on the part of Canada in providing any information or in doing any act that the Contract either expressly requires Canada to do or that would ordinarily be done by an owner in accordance with the practice of the trade, the Contractor shall give Canada written notice of intention to claim for that extra expense or loss or damage within ten working days of the date the neglect or delay first occurred.

5) When the Contractor has given a notice referred to in paragraph 4) of GC6.5, the Contractor shall give Canada a written claim for the extra expense, loss or damage no later than 30 days after the date that a Certificate of Completion is issued and not afterwards.

6) A written claim referred to in paragraph 5) of GC6.5 shall contain a sufficient description of the facts and circumstances of the occurrence that is the subject of the claim to enable Canada to determine whether or not the claim is justified and the Contractor shall supply such further and other information for that purpose as Canada may require.

7) If Canada determines that a claim referred to in paragraph 5) of GC6.5 is justified, Canada shall make an extra payment to the Contractor in an amount that is calculated in accordance with GC6.4 DETERMINATION OF PRICE.

8) If the Contractor fails to give a notice referred to in paragraph 4) and a claim referred to in paragraph 5) of GC6.5 within the times stipulated, an extra payment shall not be made to the Contractor in respect of the occurrence.

GC6.6 ALLOWABLE COSTS FOR CONTRACT CHANGES UNDER GC6.4.1

GC6.6.1 General

1) The Contractor shall submit a cost estimate breakdown for each contemplated change, in accordance with paragraph 4) of GC6.4.1 PRICE DETERMINATION PRIOR TO UNDERTAKING CHANGES. The breakdown shall itemize all labour, material, plant and equipment costs estimated by the Contractor and subcontractors, and the amount of each allowance.

2) It is the responsibility of the Contractor to ensure that all prices included in the Contractor's breakdown to the NCC, including those of subcontractors, are fair and reasonable in view of the terms expressed herein.

3) The labour hours required for the contemplated change shall be based on the estimated number of hours to perform the work.

4) Time spent by a working foreman may be included in the number of labour hours, at a rate agreed to in writing by the Contractor and the NCC.

5) Time attributable to material handling, productivity factors and approved rest periods is to be included in the number of hours required by the contemplated change and will not be paid as a separate item under hourly rates.

6) Allowances referred to in section 04 below are not to be included in the hourly labour rates.

7) Credit for work deleted will only be for the work directly associated with the change.

8) When a change deletes work which has not yet been performed, the NCC is entitled to an adjustment in the Contract Amount equal to the cost the Contractor would have incurred had the work not been deleted.

9) Allowances referred to in Section 04 below shall not be applied to any credit amounts for deleted work.

10) In those cases where the change involves additions and deletions to the work, the allowances referred to in section 04 below shall apply only when the cost of the additions minus the cost of the deletions would result in an increase in the Contract Amount. The percentage allowance shall only be applied to that portion of the costs of the additions that is in excess of the cost of the deletions.

11) If the contemplated change in the work necessitates a change in the contract completion date, or has an impact on the work, the Contractor shall identify and include the resulting cost in the breakdown.

GC6.6.2 Hourly Labour Rates

1) The hourly labour rates listed in the Contractor's breakdown shall be determined in accordance with the collective agreements that are applicable at the site of the work and shall include:

   (a) the base rate of pay;

   (b) vacation pay:

   (c) benefits which includes:

      (i) welfare contributions;

      (ii) pension contributions;

      (iii) union dues;

      (iv) training and industry funds contributions; and

      (v) other applicable benefits, if any, that can be substantiated by the Contractor.

   (d) statutory and legislated requirements, assessed and payable under statutory authority, which includes:

      (i) Employment Insurance contributions;

      (ii) Canada Pension Plan or Québec Pension Plan contributions;

      (ii) Worker's Compensation Board or Commission de la santé et de la sécurité du travail premiums;

      (iv) Public Liability and Property Damage insurance premiums; and

      (v) health tax premiums.

2) In the case of nonunion labour, all rates claimed shall be in accordance with the terms of the Labour Conditions forming part of this contract and the Contractor must provide satisfactory proof of the rates actually paid.

GC6.6.3 Material, Plant and Equipment Costs

1) The costs of all purchases and rentals must be based on the actual amount paid to the suppliers by the Contractor or subcontractor and said costs are to include all applicable discounts.

GC6.6.4 Allowance to the Contractor or Subcontractor

1) The allowances determined in accordance with paragraph 1) of GC6.4.1 PRICE DETERMINATION PRIOR TO UNDERTAKING CHANGES shall be considered as full compensation for:

   (a) supervision, co-ordination, administration, overhead, margin and the risk of undertaking the work within the stipulated amount; and

(b) miscellaneous additional costs related to:

(i) the purchase or rental of material, plant and equipment;

(ii) the purchase of small tools and supplies;

(iii) safety and protection measures; and

(iv) permits, bonds, insurance, engineering, as built drawings, commissioning and site office.

GC7 DEFAULT, SUSPENSION OR TERMINATION OF CONTRACT

GC7.1 TAKING THE WORK OUT OF THE CONTRACTOR'S HANDS

1) By giving notice in writing to the Contractor in accordance with GC2.3 NOTICES, the NCC, without any other authorization, may take all or any part of the Work out of the Contractor's hands, and may employ such means as the NCC sees fit to have the Work completed if the Contractor:

   (a) fails to remedy any delay in the commencement or default in the diligent performance of the Work to the satisfaction of the NCC within six days of the NCC giving notice to the Contractor in writing in accordance with GC2.3 NOTICES;

   (b) defaults in the completion of any part of the Work within the time fixed for its completion by the Contract;

   (c) becomes insolvent, or has committed an act of bankruptcy, and has neither made a proposal to its creditors nor filed a notice of intention to make such a proposal, pursuant to the Bankruptcy and Insolvency Act;

   (d) abandons the work;

   (e) makes an assignment of the Contract without the consent required by GC1.16 ASSIGNMENT; or

   (f) otherwise fails to observe or perform any of the provisions of the Contract.

2) If the whole or any part of the Work is taken out of the Contractor's hands, the Contractor's right to any further payment that is due or accruing due under the Contract is, subject only to paragraph 3) of GC7.1, extinguished, and the Contractor is liable to pay the NCC, upon demand, an amount that is equal to the amount of all loss and damage incurred or sustained by the NCC in respect of the Contractor's failure to complete the Work.

3) If the whole or any part of the Work that is taken out of the Contractor's hands is completed by the NCC, the NCC may pay the Contractor the amount, if any, of the holdback or a progress claim as determined by the NCC that had accrued and was due prior to the date on which the Work was taken out of the Contractor's hands and that is not required for the purposes of having the Work performed or of compensating the NCC for any other loss or damage incurred or sustained by reason of the Contractor's default.

4) The taking of the Work or any part thereof out of the Contractor's hands does not relieve the Contractor from any obligation under the Contract or imposed by law except the obligation to complete the performance of that part of the Work that was taken out of the Contractor's hands.

5) If the Work or any part thereof is taken out of the Contractor's hands, all Plant and Material and the interest of the Contractor, or its suppliers or subcontractors at any tier, in all real property, licences, powers and privileges acquired, used or provided by the Contractor, or its suppliers or subcontractors at any tier, under the Contract shall continue to be the property of the NCC without compensation.

6) When the NCC certifies that any Plant, Material, or any interest of the Contractor is no longer required for the purposes of the Work, or that it is not in the interests of the NCC to retain that Plant, Material, or interest, it shall revert to the Contractor.

7) If the Contractor has become insolvent or has committed an act of bankruptcy, and has either made a proposal to its creditors or filed a notice of intention to make such a proposal, pursuant to the Bankruptcy and Insolvency Act, the Contractor shall immediately forward a copy of the proposal or the notice of intention to the NCC.

GC7.2 SUSPENSION OF WORK

1) When, in the NCC's opinion, it is in the public interest to do so, the NCC may require the Contractor to suspend performance of the Work either for a specified or an unspecified period, by giving a notice of suspension in writing to the Contractor in accordance with GC2.3 NOTICES.

2) When a notice of suspension is received by the Contractor, the Contractor shall suspend all operations in respect of the Work except those that the NCC determines are necessary for the care and preservation of the Work, Plant and Material.

3) During a period of suspension, the Contractor shall not remove any part of the Work, Plant or Material from its site without the consent of the NCC.

4) If a period of suspension is 60 days or less, the Contractor shall resume the performance of the Work on the expiration of that period, and the Contractor is entitled to be paid the extra costs necessarily incurred by the Contractor as a result of the suspension, determined in accordance with GC6.4 DETERMINATION OF PRICE.

5) If a period of suspension is more than 60 days, the NCC and the Contractor may agree that the performance of the Work shall be continued by the Contractor, and the Contractor shall resume performance of the Work subject to any terms and conditions agreed upon by the NCC and the Contractor. If the NCC and the Contractor do not agree that performance of the Work shall be continued by the Contractor, or upon the terms and conditions under which the Contractor shall continue the Work, the notice of suspension shall be deemed to be a notice of termination pursuant to GC7.3 TERMINATION OF CONTRACT.

GC7.3 TERMINATION OF CONTRACT

1) The NCC may terminate the Contract at any time by giving a notice of termination in writing to the Contractor in accordance with GC2.3 NOTICES.

2) If the Contractor receives a notice of termination, the Contractor shall forthwith cease all operations in performance of the Contract, subject to any conditions stipulated in the notice.

3) Subject to paragraph 4) of GC7.3, if the Contract is terminated, the NCC shall pay the Contractor an amount determined to be due to the Contractor pursuant to GC6.4 DETERMINATION OF PRICE less the aggregate of all amounts that were paid to the Contractor by the NCC and all amounts that are due to the NCC from the Contractor pursuant to the Contract.

4) In no event shall the total amount payable by the NCC to the Contractor exceed the amount, calculated in accordance with GC5 TERMS OF PAYMENT, that would have been payable to the Contractor had the Contractor completed the Work.

5) Payment to the Contractor, if any, shall be made as soon as practicable under the circumstances.

GC7.4 SECURITY DEPOSIT - FORFEITURE OR RETURN

1) If the Work is taken out of the Contractor's hands, or the Contractor is in breach of, or in default under, the Contract, the NCC may convert a security deposit to the NCC's own use.

2) If the NCC converts a security deposit, the amount realized shall be deemed to be an amount due from the NCC to the Contractor under the Contract.

3) Any balance of the amount realized that remains after payment of all losses, damage and claims of the NCC and others shall be paid by the NCC to the Contractor if, in the opinion of the NCC, it is not required for the purposes of the Contract.

GC8 DISPUTE RESOLUTION

1) The Contractor may, within 10 days after the communication to the Contractor of any decision or direction referred to in GC6.1 CHANGES IN THE WORK and GC2.2 INTERPRETATION OF CONTRACT, protest that decision or direction.

2) A protest referred to in paragraph 1) of GC8 shall be in writing, contain full reasons for the protest, be signed by the Contractor and be given to the NCC.

3) If the Contractor gives a protest pursuant to paragraph 2) of GC8, any compliance by the Contractor with the decision or direction that was protested shall not be construed as an admission by the Contractor of the correctness of that decision or direction, or prevent the Contractor from taking whatever action the Contractor considers appropriate in the circumstances.

4) The giving of a protest by the Contractor pursuant to paragraph 2) of GC8 shall not relieve the Contractor from complying with the decision or direction that is the subject of the protest.

5) Subject to paragraph 6) of GC8, the Contractor shall take any action referred to in paragraph 3) of GC8 within 3 months after the date of the Certificate of Completion referred to in GC5.6 FINAL COMPLETION and not afterwards, except where it is otherwise provided by law.

6) The Contractor shall take any action referred to in paragraph 3) of GC8 resulting from a direction under GC3.13 WARRANTY AND RECTIFICATION OF DEFECTS IN WORK, within 3 months after the expiry of a warranty or guarantee period and not afterwards, except where it is otherwise provided by law.

7) Subject to paragraph 8) of GC8, if the NCC determines that the Contractor's protest is justified, the NCC shall pay the Contractor the cost of the additional labour, Plant and Material necessarily incurred by the Contractor in carrying out the protested decision or direction.

8) Costs referred to in paragraph 7) of GC8 shall be calculated in accordance with GC6.4 DETERMINATION OF PRICE.

GC9.1 OBLIGATION TO PROVIDE CONTRACT SECURITY

1) The Contractor shall, at the Contractor's expense and within 7 days after the date that the Contractor receives notice that the Contractor's bid was accepted by the NCC, obtain and deliver Contract Security to the NCC in one or more of the forms prescribed in GC9.2 TYPES AND AMOUNTS OF CONTRACT SECURITY.

2) If the whole or a part of the Contract Security provided is in the form of a security deposit, it shall be held and disposed of in accordance with GC5.13 RETURN OF SECURITY DEPOSIT and GC7.4 SECURITY DEPOSIT - FORFEITURE OR RETURN.

3) If a part of the Contract Security provided is in the form of a labour and material payment bond, the Contractor shall post a copy of that bond at the site of the Work.

4) It is a condition precedent to the release of the first progress payment that the Contractor has provided the Contract Security as specified herein.

5) In addition to the limitation imposed in paragraph 4) of GC9.1, the Contractor further acknowledges and agrees that it will not be entitled to have access to the site, nor to commence work pursuant to this contract until it has delivered the Contract Security as specified herein.

GC9.2 TYPES AND AMOUNTS OF CONTRACT SECURITY

1) The Contractor shall deliver to the NCC (a), (b) or (c):

   (a) A performance bond and a labour and material payment bond each in an amount that is equal to not less than 50% of the Contract Amount including taxes

   (b) A labour and material payment bond in an amount that is equal to not less than 50% of the Contract Amount including taxes, and a security deposit in an amount that is equal to not less than 10% of the Contract Amount including taxes.

   (c) A security deposit in an amount prescribed by subparagraph 1)(b) of GC9.2, plus an additional amount that is equal to 10% of the Contract Amount including taxes.

2) The amount of a security deposit referred to in subparagraph 1)(b) of GC9.2 shall not exceed $2,000,000 regardless of the Contract Amount including taxes.

3) A performance bond and a labour and material payment bond referred to in paragraph 1) of GC9.2 shall be in a form and be issued by a bonding or surety company that is approved by the NCC.

   (a) The approved form for the performance bond is enclosed at the end of GC9.

   (b) The approved form for the labour and material payment bond is enclosed at the end of GC9

   (c) The list of approved bonding or surety companies is displayed at the following Website:

   http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12027 .

4) A security deposit referred to in subparagraphs 1)(b) and 1)(c) of GC9.2 shall be in the form of:

(a) a bill of exchange, bank draft or money order made payable to the NCC 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.

5) For the purposes of subparagraph 4)(a) of GC9.2:

(a) a bill of exchange is an unconditional order in writing signed by the Contractor and addressed to an approved financial institution, requiring the said institution to pay, on demand, at a fixed or determinable future time a certain sum of money to, or to the order of, the NCC;

(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 5)(c) of GC9.2, 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 Régie de l'assurance-dépôts du Québec;

(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.

6) Bonds referred to in subparagraph 4)(b) of GC9.2 shall be provided on the basis of their market value current at the date of the Contract, and shall be:

(a) made payable to bearer; or

(b) accompanied by a duly executed instrument of transfer of the bonds to the NCC 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 NCC pursuant to the Domestic Bonds of Canada Regulations.

GC9.3 IRREVOCABLE STANDBY LETTER OF CREDIT

1) As an alternative to a security deposit, an irrevocable standby letter of credit is acceptable to the NCC, the amount of which shall be determined in the same manner as a security deposit referred to in GC9.2 TYPES AND AMOUNTS OF CONTRACT SECURITY.

2) An irrevocable standby letter of credit 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 NCC as the beneficiary;

(ii) is to accept and pay bills of exchange drawn by the NCC;

(ii) 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 that may be drawn against it;

(c) state its expiry date;

(d) provide for sight payment to the NCC by way of the financial institution's draft against presentation of a written demand for payment signed by the NCC;

(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 for Documentary Credits, 2007 Revision, ICC Publication No. 600;

(g) clearly specify that it is irrevocable or deemed to be irrevocable pursuant to article 6 c) of the International Chamber of Commerce (ICC) Uniform Customs and Practice for Documentary Credits, 2007 Revision, ICC Publication No. 600; and

(h) be issued or confirmed, in either official language in a format left to the discretion of the issuer or confirmer, by an approved financial institution on its letterhead.

PERFORMANCE BOND

Bond Number _____

Amount $ _____

KNOW ALL MEN BY THESE PRESENTS, that _____ as Principal, hereinafter called the Principal, and _____ as Surety, hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto the National Capital Commission as Obligee, hereinafter called the NCC, In the amount of _____ dollars ($ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____ , _____ . WHEREAS, the Principal has entered into a Contract with the NCC, dated the _____ day of _____ , _____ , for: _____ .

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that if the Principal shall well and faithfully observe and perform all the obligations on the part of the Principal to be observed and performed in connection with the Contract, then this obligation shall be void, otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. Whenever the Principal shall be, and declared by the NCC to be, in default under the Contract, the Surety shall
   (a) if the work is not taken out of the Principal's hands, remedy the default of the Principal,
   (b) if the work is taken out of the Principal's hands and the NCC directs the Surety to undertake the completion of the work, complete the work in accordance with the Contract provided that if a contract is entered into for the completion of the work,
      (i) it shall be between the Surety and the completing contractor, and
      (ii) the selection of such completing contractor shall be subject to the approval of the NCC,
   (c) if the work is taken out of the Principal's hands and the NCC, after reasonable notice to the Surety, does not direct the Surety to undertake the completion of the work, assume the financial responsibility for the cost of completion in excess of the moneys available to the NCC under the Contract,
   (d) be liable for and pay all the excess costs of completion of the Contract, and
   (e) not be entitled to any Contract moneys earned by the Principal, up to the date of his default on the Contract and any holdbacks relating to such earned Contract moneys held by the NCC, and the liability of the Surety under this Bond shall remain unchanged provided, however, and without restricting the generality of the foregoing, upon the completion of the Contract to the satisfaction of the NCC, any Contract moneys earned by the Principal or holdbacks related thereto held by the NCC may be paid to the Surety by the NCC.

2. The Surety shall not be liable for a greater sum than the amount specified in this Bond.

3. No suit or action shall be instituted by the NCC herein against the Surety pursuant to these presents after the expiration of two (2) years from the date on which final payment under the Contract is payable.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal _____

Witness _____

Surety _____

Note: Affix Corporate seal if applicable.

LABOUR AND MATERIAL PAYMENT BOND

Bond Number _____

Amount $ _____

KNOW ALL MEN BY THESE PRESENTS, that _____ as Principal,

hereinafter called the Principal, and _____ as Surety, hereinafter

called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto the National Capital Commission as Obligee,

hereinafter called the NCC, In the amount of _____ dollars

($ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety

bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____ , _____ . WHEREAS, the Principal has entered into a Contract

with the NCC, dated the _____ day of _____ , _____ , for: _____

_____ which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that, if payment is promptly made to all Claimants who have performed labour or services or supplied material in connection with the Contract and any and all duly authorized modifications and extensions of the Contract that may hereafter be made, notice of which modifications and extensions to the Surety being hereby waived, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. For the purpose of this bond, a Claimant is defined as one having a direct contract with the Principal or any Sub-Contractor of the Principal for labour, material or both, used or reasonably required for use in the performance of the Contract, labour and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone services or rental of equipment (but excluding rental of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract.

2. For the purpose of this Bond, no payment is required to be made in respect of a claim for payment for labour or services performed or material supplied in connection with the Contract that represents a capital expenditure, overhead or general administration costs incurred by the Principal during the currency or in respect of the Contract.

3. The Principal and the Surety hereby jointly and severally agree with the NCC that if any Claimant has not been paid as provided for under the terms of his contract with the Principal or a Sub-Contractor of the Principal before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's labour or service was done or performed or materials were supplied by such Claimant, the NCC may sue on this bond, have the right to prosecute the suit to final judgment for such sum or sums as may be due and have execution thereon; and such right of the NCC is assigned by virtue of Part VIII of the Financial Administration Act to such Claimant.

4. For the purpose of this bond the liability of the Surety and the Principal to make payment to any claimant not having a contract directly with the Principal shall be limited to that amount which the Principal would have been obliged to pay to such claimant had the provisions of the applicable provincial or territorial legislation on lien or privileges been applicable to the work. A claimant need not comply with provisions of such legislation setting out steps by way of notice, registration or otherwise as might have been necessary to preserve or perfect any claim for lien or privilege which the claimant might have had. Any such claimant shall be entitled to pursue a claim and to recover judgment hereunder subject to the terms and notification provisions of the Bond.

5. Any material change in the Contract between the Principal and the NCC shall not prejudice the rights or interest of any Claimant under this Bond who is not instrumental in bringing about or has not caused such change.

6. No suit or action shall be commenced hereunder by any Claimant:

   (a) Unless such Claimant shall have given written notice within the time limits hereinafter set forth to the Principal and the Surety above named, stating with substantial accuracy the amount claimed. Such notice shall be served by mailing the same by registered mail to the Principal and the Surety at any place where an office is regularly maintained for the transaction of business by such persons or served in any manner in which legal process may be served in the Province or other part of Canada in which the subject matter of the Contract is located. Such notice shall be given

      (i) in respect of any claim for the amount or any portion thereof required to be held back from the Claimant by the Principal or by the Sub-Contractor of the Principal under either the terms of the Claimant's Contract with the Principal or the Claimant's Contract with the Sub-Contractor of the Principal within one hundred and twenty (120) days after such Claimant should have been paid in full under this Contract;

…/2

(ii) in respect of any claim other than for the holdback or portion thereof referred to above within one hundred and twenty (120) days after the date upon which such Claimant did or performed the last of the service, work or labour or furnished the last of the materials for which such claim is made under the Claimant's Contract with the Principal or a Sub-Contractor of the Principal

(b) After the expiration of one (1) year following the date on which the Principal ceased work on the said Contract, including work performed under the guarantees provided in the Contract;

(c) Other than in a court of competent jurisdiction in the province or district of Canada in which the subject matter of the Contract or any part thereof is situated and not elsewhere, and the parties hereto hereby agree to submit to the jurisdiction of such court.

7. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.

8. The Surety shall not be entitled to claim any moneys relating to the Contract and the liability of the Surety under this Bond shall remain unchanged and, without restricting the generality of the foregoing, the Surety shall pay all valid claims of Claimants under this Bond before any moneys relating to the Contract held by the NCC are paid to the Surety by the NCC.

9. The Surety shall not be liable for a greater sum that the amount specified in this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal _____

Witness _____

Surety _____

Note: Affix Corporate seal if applicable.

GC10.1 INSURANCE CONTRACTS

1) The Contractor shall, at the Contractor's expense, obtain and maintain insurance contracts in respect of the work and shall provide evidence thereof to the NCC in accordance with the requirements of GC10.

2) The insurance contracts referred to in paragraph 1) of GC10.1 shall:

   (a) be in a form, of the nature, in the amounts, for the periods and containing the terms and conditions specified in GC10; and

   (b) provide for the payment of claims under such insurance contracts in accordance with GC10.2 INSURANCE PROCEEDS.

GC10.2 INSURANCE PROCEEDS

1) In the case of a claim payable under a Builders Risk/Installation (All Risks) insurance contract maintained by the Contractor pursuant to GC10.1 INSURANCE CONTRACTS, the proceeds of the claim shall be paid directly to the NCC, and:

   (a) the monies so paid shall be held by the NCC for the purposes of the contract; or

   (b) if the NCC elects, shall be retained by the NCC, in which event they vest in the NCC absolutely.

2) In the case of a claim payable under a General Liability insurance contract maintained by the Contractor pursuant to GC10.1 INSURANCE CONTRACTS, the proceeds of the claim shall be paid by the insurer directly to the claimant.

3) If an election is made pursuant to paragraph 1) of GC10.2, the NCC may cause an audit to be made of the accounts of the Contractor and of the NCC in respect of the part of the work that was lost, damaged or destroyed for the purpose of establishing the difference, if any, between:

   (a) the aggregate of the amount of the loss or damage suffered or sustained by the NCC, including any costs incurred in respect of the clearing of the work and its site and any other amount that is payable by the Contractor to the NCC under the contract, minus any monies retained pursuant to subparagraph 1)(b) of GC10.2; and

   (b) the aggregate of the amounts payable by the NCC to the Contractor pursuant to the contract up to the date of the loss or damage.

4) A difference that is established pursuant to paragraph 3) of GC10.2 shall be paid forthwith by the party who is determined by the audit to be the debtor to the party who is determined by the audit to be the creditor.

5) When payment of a deficiency has been made pursuant to paragraph 4) of GC10.2, all rights and obligations of the NCC and the Contractor under the contract shall, with respect only to the part of the work that was the subject of the audit referred to in paragraph 3) of GC10.2, be deemed to have been expended and discharged.

6) If an election is not made pursuant to subparagraph 1)(b) of GC10.2, the Contractor shall, subject to paragraph 7) of GC10.2, clear and clean the work and its site and restore and replace the part of the work that was lost, damaged or destroyed at the Contractor's expense as if that part of the work had not yet been performed.

7) When the Contractor clears and cleans the work and its site and restores and replaces the work referred to in paragraph 6) of GC10.2, the NCC shall pay the Contractor out of the monies referred to in paragraph 1) of GC10.2 so far as they will thereunto extend.

8) Subject to paragraph 7) of GC10.2, payment by the NCC pursuant to paragraph 7) of GC10.2 shall be made in accordance with the contract but the amount of each payment shall be 100% of the amount claimed notwithstanding subparagraphs 3)(a) and 3)(b) of GC5.4 PROGRESS PAYMENT.

GC10.3 INSURANCE TERMS

GC10.3.1 General

GC10.3.1.1 Proof of Insurance

1) Before commencement of the Work, and prior to contract award, the Contractor shall deposit with the NCC a Certificate of Insurance (approved Insurance form is enclosed at the end of this section).

2) Upon request by the NCC, the Contractor shall provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the provisions contained herein.

3) The insurance policies shall be endorsed to provide the NCC with no less than 30 days notice in writing in advance of a cancellation of insurance or any reduction in coverage.

GC10.3.1.2 Payment of Deductible

1) Any moneys paid or payable in respect of a deductible amount shall be borne exclusively by the Contractor.

GC10.3.2 Commercial General Liability

GC10.3.2.1 Scope of Policy

1) The insurance coverage provided shall not be less than that provided by IBC Form 2100, as amended from time to time, and shall have:

(a) an Each Occurrence Limit of not less than $5,000,000;

(b) a Products/Completed Operations Aggregate Limit of not less than $5,000,000; and

(c) a General Aggregate Limit of not be less than $10,000,000 per policy year, if the policy is subject to such a limit.

2) The policy shall either include or be endorsed to include coverage for the following exposures or hazards if the Work is subject thereto:
   (a) Blasting;

   (b) Pile driving and caisson work;

   (c) Underpinning;

   (d) Removal or weakening of support of any building or land whether such support be natural or otherwise if the work is performed by the insured Contractor.

GC10.3.2.2 Insured

1) The policy shall insure the Contractor and shall include the NCC as an additional Insured, with respect to liability arising out of the operations of the Contractor with regard to the work.

GC10.3.2.3 Period of Insurance

1) Unless otherwise directed in writing by the NCC, or, otherwise stipulated elsewhere herein, the policy required herein shall be in force and be maintained from the date of contract award until the day of issue of the Certificate of Completion except that the coverage for Completed Operations Liability shall, in any event, be maintained for a period of at least six (6) years beyond the date of the Certificate of Substantial Performance.

GC10.3.3 Builder's Risk / Installation Floater

GC10.3.3.1 Scope of Policy

1) The insurance coverage provided by a Builder's Risk policy or an Installation Floater policy shall not be less than that provided by IBC Forms 4042 and 4047, as amended from time to time.

2) The policy shall permit use and occupancy of the project, or any part thereof, where such use and occupancy is for the purposes for which the project is intended upon completion.

3) The policy may exclude or be endorsed to exclude coverage for loss or damage caused by any of the following:

   (a) Asbestos;

   (b) Fungi or spores;

   (c) Cyber;

   (d) Terrorism.

GC10.3.3.2 Amount of Insurance

1) The amount of insurance shall not be less than the sum of the contract value plus the declared value (if any) set forth in the contract documents of all material and equipment supplied by the NCC at the site of the project to be incorporated into and form part of the finished Work. If the value of the Work is changed, the policy shall be changed to reflect the revised contract value.

GC10.3.3.3 Insurance Proceeds

1) The policy shall provide that the proceeds thereof are payable to the NCC may direct in accordance with GC10.2, "Insurance Proceeds".

2) The Contractor shall, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.

CERTIFICAT OF INSURANCE
ATTESTATION D'ASSURANCE

- **To be completed by the insurer / À être rempli par l'assureur**

CONTRACT / MARCHÉ	
Description and location of work / Description et endroit des travaux	Contract no. / N° de contrat

INSURER / ASSUREUR			
Name / Nom			
Address / Adresse	No., Street / N°, rue		
	City / Ville	Province	Postal code / Code postal

BROKER / COURTIER			
Name / Nom			
Address / Adresse	No., Street / N°, rue		
	City / Ville	Province	Postal code / Code postal

INSURED / ASSURÉ			
Name of contractor / Nom de l'entrepreneur			
Address / Adresse	No., Street / N°, rue		
	City / Ville	Province	Postal code / Code postal

ADDITIONAL INSURED / ASSURÉ ADDITIIONNEL

The National Capital Commission / La Commission de la capitale nationale

This insurer certifies that the following policies of insurance are at present in force covering all operations of the Insured, in connection with the contract made between the named insured and the National Capital Commission.

L'assureur atteste que les polices d'assurances suivantes sont présentement en vigueur et couvrent toutes les activités de l'assuré en fonction du marché conclu entre l'Assuré dénommé la Commission de la capitale nationale

POLICY / POLICE

Type Genre	Number Numéro	Inception Date Date d'effet	Expiry Date Date d'expiration	Limit of Liability Limites de garantie
Commercial General Liability Responsabilité civile des entreprises				
Builder's Risk "All Risks" Assurance des chantiers « tous risques »				
Installation Floater "All Risks" Risques d'installation « tous risques »				
Other (list) / Autre (énumérer)				

Each of these policies includes the coverages and provisions as specified in Insurance Terms and each policy has been endorsed to cover the National Capital Commission as an Additional Insured. The Insurer agrees to notify the National Capital Commission in writing thirty (30) days prior to any material change in, or cancellation of any policy or coverage.	Chacune des présentes polices renferment des garanties et dispositions spécifiées aux Conditions d'assurance, et chaque police a été amendée pour couvrir la Commission de la capitale nationale en tant qu'assuré additionnel. L'assureur convient de donner un préavis de trente (30) jours à la Commission de la capitale nationale en cas de changement visant la garantie d'assurance ou les conditions ou de l'annulation de n'importe quelle police ou garantie.

Name of Insurer's Office or Authorized Employee / Nom du cadre ou de la personne autorisée

Telephone number / Numéro de téléphone

Signature

Date

OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS

1. General

1.1 In this Contract "OHS" means "occupational health and safety".

1.2 With respect to the work to be performed under the Contract, the Contractor covenants and agrees to perform at, and to enforce conformity with, a standard equivalent to or greater than the best practices prevailing in the construction industry at that time.

1.3 The Contractor acknowledges that, to the extent that the following matters may be affected by conduct of the work, it is responsible for the:

1.3.1 health and safety of persons on site;

1.3.2 safety of property on site;

1.3.3 protection of persons adjacent to the site; and,

1.3.4 protection of the environment.

1.4 Without limiting the generality of section 1.3, the Contractor acknowledges that it is required to, and covenants and agrees to, comply and to enforce compliance with all laws or regulations that may be applicable to the conduct of the work including, without limitation:

(a) the provisions of the *Occupational Health and Safety Act* of Ontario and all regulations, policies or directives issued thereunder for work performed in Ontario;

(b) La *Loi sur la santé et la sécurité du travail* of Québec and all regulations, policies or directives issued thereunder for work performed in Québec;

(c) Applicable provisions of the *Canada Labour Code, Part II;*

(d) Employment standards legislation in the province(s) in which any part of the work is performed; and

(e) Any policies or directives issued by the NCC in respect of the subject matter of the contract.

The NCC will present any such policies or directives referred to in paragraph (e) to the Contractor in written form by not later than the pre-construction meeting. The Contractor is obliged to ensure that the relevant policies and directives have been communicated to and acknowledged by all its employees and that they will be complied with. The NCC reserves the right to require the Contractor to produce evidence satisfactory to the NCC acting reasonably that the Contractor has discharged the foregoing obligations.

1.5 By entering into the Contract with the NCC, the Contractor represents and warrants to the NCC that it has informed itself of and is knowledgeable about the obligations imposed by the legislation referred to in 1.4. above.

1.6 For purposes of the relevant provincial OHS legislative regime the Contractor acknowledges and agrees that it is the "Constructor" and covenants to discharge and accept all liability for the performance of the obligations of the "Constructor" in respect of the work provided for in the Contract. Notwithstanding a determination by the relevant authority having jurisdiction that the NCC is the "Constructor" in the event of a dispute between the Contractor and the NCC, the Contractor acknowledges and agrees that the Contractor shall be financially responsible for the implementation of protective measures necessary to fulfill the obligations of the "Constructor".

1.7 As between the NCC and the Contractor, the NCC's decision as to whether the Contractor is discharging its obligations in respect of OHS issues shall be definitive. Without limiting the generality of the foregoing, in the event of any dispute with respect to instructions given by the NCC's designated representative, the Contractor may note such dispute, but must nevertheless forthwith comply with any such instructions.

1.8 The Contractor hereby indemnifies and agrees to hold harmless the NCC, its agents and employees, from and against any and all claims, demands, losses, costs (including legal fees on a full indemnity basis), damages, actions, suits or proceedings (hereinafter collectively referred to as "claims") by third parties that arise out of or are attributable to the Contractor's errors or omissions in the performance of the Contract. Without limiting the generality of the foregoing, this indemnification extends to any claims related to any violation of any statute or regulation relating to OHS matters.

1.9 The NCC shall provide the contractor:

1.9.1 a written description of every known and foreseeable health and safety hazard to which persons employed in the performance of the work may be exposed because of the nature of the site;

1.9.2 a list of any prescribed materials, equipment, devices and clothing necessary because of the nature of the site;

1.9.3 with written information indicating the prescribed circumstances and manner to use all prescribed materials, equipment, devices and clothing listed pursuant to 1.9.2; and,

1.9.4 with a copy of any NCC policies and procedures that may be applicable in relation to the work site.

1.10 Without limiting the generality of 1.9, prior to the commencement of the work by the contractor, the contractor shall, at the contractor's expense:

1.10.1 take all reasonable care to ensure that all persons employed in the performance of the work or granted access to the work or its site are informed of any health and safety hazard described pursuant to 1.9.1;

1.10.2 provide all persons employed in the performance of the work or granted access to the work or its site with prescribed materials, equipment, devices and clothing listed pursuant to 1.9.2;

1.10.3 take all reasonable care to ensure that all persons employed in the performance of the work or granted access to the work or its site are familiar with the prescribed circumstances and manner all prescribed materials, equipment, devices and clothing listed pursuant to 1.9.2; and

1.10.4 take all reasonable care to ensure that all persons employed in the performance of the work or granted access to the work or its site are familiar with policies and procedures referred to in 1.9.4.

2. Qualifications of Personnel

2.1 By entering into this agreement the contractor represents and warrants the it has the requisite experience, training, formal certification and equipment to enable it to discharge the obligations enumerated in sections 1.3. 1.4, 1.5 and 1.6 above.

2.2 The Contractor represents and warrants that supervisory personnel employed by the Contractor in respect of performance of any part of the work have the requisite experience, authority, training, formal certification and equipment to ensure that the obligations enumerated in sections 1.3 1.4, 1.5

and 1.6 above are discharged and agrees to deliver such evidence as may be required by the NCC from time to time to verify same.

3. Certification

3.1 After receiving notification that its bid has been retained and prior to and as a condition of contract award, the Contractor covenants and agrees to deliver a Worker's Compensation Clearance Certificate. Where the duration of the project is greater than sixty days, the Contractor covenants and agrees to deliver up-dated certificates at least every 60 days. In the event of a failure by the Contractor to deliver up-dated certificates, the NCC shall be entitled to immediately terminate the contract without notice and without incurring any liability to the Contractor.

3.2 After receiving notification that its bid has been retained and prior to and as a condition of contract award, the Contractor covenants and agrees to deliver historical information on its injury experience including any pertinent Worker's Compensation Experience Reports. Such historical information shall report data for the previous three years.

4. Plans Policies and Procedures

4.1 After receiving notification that its bid has been retained and prior to and as a condition of contract award, the Contractor covenants and agrees to deliver for the review and approval of the NCC:

(a) A copy of the contractor's OHS policy;

(b) A safety program and plan specific to the work to be performed pursuant to the Contract which plan shall include a risk assessment and analysis, a description of safe working methods, injury and incident reporting protocols, regular periodic reporting on compliance with OHS obligations including any policies, practices and procedures otherwise provided for herein, and a site-specific contingency and emergency response plan; and

(c) Health and safety training records of personnel and alternates responsible for OHS issues on site.

The Contractor covenants and agrees to deliver the necessary material safety data sheets for the review and approval of the NCC prior to entering the site to perform work related to the relevant material.

Approval by the NCC does not amend the provisions of the Contract with respect to the allocation of liability for discharging or failing to discharge OHS obligations. Such liability remains with the Contractor notwithstanding the granting of such approval.

4.2 The Contractor acknowledges and agrees that prior to commencement of work it must attend a pre-construction briefing at which any special or additional practices and procedures to be followed in completing the work are to be established. Without limiting the provisions of section 1.4(e) above, the representatives of the Contractor attending the briefing will be required to deliver a signed acknowledgement that the practices and procedures set out in the pre-construction briefing have been understood and will be complied with.

4.3 At any time and from time to time during the performance of the work, the NCC shall have the right to audit the manner in which the Contractor is discharging its OHS obligations and to determine whether the project specification and/or OHS policies, practices and procedures are being complied with. In the event that the audit discloses any failure by the Contractor to discharge such OHS obligations , the NCC shall be entitled to forthwith rectify at the Contractor's expense any such deficiency and the NCC shall have the further right to immediately terminate the contract without notice and without incurring any liability to the Contractor.

4.4 The Contractor covenants and agrees to conform with all requirements of the Workplace Hazardous Materials Information System.

4.5 The Contractor acknowledges and agrees that where required by any law or regulation applicable to the performance of the work it must establish and maintain a project health and safety committee. The contractor further acknowledges and agrees that it must enable staff to attend all relevant safety meetings, and that the cost of same, including costs attributable to standing down equipment is included in its bid price and is not independently recoverable.

4.6 Where required by the relevant provincial regulatory regime, the Contractor acknowledges and agrees that it is responsible for delivery of notice of the project to the relevant regulatory authority, and for the performance of any other administrative activity required to meet the obligations imposed in the pertinent provincial regulatory regime.

4.7 **(Optional depending on hazard or scope of project)**. The contractor covenants and agrees that it shall employ and assign to the work, a competent OHS professional as Health and Safety Coordinator that must:

(a) have a minimum two (2) years' site-related working experience specific to activities associated with.(identify specific subject matter)

(b) have basic working knowledge of specified occupational safety and health regulations,

(c) be responsible for completing health and safety training session and ensuring that personnel not successfully completing the required training are not permitted to enter the site to perform the Work,

(d) be responsible for implementing, enforcing daily and monitoring the site-specific Health and Safety Plan, and

(e) be on site during execution of the Work.

The parties acknowledge that in lieu of employing an OHS professional, the Contractor may provide same by sub-contracting for such services.

4.8 Upon completion of the work the Contractor covenants and agrees to participate with the NCC in a post performance interview to evaluate the performance of the Contractor in respect of the OHS obligations under the contract. Without limiting the generality of the foregoing, the interview will identify areas of compliance and non-compliance in terms of:

(a) actual performance of the work;

(b) reporting or procedural requirements;

(c) resolution of deficiencies.

The contractor acknowledges and agrees that the results of the post-completion interview may be relied upon by the NCC in evaluating bids subsequently submitted by the Contractor on other NCC projects.

Security Requirements

The NCC complies with Treasury Board's *Policy on Government Security* and consequently, it will require that the Contractor's employees submit to a personal security screening process (Security Clearance Form TBS/SCT 330-60E). The NCC may also perform a credit check when the duties or tasks to be performed require it or in the event of a criminal record containing a charge/offence of a financial nature.

The NCC reserves the right to not award the Contract until such time as the Contractor's core employees have obtained the required level of security screening as identified by the NCC's Corporate Security. In this case the level of security required will be **Reliability/Site Access/Secret**.

The NCC also reserves the right to request that the Contractor submit to a *Designated Organisation Screening* and/or *Facility Security Clearance*– depending on the nature of the information it will be entrusted with. In the event that the Contractor does not meet the requirements to obtain the requested clearance, the Contractor shall take the corrective measures recommended by the Canadian Industrial Security Directorate (of PWGSC) or by the NCC's Corporate Security in order to meet these requirements. If no corrective measures are possible or if the Contractor fails to take the recommended measures, then the Contractor shall be in default of its obligations under this Contract and the NCC shall have the rights and remedies listed in section 2.14, including the right to terminate the Contract without further notice to the Contractor.

Additional information

As part of their personal screening, individuals may be required to provide evidence of their status as a Canadian citizen or permanent resident as well as any other information/documentation requested by the NCC's Corporate Security in order to complete the screening.

The NCC reserves the right to refuse access to personnel who fail to obtain the required level of security screening.

The NCC reserves the right to impose additional security measures with respect to this Contract as the need arises.

Company Security Representative

The Contractor shall appoint one Company Security Representative (CSR) as well as one alternate (for companies who have more than five employees).

Selection criteria for the CSR and the alternate are the following:

- They must be employees of the Contractor;
- They must have a security clearance (the NCC will process the clearances once the individuals have been identified).

Responsibilities of the Company Security Representative

The CSR's responsibilities are the following:

- Act as liaison between the NCC's Corporate Security and the Contractor to ensure coordination;
- In collaboration with the NCC's Corporate Security, identify the Contractor's employees who will require access to NCC information/assets/sites **as well as any recurring subcontractors** (and their employees) who will require similar access and may not be supervised by the Contractor at all times during such access. Ensure that accurate and complete Personnel Security Screening documentation is

submitted to the NCC's Corporate Security for the employees/subcontractors who have been identified;

- Ensure that employees/subcontractors, upon notification of having been granted a reliability status, sign the *Security Screening Certificate and Briefing Form* and return to the NCC's Corporate Security;
- Ensure that only persons who have been security screened to the appropriate level and who are on a "need-to-know basis" will have access to information and assets;
- Maintain a current list of security screened employees/subcontractors;
- Ensure proper safeguard of all information and assets, including any information/assets entrusted to subcontractors;
- If a Security incident or suspected breach of security occurs, prepare and submit to the NCC an occurrence report as soon as possible.

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

.1 The work of this contract will take place in a historic building located in Ottawa, ON and consists of three roofs.

.2 The work of this contract is described by drawings and specification sections as identified in the Index Sections. For additional details refer to the General Requirements specification section for each of the three roofs.

.3 Site Supervisor: Provide competent site supervisor (minimum 10 years of experience), capable of managing the site operations of this Contract on a full-time basis during the duration of the implementation of the work of this Contract at the site.

.4 Site Safety Officer: Appoint a Site Safety Officer responsible for health and site safety for activities and duration of the implementation of the work of this Contract.

1.2 TIME OF START AND COMPLETION

.1 It is anticipated that preliminary site investigation, and approval of shop drawing, will begin on November 16th, 2017

.2 Construction for all three roofs shall begin on November 16th, 2017.

.3 Substantial Completion for all roofs shall be December 8th, 2017.

.4 Final Completion for all roofs shall be December 15th, 2017.

1.3 PRE-CONTRACT AWARD CONDITIONS

.1 Prior to the award of Contract, the Contractor must submit within 10 days of receiving the letter of notification: a site specific health and safety plan, corporate health and safety policy, and all other documents required by the letter of notification (Performance and Labour & Material bonds, insurance certificate, WSIB certificate), and information required for security access application.

.2 If the requested documentation is not received within 10 business days of receiving the letter of notification, the NCC reserves the right to proceed on to the next lowest compliant bidder.

.3 The NCC reserves the right to not award the Contract until such time as the contractor's personnel core employees, as well as any recurring subcontractors, have obtained the required level of security screening as identified by the NCC's Corporate Security.

.4 All visits to site shall be approved and coordinated through NCC Corporate Security.

1.4 ADDENDA

.1 Answers to questions directed to the NCC Representative and all amendments to the drawings or specifications during the tender period shall be issued in the form of Addenda.

.2 Addenda form part of the Contract Documents.

PART 2 ON-SITE ACTIVITIES

2.1 OCCUPANCY and USERS of the SITE

.1 The site & building will remain occupied during implementation of the work of this contract.

.2 The site also accommodates the following uses and services:
- .1 Administration offices;
- .2 NCC property management offices;
- .3 Heating plant operations and maintenance;
- .4 Security detachment;
- .5 Events and functions;
- .6 Public access to the grounds and gardens.

.3 Coordinate and cooperate with NCC so as to minimize conflict and impacts to other activities in building.

.4 Specific to the Work Area:
- .1 Contractor access to the work area will be from the gate entrance.

2.2 BUILDING/SITE SERVICES

.1 Services for this Contract: Existing and available services required for the work may be used by the Contractor without charge. Ensure capacity is adequate prior to imposing loads. Connect, use and disconnect at own expense and responsibility. The following itemizes availability of site services:
- .1 Water and electrical service are available.
- .2 The Contractor is to arrange and supply required services above and beyond what is available, in order to carry out work of this contract within the time period specified. Any such arrangements shall be at no additional cost to the Contract.
- .3 Provide 14 days' notice to and obtain requisite permissions from the NCC Representative and utility companies of any intended interruption of services. Keep duration of these interruptions to a minimum. These notifications shall be subject to review and acceptance by the NCC Representative.

2.3 USE OF SITE & FACILITIES

.1 The Contractor shall arrange with the NCC Representative and site security, a work schedule and procedures for access, deliveries and transportation of materials to and from the work site.

.2 Contractor Facilities: Contractor shall make provision for an administrative and lunch area with adequate lighting, heat, and ventilation for use by the Contractor and sub-contractors workforce.

.3 Communication: Contractor shall ensure provision of telecommunication equipment (i.e. cellular phones, email, etc.) necessary to ensure continuous progress of operations of the work of this contract on site.

.4 Protection and Hoarding, identification of the Designated Work Site Area: the Contractor shall clearly demarcate the work site area by erecting hoarding and/or fencing. Review proposed installations with NCC Representative.

.5 Temporary Barriers and Enclosures for mandatory hoarding around the Work area.
- .1 Erect hoarding indicated and as necessary to protect building occupants, the public, workers and property from injury or damage.

.6 Weather Enclosures
- .1 Provide weather-tight closures at openings in floors and roofs where required to protect building components as the work proceeds.
- .2 Design enclosures to withstand wind pressure.

.7 Storage: NCC Representative will establish on-site areas for storage of material.

.8 Waste bin shall be permitted in area designated and pre-approved by NCC Representative and shall be planned for minimal duration. Waste containers for potential designated substances shall be in accordance to applicable regulations.

.9 Materials and equipment shall not be permitted to encumber any area outside of the designated work site area unless pre-authorized by NCC Representative.

.10 Execute work with least possible interference or disturbance to the normal use of the building's operations. Confine the Work and operations of employees to limits indicated by Contract Documents and as directed by the NCC Representative. Make arrangements with NCC Representative to facilitate work as stated.

.11 Ventilation
- .1 Provide ventilation to prevent accumulation of dust, fumes, mists, vapours, or gases in areas of Work.
- .2 Provide ventilation through portable fan(s) exhausted to the out of doors to prevent migration of dust and debris within the building.
- .3 Dispose of exhaust materials in manner that does not contaminate adjacent areas.
- .4 Continue operation of ventilation and exhaust systems for sufficient time after cessation of operations to ensure removal of pollutants.

.12 Temporary Heating
- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2 Building electrical supply may be used. Ensure capacity is adequate prior to imposing loads. Connect, use and disconnect at own expense and responsibility. Coordinate with NCC Representative. Owner will pay for Electrical Utility usage costs.

.13 Parking: Access and parking on site for contractor's work force and sub-trades shall be as approved by NCC Representative at the start of the work. Parking along the entrance lane is strictly forbidden.

.14 Deliveries to the site shall be within pre-arranged and authorized time frames by NCC Representative and site security with a minimum 24 hours' notice.

.15 Provide for personnel and vehicle access. Maintain safe exiting routes from the site and building at all times.

.16 Waste Disposal: unloading and disposing of waste is only allowed after working hours: before 7:00am and after 6:00pm.

.17 The use of a boom trucks or lifts is only allowed after working hours: before 7:00am and after 6:00pm.

.18 Scaffolding may be erected to allow access to the roofs and upper floors. Scaffolding may not be erected along the entrance lane.

.19 Smoking is prohibited within 50 feet of buildings. A designated smoking area shall be identified by the NCC Representative. The Contractor is to ensure adequate sealed cigarette butt disposal.

.20 Washrooms: The Contractor shall provide his own washroom facilities. Use of water for the project and cleaning of equipment is strictly forbidden from any washrooms.

.21 Location of Utilities: Ensure locates of site services and infrastructures, including security systems, prior to any work. Where unknown services are encountered, immediately advise the NCC Representative and confirm findings in writing. Stop work immediately upon encountering services suspect of being part of the security infrastructure.

.22 Please follow the guidelines below, to respect adjacent users and functions within site:
- .1 Language and behaviour deemed inappropriate will not be tolerated on site.

.2 Talk at sound level deemed reasonable.
.3 Ensure staff and sub-trades dress appropriately while on site. Abstain from wearing profane depiction or graphics on pieces of clothing, equipment or hardhat.

2.4 SIGNAGE

.1 All signage for this project shall be bilingual in French and English.

.2 Proposed wording and signage shall be submitted for review and approval by NCC Representative.

.3 Contractor is to provide warning signage to clearly identify area under construction and access restrictions (protective gear, sign-in, etc.).

.4 No promotion signage will be permitted.

.5 No signage representing supply and installations companies and/or contractors and consultants shall be permitted.

2.5 CO-OPERATION WITH OTHERS and PUBLIC RELATIONS

.1 At all times during the design and construction activities of the work of this contract, the Contractor shall permit and facilitate access to the work site to NCC construction services and to NCC contracted consultants for design and implementation phases of this work.

.2 The Contractor may be in contact with users/visitors on site. If interacting with users/visitors to the site, the Contractor shall, at all times, be courteous, helpful and respectful to the users/visitors.

.3 Behaviour, demeanor and conduct at the work site shall be in good practices. Profane language from the Contractor's workforce is not acceptable at the work site.

.4 The Contractor shall at all times during work of this contract, respect traffic regulations of the site.

.5 Co-operate with site operations and maintenance staff and services at all times.

.6 Co-operate with Other Contractors retained for site operations and maintenance services.

2.6 DAMAGES

.1 Restore or replace to their original condition existing public and/or privately owned property, structures, finishes, services and/or utilities damaged during the execution of the work of this contract, or make adequate compensation to affected parties.

.2 The terms "restore" and "replace" include labour, equipment and material costs.

2.7 FIRE SAFETY

.1 Provide fire extinguishers to protect the work in progress.

.2 Advise NCC Representative of any work that would impede fire apparatus / personnel response.

.3 Know the location of nearest fire alarm box and telephone, including the emergency phone number.

.4 Observe at all times smoking regulations. There is no smoking in or near the Work. The NCC Representative will designate a smoking area.

2.8 ENVIRONMENTAL PROTECTION

.1 Fires

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

.2 Disposal of Wastes
.1 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

.3 Drainage
.1 Do not pump water containing suspended materials into waterways, sewer or drainage system.

.4 Tree and Plant Protection
.1 Protect trees and plants on site.

.5 Pollution Control
.1 Control emissions from equipment and plant to local authorities emission requirements.
.2 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

.6 Spills Reporting
.1 Prepare an environmental emergency measure plan and post at the place of work indicating:
.1 The site's refuelling area.
.2 The NCC Environmental Emergency Service telephone number (613) 239-5353. Call immediately in the event of accidental spill of fuel or other pollutant.
.2 Assume financial responsibility to clean up effects of spill.

2.9 WASTE DISPOSAL

.1 Unless otherwise indicated or specified, materials indicated for removal become the Contractor's property and shall be taken from site.

.2 Dispose of waste materials in accordance with requirements of authorities having jurisdiction and as described in the Contract Documents.

2.10 POWER/EXPLOSIVE ACTUATED FASTENING DEVICES

.1 Do not employ power guns using explosives without prior written permission of NCC Representative.

2.11 PROTECTION OF WORK AND SITE

.1 Protect finished work against damage until take-over.

.2 Protect hard and soft landscaping adjacent to the work form damage unless indicated or described otherwise.

.3 Protect adjacent building spaces and occupants against spread of dust, harmful vapours, hazardous materials and dirt. Use devices and methods that minimize inconvenience and risk to the occupants.

2.12 CUTTING AND PATCHING

.1 Do cutting and patching as indicated and as specified.

.2 In the absence of explicit indication or specification, and as directed by the NCC Representative, do cutting and patching as follows:
.1 Perform cutting, fitting, and patching to complete the Work.
.2 Remove and replace defective and non-conforming work that is to form the base or substrate for new work.
.3 Perform work to avoid damage to other work.

.4 Prepare surfaces to receive patching and finishing.
.5 Refinish surfaces to match adjacent finishes; for continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit, unless indicated otherwise.
.6 Make cuts with clean, true, smooth edges.

2.13 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures, outlets and distribution systems indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures, outlets and distribution systems to minimize interference between systems, to allow access for maintenance and to maximize the usable space.

.3 Inform the NCC Representative of a conflicting installation. Install as directed

.4 Inform NCC Representative of impending installation and obtain approval for actual location

2.14 EXISTING SERVICES

.1 Where work involves disruption of existing services:
.1 Execute work at times directed by NCC Representative,
.2 Submit schedule to and obtain approval from NCC Representative for any shutdown or closure of active services,
.3 Notify NCC Representative at least 14 days before service disruption,
.4 Adhere to approved schedule.

2.15 CLEAN-UP

.1 Provide on-site waste containers for collection of waste materials and debris and locate as directed by NCC Representative. Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.2 At the end of each work period, and more often if directed by the NCC Representative, remove debris from site, neatly stack material for use, and clean up generally. Conduct disposal operations to comply with municipal and site ordinances, anti pollution laws and as required by the Contract Documents.

.3 Upon completion, remove temporary protections installed under this contract and remove surplus materials. Make good defects noted at this stage.

.4 Cleaning during construction
.1 Clean-up work area as the work progresses in order to prevent migration of dust and debris.
.2 Clean as directed by the NCC Representative.

.5 Final clean-up
.1 For site, broom clean hard landscaped surfaces. Rake clean other landscaped areas. Hose down with water and wash hard landscaped surfaces as directed by NCC Representative.
.2 Broom clean all interiors before inspection process.
.3 Clean as directed by the NCC Representative.

2.16 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations, occupants, public and normal use of premises. Arrange with NCC Representative to facilitate execution of work.

PART 3 CONTRACT ADMINISTRATION

3.1 CONTRACT DOCUMENTS

.1 All contract documents are complementary. Items indicated in one and not in the other are deemed to be included in the contract work.

.2 Drawings are intended to convey the scope of work and to indicate general arrangements. Obtain NCC Representative's approval of exact locations before installation.

.3 Obtain direction from NCC Representative before proceeding if a possible obstacle or interference with an indicated installation is identified.

.4 When the Contractor encounters an obstacle or interference that could have been reasonably foreseen and the Contractor failed to obtain direction from the NCC Representative in the matter, the NCC Representative may require that the work of the Contractor be modified in whole or part in response to the obstacle or interference. The Contractor shall assume the costs of additional work arising from such work.

3.2 CODES, STANDARDS AND CONTRACT DOCUMENT CONFLICTS

.1 Unless otherwise specified or indicated, perform work in accordance with the National Building Code of Canada, current addition, and all applicable provincial or local building codes.

.2 In the instance of a conflict among building codes, referenced standards and contract documents, the more stringent requirement shall apply.

.3 In the instance of a conflict between the Master General Requirements Specification section, and the General Requirements Specification section part of each package, the more stringent requirement shall apply.

3.3 PERMIT, FEES & TAXES

.1 Contractor to pay all permit, fees & taxes properly levied by law Federal, Provincial, Municipal and other regulatory bodies.

.2 Obtain all permits required for the work of this contract Provide authorities with plans and information for acceptance certificates. Provide inspection certificates as evidence that work conforms to requirements of Authority having jurisdiction.

.3 Occupancy permit: The Contractor shall be responsible for obtaining the occupancy permit confirming compliance of the completed Work.

.4 Pay for and obtain certificates of verification from applicable municipal, provincial and federal authorities for Work of this Contract.

.5 Pay for and obtain municipal building permit for all packages except the Basement Abatement package. The NCC shall pay to obtain the municipal building permit for the Basement Abatement package and shall supply a copy to the Contractor.

3.4 SUBMITTALS

.1 Administrative

.1 Submit to NCC Representative submittals listed for review. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in the Work.

.2 Work affected by submittal shall not proceed until review is complete.

.3 Review submittals and stamp all submittals with Contractor’s shop drawing stamp prior to submission to NCC Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal

has been checked and coordinated with requirements of the Work and Contract Documents.

.4 Verify field measurements and affected adjacent Work are coordinated.

.2 Shop drawings and product data

.1 "Shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data that are to be provided by Contractor to illustrate details of a portion of the Work.

.2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connection, explanatory notes and other information necessary for completion of Work.

.3 Adjustments made on shop drawings by NCC Representative are not intended to change Contract Price.

.4 Make changes in shop drawings as NCC Representative may require.

.5 Submit one electronic copy in PDF format, unless indicated otherwise, of shop drawings for each requirement requested in specification Sections and as NCC Representative may reasonably request

.6 Submit one electronic copy in PDF format, unless indicated otherwise, of product data sheets or brochures for requirements requested in Specification Sections and as NCC Representative may reasonably request where shop drawings will not be prepared due to standardized manufacture of product.

.3 Samples

.1 Submit for review, samples as requested in respective Specification Sections and as indicated on the drawings.

.2 Deliver samples prepaid to NCC Representative's business address.

3.5 CONTRACT PRICE BREAKDOWN

.1 Within 10 working days following award of this contract, the Contractor shall submit a sample request for payment, identifying the contract price breakdown by activity and/or sub-trade for review and approval.

.2 Approved cost breakdown will be used as basis for progress claim payments.

3.6 PROJECT MEETINGS

.1 Administrative

.1 NCC Representative will schedule and administer regular progress meetings throughout the progress of work, at times, frequency and locations set by the NCC Representative.

.2 The NCC Representative will distribute written notice of each meeting in advance of meeting date to Contractor, Consultant, and all other affected parties.

.3 The Contractor shall attend.

.4 The Contractor shall ensure affected Subcontractors attend.

.5 The NCC Representative will record minutes and include significant proceedings and decisions and identify 'action by' parties.

.6 The NCC Representative will reproduce and distribute copies of minutes to meeting participants and affected parties not in attendance.

3.7 AS-BUILT DRAWINGS

.1 NCC Representative will provide two sets of white prints for record drawing purposes.

.2 Maintain project record drawings and record accurately all deviations from Contract documents as project progresses. Maintain on-going as-built records on site, ready for inspection during the course of the construction.

.3 Update these drawings daily.

.4 Record changes in red. Mark on one set of prints and at completion of project and prior to final inspection, neatly transfer notations to second set and submit both sets to NCC Representative.

.5 Provide a cost for the As-Built Drawings in the Contractor cost breakdown.

3.8 DOCUMENTS REQUIRED ON-SITE

.1 Maintain at job site, one copy each of following:
- .1 Contract drawings,
- .2 Specifications,
- .3 Addenda,
- .4 Change orders,
- .5 Other modifications to Contract,
- .6 Approved work schedule,
- .7 Permits,
- .8 Field test reports,
- .9 Reviewed shop drawings,
- .10 As-built drawings.

3.9 QUALITY OF EQUIPMENT, MATERIALS AND WORKMANSHIP

.1 Use only new materials, unless indicated otherwise.

.2 Exceed or meet the minimum requirements of standards referenced in the specifications, such as the Canadian Standards Association (CSA), and the National Building Code of Canada (current edition), and of all applicable federal, provincial, and municipal codes. In the case of conflict or discrepancy between these requirements, the most stringent applies.

.3 Workmanship
- .1 Workmanship shall be best quality, executed by workers experienced and skilled in respective duties for which they are employed.
- .2 Employ persons fit for and skilled in their required duties.
- .3 Assume the costs of redoing work that, in the NCC Representative's opinion, does not meet the specified quality of workmanship.

.4 Alternatives
- .1 The NCC Representative will only consider Alternatives
  - .1 for materials, products or processes specified with the term "and/or approved equivalent" applied and;
  - .2 submitted in accordance with the "General Instructions for Tendering".
- .2 The NCC Representative will approve alternatives that are in his opinion equal in material content, workmanship and quality to the materials, products or processes identified and at least conformant to the standards specified.
- .3 Assume the cost of additional work or modifications to the design due to the use of NCC Representative approved alternatives.

3.10 SECURITY CLEARANCE

.1 In accordance with the Security Policy of the Government of Canada, all persons undertaking work or services at the property covered by this contract shall be required to meet the requirements of a Site Access Reliability Check. The Site Access Security Assessment requires disclosure of information concerning:
- .1 financial information (credit check),
- .2 education,
- .3 employment history,

.4 personal history and relatives, and
.5 criminal record (if any) for which a pardon has not been granted. (Fingerprint impressions may be necessary).

.2 The NCC reserves the right to refuse access to personnel not passing a Site Access Reliability Check.

.3 Unless otherwise indicated, access to the site (employees, deliveries, visitors and pick-ups of materials, etc.) must be coordinated with and approved by NCC Representative.

.4 Reasonable care must be exercised to ensure the security of any material prepared or received in handling this project. No part of this project may be discussed, published, or displayed without the written permission of the NCC.

3.11 SITE SECURITY

.1 Provide site security as Contractor deems necessary to ensure protection of Contractor's materials, equipment, and building.

.2 Where security has been reduced by work of the Contract, provide temporary means to maintain security.

.3 Cooperate with NCC and security staff in maintenance of site security.

3.12 SECURITY AND CONFIDENTIALITY

.1 Exercise utmost care to ensure the security of any material prepared or received in handling this project.

.2 Without the prior written permission of the NCC Representative, do not distribute, publish, display or reproduce any documents, photographs, site plans, maps or information related to the project (or collected during the project), in any medium, including the internet.

.3 Without the prior written permission of the NCC Representative, do not disclose any documents, photographs, site plans, maps or information related to the project unless such disclosure:
.1 Is reasonably required to obtain necessary permits and approvals to perform the work;
.2 Is reasonably required to facilitate the contracting and performance of sub-contractors, consultants and other parties involved in completing the contracted work;
.3 Is required by law.

.4 When requested by the NCC, return to the NCC all copies of all site photographs and construction documents, site plans and maps related to the project.

.5 All the above restrictions apply to all sub-contracts for work and services related to the project.

3.13 RELICS AND ANTIQUITIES

.1 Protect relics and antiquities, items of historical or scientific interest and similar objects found during the course of work.

.2 Immediately notify NCC Representative of any findings and await NCC Representative's written instructions before proceeding with work adjacent to findings.

.3 If any vestiges of early human occupancy of the land are uncovered during construction, suspend construction activity and notify the NCC Representative.

.4 Relics, antiquities and items of historical or scientific interest shall remain the property of the Crown.

3.14 SCHEDULING OF WORK and RESTRICTIONS

.1 The Contractor shall schedule work activities to prevent and minimize any disruption to the occupants and users of the site. Disruptive work activities and their scheduling shall be done in co-ordination with the NCC Representative and site security

.2 Within 10 working days following notification of intent to award this contract, the Contractor shall submit and review with NCC Representative the sequencing of intended work and activity schedule for approval:
- .1 Work commencement.
- .2 Contractor's on-site mobilization area.
- .3 Protection, hoarding and temporary shoring structures.
- .4 Installation and delivery of equipment and waste disposal bins.
- .5 Deliveries of materials.
- .6 Sequencing of and preparation measures for dis-assembly and selective demolition, assembly and construction activities.
- .7 Identification of noisy and disruptive activities; identification of service interruptions.
- .8 Connection to site infrastructures for water, power, fire and security systems.
- .9 Testing and commissioning of components and systems.
- .10 Exterior landscaping.

.3 The Contractor shall submit to the NCC Representative for review the proposed implementation methodology for work of this Contract.

.4 Site Access Restriction: the site is secured and of restricted access. Individuals requiring access to the site will require pre-authorized site access security clearances.

3.15 SCHEDULE

.1 Submit a schedule of work for approval, in a form acceptable to NCC Representative and within ten (10) days of award of contract. Show in schedule dates for:
- .1 shop drawing, material lists and samples submissions;
- .2 equipment and material delivery;
- .3 work commencement and completion for each trade as corresponds to each trade section of the Specification;
- .4 Substantial and final completion date within time period required by Contract Documents.

.2 Submit updated schedules at each progress meeting and as reasonably requested by the NCC Representative.

3.16 HOURS OF WORK / WORK WEEK

.1 Standard authorised hours of work are Monday to Friday, 07:00 hours to 18:00 hours.

.2 Extended hours and weekend work shall be performed by Contractor to ensure work is completed on schedule. The Contract price will not be changed for this work.

.3 Obtain prior permission through NCC Representative for work outside of 07:00h to 18:00h / Monday to Friday time frame. Assume any extra costs for labour, material or equipment associated with work performed outside of the standard authorised time frame unless specifically requested by Owner.

3.17 WORK STOPPAGES, RESTRICTIONS AND INTERRUPTIONS

.1 Work stoppages constitute a request from the NCC Representative for on-site work to be stopped and the vacating of the site's by the Contractor's work forces for a determined period of time. The Contractor shall make provisions for the following work stoppages:

.1 Three (3) separate one (1) day work stoppages with a minimum of 24 hours' notice from October 1, to December 8, 2017.
.2 Three (3) separate half-day work stoppages with a minimum of 8 hours' notice from October 1 to December 8, 2017.
.3 Include in the contract price for the cost of these work stoppages, restrictions and interruptions.
.4 Substantial Performance and Total Completion dates will not be changed as a result of these work stoppages.
.5 Include for and indicate all the work stoppages in the Contractor prepared schedule.

3.18 PROJECT COORDINATION

.1 Coordinate progress of the Work, progress schedules, submittals, use of the site, temporary utilities and construction facilities and controls.

3.19 SETTING-OUT OF WORK

.1 Provide devices needed to lay out and carry out the work. Supply such devices as required to facilitate NCC Representative's inspection of work.

3.20 CO-ORDINATION of the WORK and SUB-TRADES

.1 Co-ordination of the work: It is the Contractors' responsibility to co-ordinate work to be carried out as identified in the contract documents between all trades.

.2 Should there be discrepancies, conflicts in the instructions of the contract documents and/or conflicts with applicable regulations, the Contractor shall notify the NCC Representative prior to proceeding with implementation of the work and wait for instructions and directions on how to proceed.

.3 Manage the sequencing of the work activities in consideration of health and safety of the work area and adjacent structures and site.

.4 Ensure adequate access and equipment is supplied for work of the contract.

.5 Cut surfaces as required to accommodate work.

.6 Remove, dis-assemble all items so shown or specified. Identify, protect from damage components to be retained for re-installation.

.7 Patch and make good surfaces cut, damaged or disturbed, to NCC Representative's approval. Match existing material, colour, finish and textures unless indicated otherwise.

PART 4 EXECUTION

4.1 NOT USED

.1 Not used.

END OF SECTION

Fishburn Sheridan & Associates Ltd.

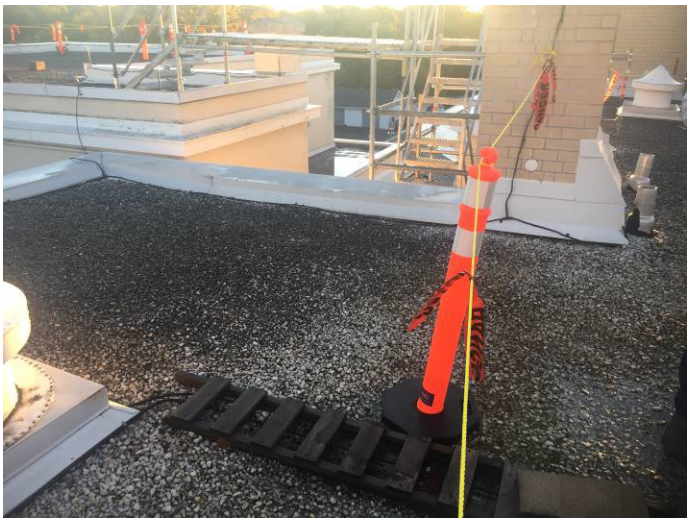
2017-10-18 FSA Project #: 17345DO

APPENDIX A

Project: **Roof Replacement, Roof Area 2**
Réfection de Toiture, Toit 2

Main Building, Roof
Ottawa

ROOF AREA 2 – PHOTOS
TOIT 2 - IMAGES



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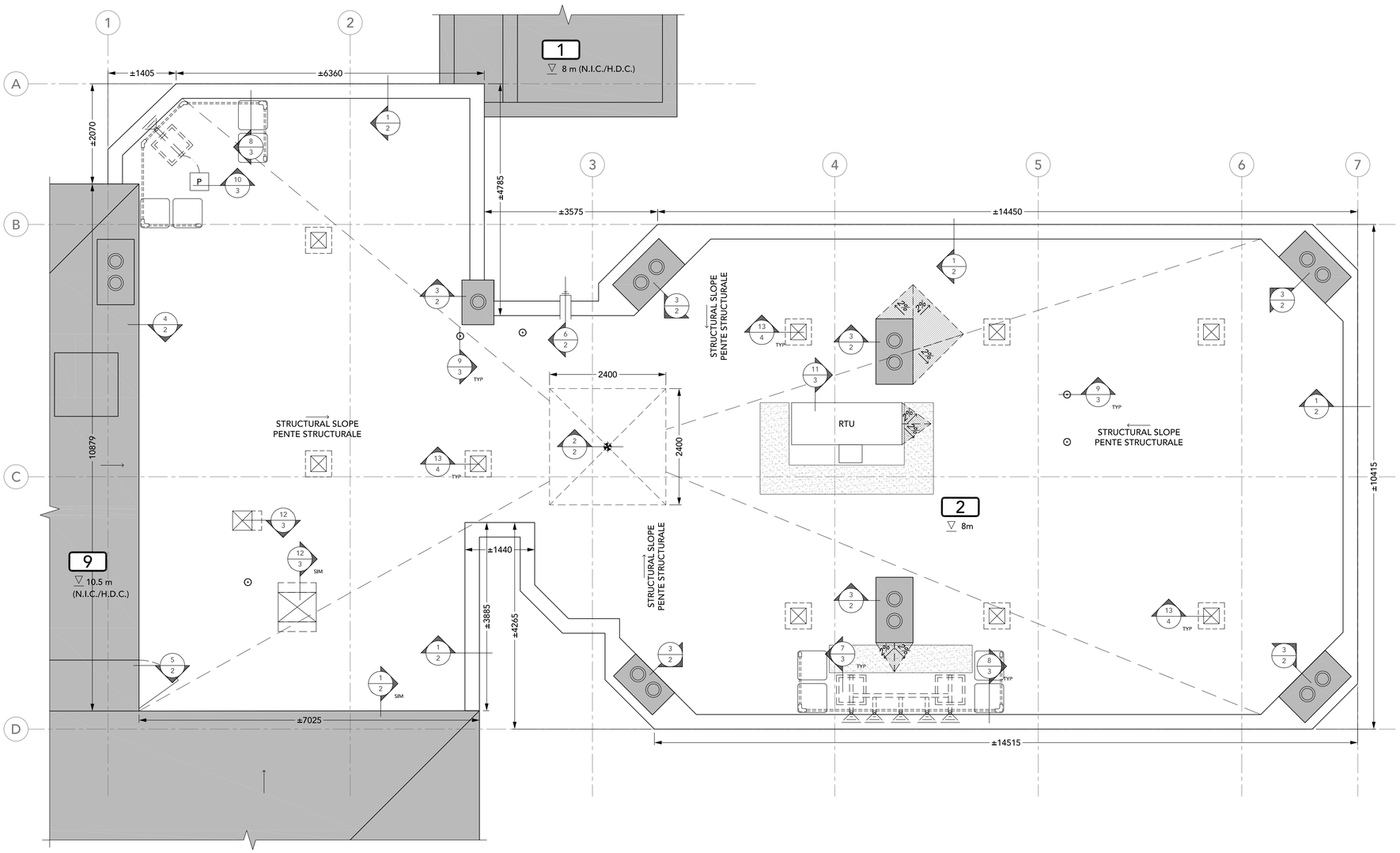


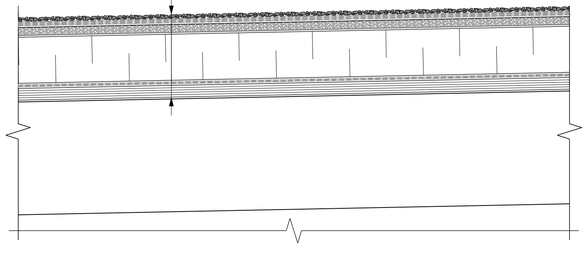
ROOF PLAN / PLAN DU TOIT

1:50

LEGEND / LÉGENDE

SYMBOL / SYMBOLE	DESCRIPTION
	BALLASTED GUARDRAIL GARDE-CORPS STATIONNAIRE
	CHIMNEY CHEMINÉE
	CONCRETE PAVER DALLE DE BÉTON
	DOOR OPENING PORTE D'ACCÈS AU TOIT
XXXX	EXTENT AND DIRECTION OF STRUCTURAL SLOPE AIRE ET DIRECTION DE LA PENTE STRUCTURALE
	GOOSENECK EXHAUST ÉVENT COL-DE-SIGNE
	LIGHT FIXTURE MOUNTED ON PAVER LAMPE FIXÉE SUR DALLE DE BÉTON
	PAVER DALLE DE BÉTON
P	PIPE ENCLOSURE SORTIE POUR TUYAUTERIE
	PLUMBING VENT ÉVENT DE PLOMBERIE
	PROTECTIVE MEMBRANE MEMBRANE DE PROTECTION
	ROOF DRAIN WITH SUMP DRAIN DE TOIT ET PUISARD
XX XX	ROOF NUMBER AND ELEVATION NUMÉRO ET HAUTEUR DU TOIT
RTU	ROOFTOP UNIT UNITÉ MÉCHANIQUE
	SCUPPER GARGOUILLE
	LOUVERED VENT ÉVENT STATIQUE D'ENTRETOIT
	CRICKET

EXISTING ROOF SYSTEM / SYSTÈME DE TOITURE EXISTANTE E1:
- 4-PLY BUR MEMBRANE WITH GRAVEL / MEMBRANE MULTICOUCHE DE 4 PLIS AVEC GRAVIER
- 13 mm FIBREBOARD / PANNEAU DE FIBRE DE BOIS DE 13 mm
- 76 mm FIBREGLASS INSULATION / ISOLANT DE FIBRE DE VERRE DE 88 mm
- 2-PLY BUR AIR/VAPOUR BARRIER / PARE-VAPEUR MULTICOUCHE DE 2 PLIS
- SLOPED WOOD DECK / PONTAGE DE BOIS EN PENTE

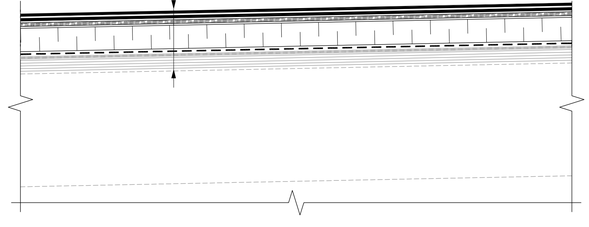


E1 / 1 — EXISTING ROOF SYSTEM / SYSTÈME DE TOITURE EXISTANTE E1

1:5

ROOF AREA / TOIT 2

TYPICAL ROOF SYSTEM / SYSTÈME DE TOITURE TYPIQUE R1:
- 2-PLY MOD. BIT. MEMBRANE / MEMBRANE DE BITUME MODIFIÉ
- 6 mm PROTECTION BOARD / PANNEAU DE SUPPORT DE 6 mm
- 38 mm POLYISO INSULATION / ISOLANT DE POLYISO DE 50 mm
- 1-PLY SELF-ADHERED AIR/VAPOUR BARRIER / MEMBRANE PARE-VAPEUR
- EXISTING 2-PLY BUR AIR/VAPOUR BARRIER / PARE-VAPEUR MULTICOUCHE DE 2 PLIS
- EXISTING WOOD DECK / PONTAGE DE BOIS EXISTANT



R1 / 1 — TYPICAL ROOF SYSTEM / SYSTÈME DE TOITURE TYPIQUE R1

1:5

ROOF AREA / TOIT 2

NCC CCN

Canada

Capital Planning and Real Asset Management Branch
Direction de l'aménagement de la capitale et gestion de l'immobilier

Design and Construction Division
Division design et construction

director - Claude Robert - directeur

consultant
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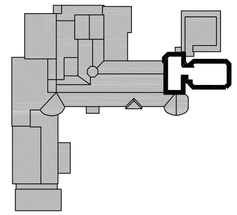
Key Plan
Plan Repère



NOTES / NOTES :

1. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL DIMENSIONS AND CONFIRM EXISTING CONDITIONS.
   L'ENTREPRENEUR EST RESPONSABLE DE VÉRIFIER TOUTES LES DIMENSSIONS ET DE CONFIRMER LES CONDITIONS EXISTANTES.
2. NOTIFY CONSULTANT IMMEDIATELY OF ANY DEVIATIONS FROM ASSUMED EXISTING CONDITIONS AS THEY ARE ENCOUNTERED ON SITE.
   INFORMER LE CONSULTANT IMMÉDIATEMENT POUR LES VARIANCES ENTRE LES CONDITIONS EXISTANTES ASSUMÉES ET CELLES RETROUVÉES AU CHANTIER.
3. TEMPORARILY REMOVE AND SUPPORT ELECTRICAL BOXES AND CONDUIT RUNNING ON ROOF SURFACES. REINSTATE UPON COMPLETION AND RE-SECURE AS REQUIRED.
   ENLEVER ET SUPPORTER TEMPORAIREMENT LES BOÎTES ET CONDUITS ÉLECTRIQUE QUI SE RETROUVENT SUR LE TOIT. RÉINSTALLER À LA FIN DES TRAVAUX ET LES FIXER AU BESOIN.
4. DRAWINGS ARE NOT TO BE SCALED.
   LES DESSINS PEUVENT NE PAS ÊTRE À L'ÉCHELLE.

issued or revised
émis ou revisé

no.	description	date
1	FOR TENDER/ POUR SOUMISSION	2017-10-18
1	FOR REVIEW / POUR RÉVISION 90%	2017-10-17
no.	description	date

project
projet

MAIN BUILDING ROOF
OTTAWA, ONTARIO
ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 2 / TOIT 2

drawing
dessin

ROOF PLAN / PLAN DU TOIT

reviewed by révisé par	J. C. / R. S.
designed by conçu par	M. P.
drawn by dessiné par	J. M.
FSA #	17345DO
date 2017-10-17	scale échelle VAR.
NCC project no. no. du projet de la CCN	sheet no. no. de la feuille
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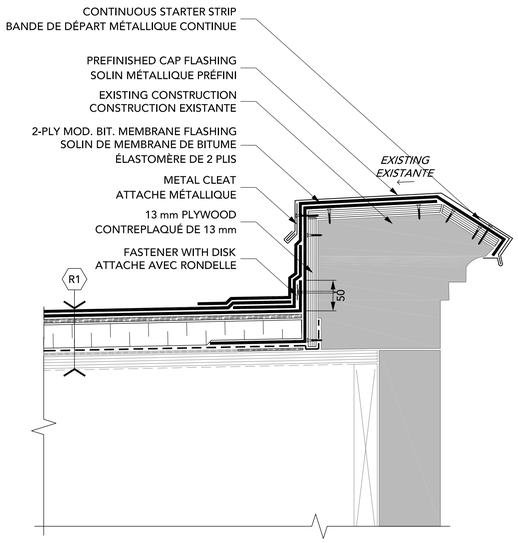

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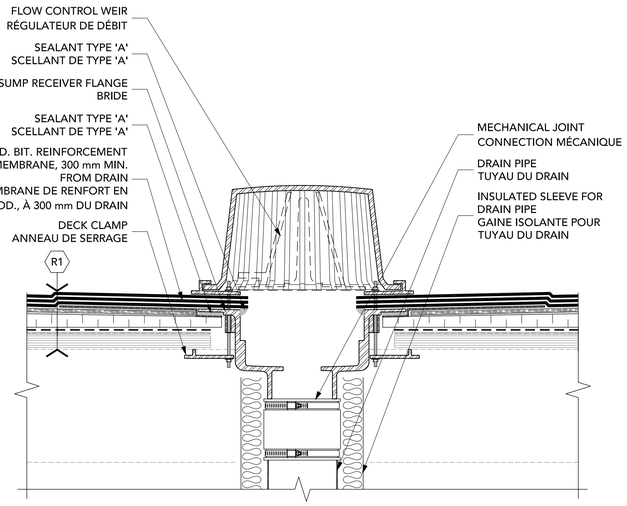
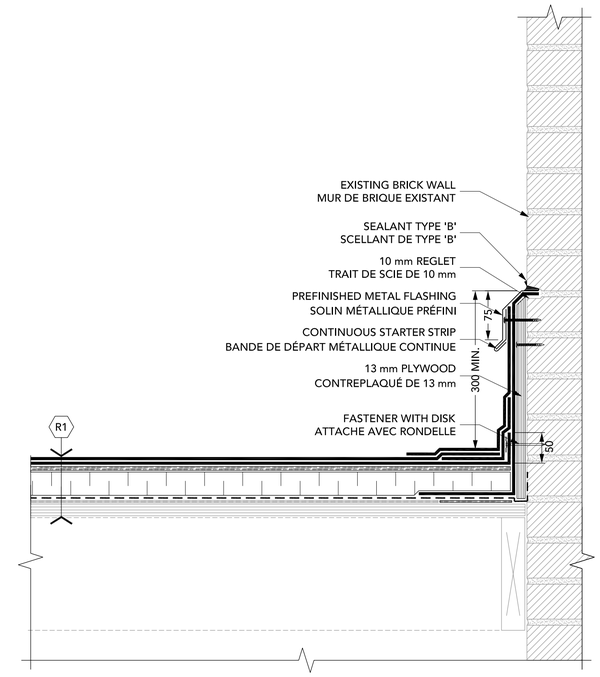


2/2 ROOF DRAIN / DRAIN DE TOIT
1:5



3/2 WALL FLASHING / SOLIN MURAL
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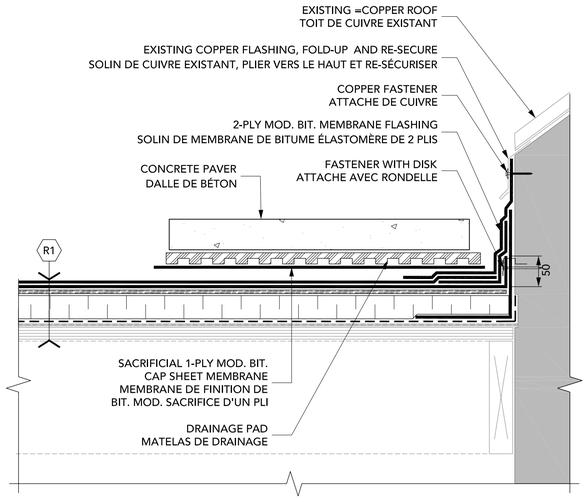

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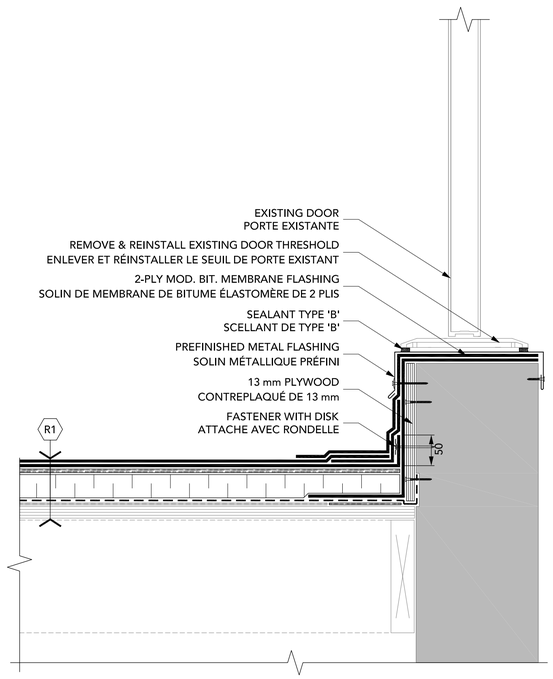
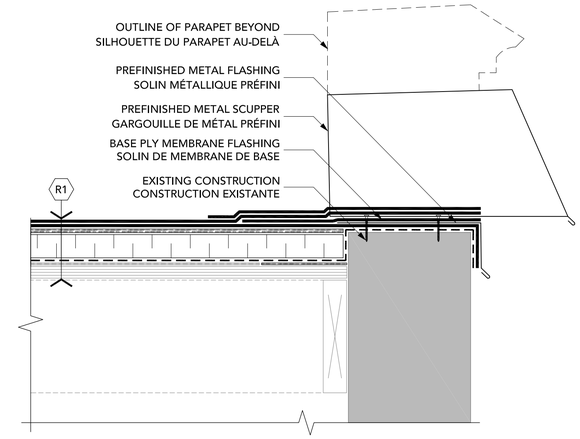
1:5



5/2 DOOR FLASHING / SOLIN AU SEUIL DE PORTE
1:5



6/2 SCUPPER / GARGOUILLE
1:5

NCC CCN
Canada

Capital Planning and Real Asset Management Branch
Direction de l'aménagement de la capitale et gestion de l'immobilier

Design and Construction Division
Division design et construction

director - Claude Robert - directeur

consultant
expert-conseil

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Key Plan
Plan Repère

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émis ou revisé

no.	description	date
1	FOR TENDER/ POUR SOUMISSION	2017-10-18
1	FOR REVIEW / POUR RÉVISION 90%	2017-10-17

project
projet

MAIN BUILDING ROOF
OTTAWA, ONTARIO
ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 2 / TOIT 2

drawing
dessin

DETAILS / DÉTAILS

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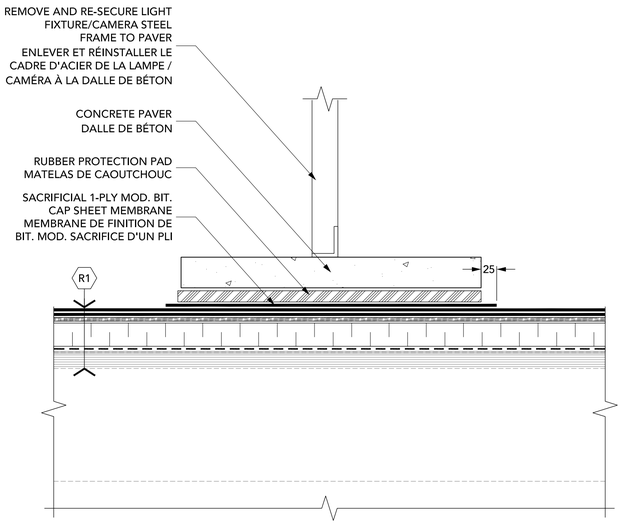
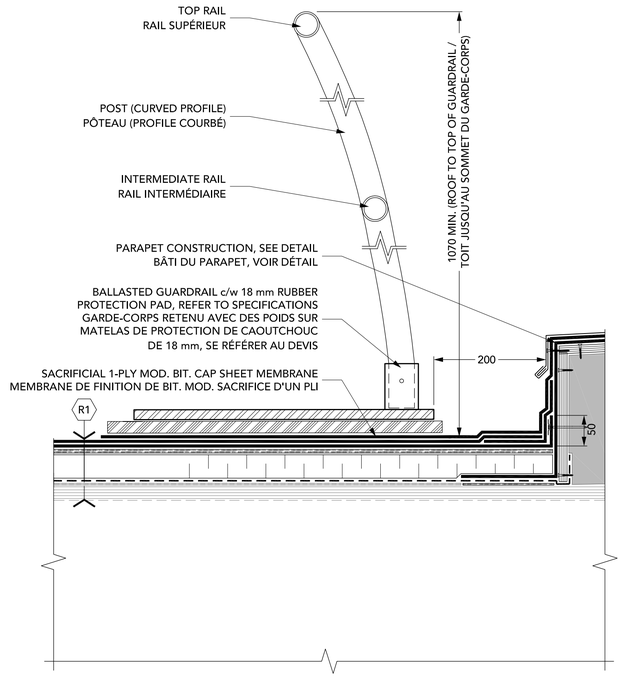


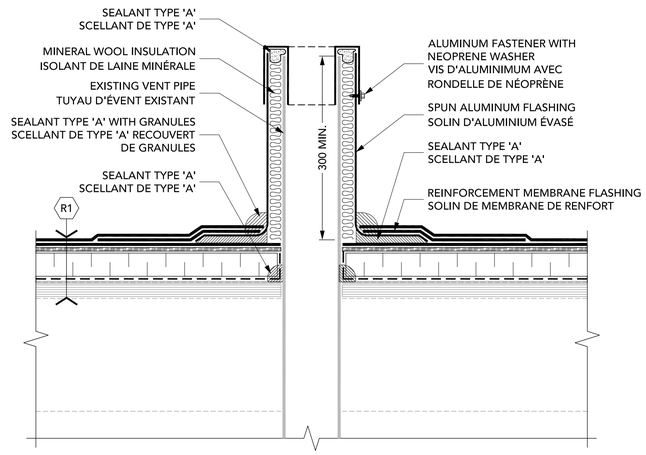
7/3 CONCRETE PAVER / DALLE DE BÉTON

1:5



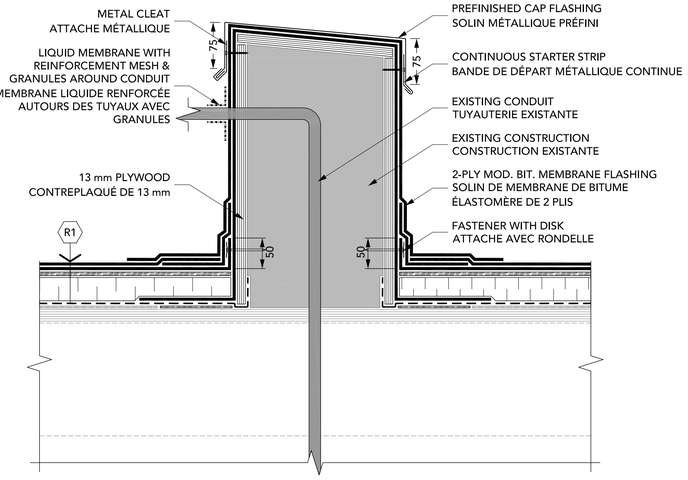
8/3 BALLASTED GUARDRAIL / GARDE-CORPS STATIONNAIRE

1:5



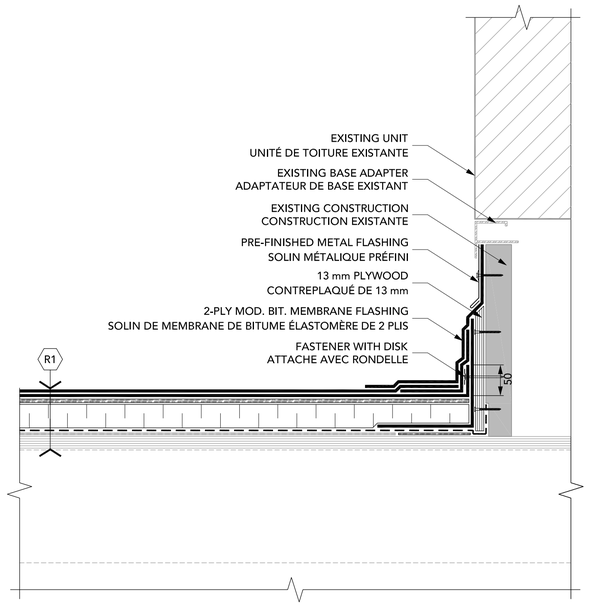
9/3 PLUMBING VENT / ÉVENT DE PLOMBERIE

1:5



10/3 PIPE ENCLOSURE / SORTIE POUR TUYAUTERIE

1:5



11/3 ROOFTOP UNIT / UNITÉ MÉCANIQUE

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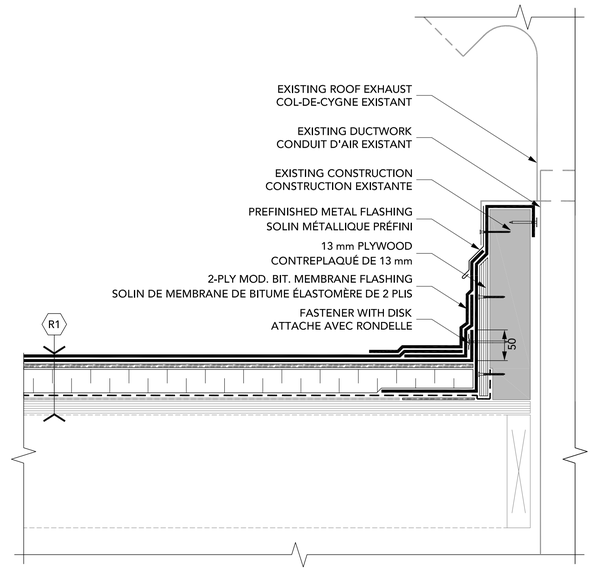

12/3 ROOF EXHAUST / COL-DE-CYGNE

1:5

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projet

MAIN BUILDING ROOF

OTTAWA, ONTARIO

ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 2 / TOIT 2

drawing
dessin

DETAILS

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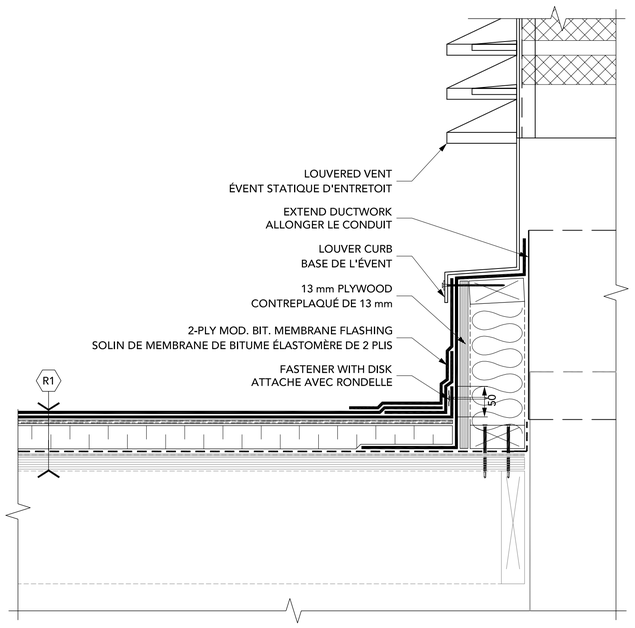

13/4 LOUVERED VENT / ÉVENT STATIQUE D'ENTRETOIT

1:5

NCC CCN

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MAIN BUILDING ROOF

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ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 2 / TOIT 2

drawing
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SPECIFICATIONS FOR

ROOF REPLACEMENT
ROOF AREA 2

MAIN BUILDING, ROOF

OTTAWA, ONTARIO

Prepared for:

National Capital Commission
202-40 Elgin Street
Ottawa, Ontario K1P 1C7

Prepared by:

Fishburn Sheridan & Associates Ltd.

110 – 150 Katimavik Road, Ottawa, Ontario K2L 2N2
T: 613-831-7293 | F: 613-831-3812 | www.fsaeng.com

FSA Project No.: 17345DO

October 2017

END OF SECTION

Part 1 General

1.1 GENERAL DESCRIPTION OF THE WORK

.1 Work to be carried out under this Contract, Roof Replacement in Ottawa, Ontario.

.2 Provide the necessary labour and materials to complete the removal of the existing roofing system, existing curbs, sheet metal flashings and membrane down to the existing structural deck and install new roofing system as specified herein.

.3 The new roof system shall be as follows and as specified in the areas indicated on the drawings:

.1 Typical Roof System R1:

.1 Existing wood deck.

.2 Existing 2-ply BUR air/vapour barrier

.3 Air/vapour barrier.

.4 38 mm polyiso insulation.

.5 Sloped polyiso insulation as indicated on the drawings.

.6 6 mm protection board.

.7 2-ply modified bituminous membrane.

.4 Supply and installation of related rough carpentry at parapets, walls and curbs.

.5 Supply and install all sheet metal and copper flashings and all other roof related metal flashings required to complete roof installation.

.6 Supply and installation of all sealants required to seal the transition of membrane and related metal detailing and the termination of sheet metal and non-membrane surfaces.

.7 Supply and installation of new roof drains as detailed and indicated on the drawings. New drains shall be in the same locations and shall include all required clamps, hangers, insulation, vapour wrap and all other items required to complete the new drain installation.

.8 Supply and installation of self-ballasting guardrails as indicated on the drawings.

1.2 DEFINITIONS

.1 "CONSULTANT" and “Fishburn Sheridan & Associates Ltd.” and “FSA” are synonymous.

.2 "OWNER" and **“**National Capital Commission” and “NCC” are synonymous.

.3 “CONSTRUCTOR” and “CONTRACTOR” are synonymous.

1.3 OTHER CONTRACTORS

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

1.4 USE OF THE SITE

.1 Carry out the Work so as to have the least possible interference and disturbance to the normal use of the premises. The successful bidder is expected to include in the bid an allowance for the performance of off-hours work should it be required to conform with the above.

.2 Maintain services to existing building and provide for personnel and vehicle access.

.3 Restrict construction access to and from site to approved location. Do not allow construction traffic to block entrances or exits for any reason.

.4 Co-ordinate any interference with Owner's operation in this area and abide by Owner's direction in this regard. In cases of conflicting requirements, Owner's operation takes precedence but all reasonable effort to accommodate Contractor's needs will be made.

1.5 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.

.2 Remove abandoned service lines within 2.4 m of structures. Cap or otherwise seal lines at cut-off points as directed by Consultant.

.3 Services are to be left operational unless otherwise authorized by Owner.

.4 Unless otherwise specified, the Contractor will be responsible for disconnection, relocation, re-installation and extending all services required to facilitate work under this Contract. Co-ordinate work with the Owner and provide minimum 48 hours notification if services are to be interrupted.

1.6 CUTTING AND PATCHING

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

1.7 PROTECTION OF PROPERTY

.1 Protect surrounding private and public property from damage during the performance of the Work.

.2 Be responsible for damage incurred.

1.8 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during the performance of the Work as required by insurance companies and governing codes, regulations and by-laws having jurisdiction.

.2 Work requiring the generation of open flames (welding, soldering, etc…) cannot be performed until an Owner’s Permit has been issued. It is the responsibility of the successful bidder to apply for here said permit.

.3 Open fires and burning of rubbish are not permitted on site.

1.9 OCCUPATIONAL HEALTH AND SAFETY

.1 Follow the Ontario Provincial Occupational Health and Safety Act and Regulations for Construction Projects. For the purposes of the act, the person or company contracted to carry out the work shall be deemed the **"Constructor".**

.2 Hazardous materials, not identified by the Owner, may be encountered at the worksite. Use all necessary precautions when handling such material. It is possible that asbestos may exist in some form and if encountered the Contractor is responsible to notify the Owner and to follow Ontario Ministry of Labour regulations governing the handling of asbestos in the workplace.

.3 The Owner may cause those who do not comply with the O.H.S.A. and Regulations to be escorted from the site.

1.10 PROTECTION OF BUILDING FINISHES AND EQUIPMENT

.1 Prevent movement, settlement, or other damage to other adjacent structures, utilities, and parts of building to remain in place. Provide bracing and shoring if required.

.2 Keep noise, dust, and inconvenience to occupants to a minimum.

.3 Protect building systems, services and equipment. Protect all furnishings within work area with (6 mil) polyethylene film during construction. Remove film during non-construction hours and leave premises in clean, unencumbered and safe manner for normal daytime function.

.4 Provide temporary dust tight screens, partitions, covers, railings, barricades, supports and/or other protection as required. Protect workers, finished areas of work and public.

1.11 PARKING

.1 Parking is available on site.

.2 All vehicles must be parked in designated parking areas (except for reasonable loading and unloading of equipment and/or materials to a local entrance). Failure to observe these requirements may result the vehicle being ticketed and/or towed.

1.12 SIGNS AND ADVERTISEMENTS

.1 No signs or advertisements of any description other than notices regarding safety shall be displayed at the Work Site without permission of the Owner.

.2 Upon completion of the Work, all signs shall be removed except those specifically directed by the Owner to remain.

1.13 CLEAN-UP

.1 Maintain the work area in tidy condition, free from the accumulation of waste products and debris.

.2 Remove waste and materials regularly so as to maintain a tidy work site. Do not dispose of any waste in the Owner's facilities unless specifically directed to do so by authorised personnel.

.3 Store materials in areas specially designated by the Owner. Dispose of this debris in a legal manner so as to avoid causing a hazard to occupants and visitors on site.

1.14 MATCHING

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

1.15 PERMITS, FEES, CERTIFICATES

.1 A Building Permit will not be required for this project.

.2 Arrange and pay for all inspection certificates required by Authorities having jurisdiction, (i.e., Electrical Safety Authority Certificate). Provide the Owner with copies of these certificates upon completion.

1.16 DISRUPTION OF SERVICES

.1 The Contractor is responsible to provide adequate written notice to the Owner of any interruption of services (i.e., mechanical, electrical etc.) for the connection of new services or the alteration of existing.

.2 The Contractor is expected to co-operate reasonably with the Owner in the scheduling of service interruptions.

1.17 SANITARY FACILITIES

.1 Temporary sanitary facilities will be provided by the Constructor in compliance with the Occupational Health and Safety Act and Regulations for Construction Projects.

1.18 POWER

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

1.19 WATER SUPPLY

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

1.20 TEMPORARY FACILITIES

.1 Any temporary facilities provided at the site by the Contractor must be removed upon completion of the work and the area used must be returned to the original condition.

1.21 DOCUMENTS REQUIRED

.1 Maintain at the job site, one copy each of the following:

.1 Original Plans and Specifications and completed Form of Tender.

.2 Building Department stamped drawings if required.

.3 Any changes to Drawings or Details.

.4 Shop Drawings and any changes.
.5 Addenda.
.6 Change Orders.
.7 Site Instructions.
.8 Contractor's Safety Policy.
.9 Safety Data Sheets.

1.22 WORK SCHEDULE

.1 Within 5 working days of intent to award, provide a schedule showing anticipated progress stages and final completion of the Work within the specified time period, indicating each trade and inter-phasing. Allow for expected poor weather days.

1.23 CHANGES IN WORK

.1 All changes to the Contract Documents which result in an extra or credit to the Contract amount or time are not to be executed until written instructions have been received and the extra or credit agreed to in writing by all parties.

.2 Execute variations, alterations and substitutions that do not affect the intent, function, duration, or Contract amount, as instructed by the Consultant.

.3 Changes to the work that are considered urgent by the Owner shall be acted upon by the Contractor on the basis of a written field instruction to be confirmed by a Change Order. Costs are to be kept and presented along with all appropriate timesheet vouchers and bills of materials, or fixed sum if, work is done by a Sub-Contractor on a lump sum basis.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 American National Standard / American Society of Safety Engineers (ANSI/ASSE):

.1 ANSI/ASSE A1264.1-2007 Safety Requirements for Workplace Walking/Working Surfaces and their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrail Systems.

.2 ASTM International

.1 A27/A27M-13 Standard Specification for Steel Castings, Carbon, for General Application

.2 ASTM A 47-2014, Standard Specification for Ferritic Malleable Iron Castings.

.3 ASTM A500-13 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

.4 ASTM B 221M-13, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

.5 ASTM B429//B241M-10e1, Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

.6 ASTM E935-13e1, Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.

.3 National Research Council Canada (NRC)

.1 National Building Code of Canada 2015 (NBC).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with the following:

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for guarddrails and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit manufacturer’s installation instructions with project specific annotations to suit project conditions.

.3 Shop Drawings:

.1 Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

.2 Indicate installation of guardrails including but not limited to plans, elevations, sections, details of components, anchor details and clearances to adjacent assemblies. Indicate critical field dimensions and conflicts.

.3 Indicate installation conditions at obstructions or at junction with adjacent construction as necessary to provide continuity of protection.

.4 Parts List:

.1 Submit parts list indicating manufacturer's name, part number and name, quantity required for complete installation.

.5 Certifications:

.1 Submit certification that modular guardrail system has been tested in accordance with ASTM E935, that it conforms to requirements of ANSI/ASSE A1264.1 and to workplace safety requirements of authority having jurisdiction.

.6 Modular guardrail system shall be the standard product of a manufacturer regularly engaged in the engineering design and manufacture of such products. System shall consist of components that have been in satisfactory use for at least 2 years prior to date of tender issue.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements:

.1 Deliver products to site in original factory packaging, labelled with manufacturer's name and address, and list of contents of each package.

.2 Inspect products for any damage or deformation. Remove damaged products from site and replace with matching undamaged products.

.3 Check package contents list against submitted parts list to ensure all components necessary for a complete installation have been delivered.

.3 Storage and Handling Requirements:

.1 Store material in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect guardrail components from all damage. Protect finish from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MANUFACTURED UNITS

.1 Acceptable manufacturer and product list:

.1 KeeGuard, by Kee Safety Inc.

.2 RoofBarrier, by Skyline Group.

2.2 DESIGN CRITERIA

.1 Installed guardrail assembly and anchorage shall conform to ANSI/ASSE A1264.1, structural requirements of NBC 2015 and workplace safety requirements of authority having jurisdiction.

.1 In case of conflicting requirements, the more stringent requirement shall apply.

2.3 MODULAR STEEL GUARDRAIL SYSTEM

.1 Refer to drawings for proposed design concept.

.2 Rails: 32 or 38 mm diameter structural steel to ASTM A53.

.3 Posts: 32 or 38 mm diameter structural steel tubing to ASTM A500 curved profile as indicated.

.4 Fittings: elbows, T-shapes, couplings, machined steel castings to ASTM A27 with locking stainless steel set screws.

.5 Non-Penetrating (Ballasted) Installation: weighted base mounting plate with non-abrasive non-slip resilient pad, with integral receivers to secure and fasten posts.

.6 Exposed Fasteners: flush countersunk screws or bolts; consistent with design of railing.

.7 Splice Connectors: collar with locking set screws, galvanized steel.

.8 Galvanizing: to ASTM A153, provide minimum 600 g/sq m galvanized coating.

.1 Touch-Up Primer for Galvanized Surfaces: SPCC 20 Type I Inorganic zinc rich.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for handrail installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Consultant.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant.

3.2 INSTALLATION

.1 Assemble and install modular guardrail system in accordance with manufacturer's instructions, accepted shop drawings and as necessary to provide continuity of protection.

.2 Install components plumb and level, in proper alignment with adjacent assemblies.

.3 Ensure guardrails extend beyond posts as required to leave no more than 100 mm gap to adjacent walls.

.4 At non-penetrating or freestanding guardrail, set posts into weighted base plates and secure.

.5 At curb mount guardrail, set mounting bracket in roof mastic and secure to skylight curb as shown on the drawings.

.6 Conceal bolts and screws whenever possible.

.7 Assemble with fittings, spigots, sleeves and set-screws to produce secure, vibration-resistant installation.

3.3 CLEANING

.1 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by hand rail installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 52 00 – Modified Bituminous Membrane Roofing.

.2 Section 07 62 00 – Sheet Metal Flashing and Trim.

.3 Section 07 92 00 – Joint Sealants.

.4 Section 22 05 11 – Plumbing and Drainage.

1.2 REFERENCES

.1 ASTM International

.1 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 CSA International

.1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
.2 CSA O141-05 (R2009), Softwood Lumber.
.3 CSA O151-09, Canadian Softwood Plywood.

.3 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber 2010.

.4 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S702-14, Standard for Mineral Fibre Thermal Insulation for Buildings.
.2 CAN/ULC-S702.2-10, Standard for Mineral Fibre Thermal Insulation for Buildings, Part 2: Application.
.3 CAN/ULC-S705.1-01, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.
.4 CAN/ULC-S705.2-05, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Application.

1.3 QUALITY ASSURANCE

.1 Lumber identification: By grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood identification: By grade mark in accordance with applicable CSA Standards.

1.4 PRECAUTIONS

.1 Provide temporary protection, to the satisfaction of the Consultant, to render all wood blocking watertight, if for any reason permanent membrane protection cannot be provided within the same day. Ensure the base of any curbs are

temporarily sealed to prevent water from entering below the curb assembly, or behind sheathing, should the roof assembly not be completed on the same day as the carpentry work.

Part 2 Products

2.1 LUMBER MATERIAL

.1 Lumber: Unless specified otherwise, softwood, S2S, moisture content 19% or less in accordance with following standards:

.1 CSA O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Furring, blocking, nailing strips, grounds, rough bucks, curbs:

.1 S2S is acceptable for all surfaces.

.2 Board sizes: "Standard" or better grade.

.3 Dimension sizes: "Standard" light framing or better grade.

.4 Post and timbers sizes: "Standard" or better grade.

2.2 PANEL MATERIALS

.1 Canadian softwood plywood (CSP): To CSA 0151.

.1 Urea-formaldehyde free.

2.3 FASTENERS

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

.2 Plywood to concrete, brick or hollow masonry fasteners: Tapcon 6 mm diameter screws. Length to provide minimum 32 mm and maximum 40 mm embedment into substrate as required. Drill holes 13 mm deeper than depth of fastener penetration. Type to be approved subject to results of pull tests.

.3 Nails, spikes and staples: To CSA B111.

2.4 ACCESSORIES

.1 Semi-rigid insulation: semi-rigid mineral wool, rockwool, or slagwool boards, to CAN/ULC 702.2.

2.5 FINISHES

.1 Galvanizing: To ASTM A653/A653M, use galvanized fasteners for all work.

Part 3 Execution

3.1 GENERAL INSTALLATION

.1 Extend air/vapour barrier seals up vertical surfaces and curbs and onto the deck as shown on the Drawings, to provide continuity.

.2 Slope the top of all wood blocking at the roof perimeter in towards the roof at a minimum of 5%, unless otherwise shown on the Drawings.

.3 Comply with requirements of NBC, supplemented by the following paragraphs.

.4 Align and plumb faces of furring and blocking to tolerance of 1:600.

.5 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

.6 Install wood nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.

3.2 SECUREMENT OF WOOD BLOCKING

.1 Comply with more stringent requirements as required by drawings or Ontario Building Code requirements. Increase number and spacing of all fasteners by 50% for 2400 mm from all outside roof corners.

.2 Install fasteners to the design intent to hold all wood blocking permanently in place to prevent warping, deflection and to resist all wind and weather conditions.

.3 Install fasteners in two rows in the direction of the grain, offset one to another in a staggered fashion by approximately 50%. All fasteners shall be placed minimum 10 mm from any edge of framing.

3.3 SHEATHING INSTALLATION

.1 Plywood:

.1 Not less than 2 mm gaps shall be provided between sheets, to allow for material expansion.

.2 Unless otherwise indicated, fasten plywood with a minimum of thirty-six fasteners per 1200 mm x 2400 mm sheet.

3.4 ERECTION

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Countersink bolts where necessary to provide clearance for other work.

.3 Bevel leading edge of wood panel products on vertical applications to facilitate membrane installation and as detailed on drawings.

END OF SECTION

Part 1 General

1.1 GENERAL

.1 Contractor to provide an original, complete insurance policy identifying specific coverage for torch applied systems.

1.2 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 62 00 – Sheet Metal Flashing and Trim.

.3 Section 07 92 00 – Joint Sealants.

.4 Section 22 05 11 – Plumbing and Drainage.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM A653/A653M-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian Standards Association (CSA International)

.1 CSA A231.1-14/A231.2-14, Precast Concrete Paving Slabs / Precast Concrete Pavers.

.2 CSA O151-09, Canadian Softwood Plywood.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.

.2 CGSB 37-GP-56M-80b(A1985), Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.

.3 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

.4 Factory Mutual (FM Global)

.1 Hot Work Permit Form F2630.

.2 FM 4450, Approval Standard for Class 1 Insulated Steel Roof Decks.

.5 Underwriters Laboratories' of Canada (ULC)

.1 CAN/ULC-S107-10, Standard Methods of Fire Tests of Roof Coverings.

.2 CAN/ULC-S126-06, Standard Method for Test for Fire Spread Under Roof Deck Assemblies.

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

.4 CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning roofing Work, with roofing contractor's representative and Consultant to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

1.5 COORDINATION

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

1.6 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with the following.

.2 System summary:

.1 Provide a one page synopsis of each roof type that lists the assembly components in order from top to bottom.

.3 Product Data:

.1 Provide two copies or an electronic copy of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations for all products to be incorporated in the new system.

.2 Provide two copies or an electronic copy of WHMIS for:

.1 Primers.

.2 Sealers.

.3 Liquid membrane.

.4 Adhesives.

.4 Provide shop drawings:

.1 Provide layout for sloped insulation.

.2 Provide shop drawing or submittal indicating mechanical attachment and adhesive pattern specified by manufacturer for the required wind uplift pressures indicated on the Drawings.

.5 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.7 QUALITY ASSURANCE

.1 Installer qualifications: Company or person specializing in application of modified bituminous roofing systems with 5 years documented experience, approved by manufacturer.

.2 Only certified applicators are permitted to use torch welding equipment.

.3 Hold a pre-installation meeting prior to the start of roofing works, with the roofing contractor's representative and the Consultant, to review installation conditions particular to this project.

.4 Roof membrane manufacturer shall delegate a representative to visit the work site at the start of roofing installation. Contractor shall engage membrane manufacturer's technical representative as required to provide technical guidance for and inspection of membrane application. The Contractor shall at all times enable and facilitate access to the worksite by this representative.

1.8 FIELD QUALITY CONTROL

.1 Adhesion Testing:

.1 If requested by the Consultant, at each roof drainage area, following installation of membrane base sheet, carry out adhesion tests to confirm adhesion of membrane to substrate and substrate layers to each other, down to first mechanically attached layer.

.2 Locations and timing of tests will be directed by Consultant. Provide labour and materials as required to assist Consultant in conducting tests.

.3 If inadequate adhesion is found, conduct further testing to determine the extent of the inadequate adhesion. Replace all defective areas to the satisfaction of the Consultant. Replace substrate materials as necessary with new materials, and patch cut tests with membrane patches extending at least 150 mm beyond the cut.

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

.2 Sample Testing:

.1 If requested by the Consultant, at each roof drainage area, following installation of membrane base sheet, carry out sample tests to confirm materials and installation of roof assembly components. Sample size to be 300 mm x 300 mm.

.2 Locations and timing of tests will be directed by Consultant.

.3 If inadequate construction is found, conduct further testing to determine the extent of the inadequate adhesion. Replace all defective areas to the satisfaction of the Consultant. Replace substrate materials as necessary with new materials, and patch cut tests with membrane patches extending at least 150 mm beyond the cut.

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

1.9 FIRE PROTECTION

.1 Fire Extinguishers:

.1 Pressure rechargeable type with hose and shut-off nozzle,

.2 ULC labeled for ABC class protection.

.3 ULC labeled for A class protection, for wood, paper and fibreboard.

.4 Size 14 kg.

.5 Have one fully charged ABC extinguisher and one fully charged Type A extinguisher on roof per torch applicator, within 3 m of the propane source.

.2 Maintain fire watch for 2 hours after each day's torching operations cease.

1.10 GENERAL REQUIREMENTS

.1 Comply with the General Requirements, General Instructions and Supplementary Conditions.

.2 Execute work in accordance with this Section and other related Sections, Drawings and Details.

.3 Attach roofing to structure to meet requirements of insurance underwriter and authorities having jurisdiction.

.4 Regard manufacturer’s printed recommendations as minimum requirement for materials, methods and workmanship not otherwise specified.

.5 Contact the Consultant if the specifications conflict with the manufacturer’s recommendations. Otherwise it will be assumed that the Contractor and manufacturer are in agreement with procedures outlined.

.6 Advise the Consultant of adjustments to specified roofing procedures caused by weather and site conditions. Make adjustment to specified procedures only after review with the Consultant.

.7 Maintain equipment in good working order to ensure control of roofing operations and protection of work. Types of roofing equipment and laying techniques to be employed are to meet the approval of the Consultant.

.8 Do not penetrate roof deck with any fastening devices that would do damage or impair the function of the assembly.

.9 All temporary drains shall be connected with a mechanical connection (MJ coupling) or a U-flow connection, until new drains are installed.

1.11 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of, sealing compounds, primers and caulking materials.

.3 Manufacturer’s recommendations for handling and storing products are to be considered a minimum requirement.

.4 Materials shall be delivered to the site, undamaged and in their original packages, with manufacturer’s labels visible, attesting to their conformity to specific standards.

.5 Ensure that shelf life of materials has not expired.

.6 Provide bill of lading for bulk loads of bitumen clearly showing Equiviscous Temperatures (EVT), Flash Point (FP) and Final Blowing Temperature (FBT).

.7 Remove damaged material from site and replace all rejected materials with new product.

.8 Elevate on raised platform and store as to prevent deformation of materials.

.9 Provide and maintain dry, off-ground weatherproof storage.

.10 Store rolls of membrane in upright position. Store membrane rolls with selvage edge up.

.11 Remove only in quantities required for same day use.

.12 Place plywood runways over completed Work and over areas not in Contract, as required, to enable movement of material and other traffic.

.13 Store sealants at +5°C minimum.

.14 Store insulation protected from daylight and weather and deleterious materials.

.15 Handle roofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.

.16 Avoid stockpiling of materials or use of equipment on decks in a way which could cause overloading.

1.12 ENVIRONMENTAL REQUIREMENTS

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

.2 Ensure protection of the building from weather at all times. If inclement weather is forecast or appears imminent, postpone work that would risk the building from moisture damage.

.3 If it becomes apparent that work would threaten the building watertightness, the Owner has the right to stop work. Any additional expenses due to work stoppage or postponement of work will be at the Contractor’s expense.

.4 Ambient Conditions

.1 Do not install roofing when ambient temperature remains below -18°C for torch application.

.2 Minimum ambient temperature for solvent-based adhesive is -5°C.

.5 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.13 COMPATIBILITY

.1 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a complete assembly. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.

.2 Defective work resulting from work with incompatible materials will be considered the responsibility of the Contractor.

.3 Repair all work that could result in damage or interfere with performance.

1.14 EXISTING SUBSTRATES

.1 Following removal of existing material to the existing air/vapour barrier, inspect surfaces and notify the Consultant of any deck found unsound and not suitable for roofing. Do not commence work until conditions are documented and the Consultant rules on the acceptability of surfaces and/or corrective measures required. The cost of any delays due to postponement of work that results from investigating the site problem or obtaining a ruling will be at the Owner's expense.

.2 The commencement of work is proof that the Contractor has accepted surfaces as satisfactory and accepts responsibility for appearance and performance of completed work.

.3 Defective work resulting from application of material on unsatisfactory surfaces will be considered the responsibility of the Contractor.

.4 The Contractor will be responsible for all repairs, costs and pay all cost and fees required to rectify damage or defective work. Use materials and finish to match the original preconstruction conditions.

1.15 DAILY OPERATIONS

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

1.16 EXAMINATION

.1 Before proceeding with roofing application, ensure that:

.1 All surfaces are clean and free of debris, snow, frost and moisture.

.2 The deck is clean and sufficiently dry to ensure specified adhesion will be obtained.

.3 Adjacent construction and installation of related work (i.e. curbs, drains, penetrations, wood nailers, etc.) incorporated with the roof are complete.

.4 Roof deck is sound, existing fasteners are tight and irregularities are corrected to provide a suitable surface for new roofing.

.2 Ensure substrate is smooth. Remove sharp edges or protrusions that could impair the function of the roof assembly.

.3 Inform Owner/Consultant in writing of any defects.

1.17 DRAINS AND DRAINAGE PLANE

.1 Inspect surfaces and ensure that roof deck is level or sloped to drains in conforming to design intent.

.2 Inspect surfaces and ensure that roof drains are set at a level to drain and are connected or capped.

.3 Take spot levels to verify that pools of water in excess of 13 mm depth will not form.

.4 Tabulate levels and submit to Consultant.

.5 Ensure plumbing is accessible and work can be completed as specified.

.6 Inspect roof drains to ensure they are open and working properly.

.7 Where specified or shown for areas with only one drain, provide overflow scuppers or drains to detail and specified requirements.

1.18 EQUIPMENT

.1 Inspect equipment affected by the work, including but not limited to curbs, existing drains and plumbing, skylight, mechanical and electrical to ensure they are in good repair and working order. Record any damage and advise the Consultant.

.2 During re-roofing, ensure that all electrical lighting/cameras and conduits are properly supported.

.3 Notify Owner and/or Consultant of any equipment which is not operational or damaged prior to the commencement of work.

1.19 ADVISE CONSULTANT

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

1.20 PROTECTION OF ROOFTOP EQUIPMENT

.1 Remove any equipment and flashing intended for re-use and save from harm. Store in approved location and reset at project conclusion unless specified or shown to be removed.

.2 Protect all openings, vents and stacks from weather and contamination from debris.

.3 Provide temporary plumbers plugs to protect drains during roofing operations. Ensure that temporary protection is removed at completion of work period and/or at the end of each days work.

1.21 WARRANTY

.1 Contractor's Warranty for Labour and Material:

.1 For Work of this Section 07 52 00 - Modified Bituminous Membrane Roofing, 12 months warranty period is extended to 24 months.

.2 Make all necessary repairs and replacements within 48 hours of receipt of written notification.

.3 Nothing contained in this Article shall be construed as in any way restricting or limiting the liability in common law and statutory liability of the Contractor.

.4 Provide these written warranties, confirming above, issued on the corporate letterhead, signed and sealed by an authorized signing officer. The warranties will specifically reference the name of the Building, location and Owner.

.2 Manufacturer's Warranty:

.1 Provide a 10-year membrane warranty.

Part 2 Products

2.1 GENERAL

.1 All standards, regulations and specifications listed herein are considered to be the latest available edition.

.2 For sealants, mastic, adhesives or caulk, refer to Section 07 92 00 – Joint Sealants.

2.2 PRIMERS

.1 Asphalt Primer: To manufacturer's recommendations.

.2 Self-adhesive membrane primer. As recommended by membrane manufacturer. Use low VOC, polymer emulsion-based primer, unless directed otherwise by Consultant on site.

2.3 AIR/VAPOUR BARRIER MEMBRANE

.1 For steel decks, wood decks and gypsum board surfaces: Self-adhesive modified bituminous air/vapour barrier, with laminated top surfacing suitable for adhering insulation, minimum thickness 0.85 mm.

.1 Standard of acceptance or approved equivalent:

.1 Vapor-Bloc SA by Henry Bakor.

.2 MVP by IKO.

.3 Soprvap 'R' by Soprema.

2.4 SELF-ADHERED MEMBRANE

.1 To CSA A123.22, self-adhering membrane consisting of SBS rubberized asphalt compound laminated to a polyethelene film. Minimum thickness 1 mm.

.1 Standard of acceptance or approved equivalent:

.1 Blueskin SA by Henry Bakor.

.2 GoldShield by IKO.

.3 Soprastick 1100 by Soprema.

2.5 MEMBRANE AND MEMBRANE FLASHINGS

.1 Acceptable membrane manufacturers:

.1 Soprema Group.

.2 IKO Industries Ltd.

.3 Henry Bakor.

.2 Base sheet membrane and base sheet membrane flashing (non-combustible substrates): To CGSB 37-GP-56M.

.1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer polyester reinforcement, having nominal weight of 180 g/m^2.

.2 Type 2.

.3 Class C - plain surfaced.

.4 Grade 1 - standard service.

.5 Top and bottom surfaces:

.1 polyethylene/polyethylene.

.3 Self-Adhesive base sheet membrane flashing (combustible substrates): To CGSB 37-GP-56M.

.1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, polyester and glass reinforcement.

.2 Type 2, adhered.

.3 Class C - plain surfaced.

.4 Grade 2 – heavy duty service.

.5 Top and bottom surfaces:

.1 Polyethylene/release paper.

.4 Cap sheet membrane and membrane flashing: To CGSB 37-GP-56M

.1 Styrene-Butadiene-Styrene(SBS) elastomeric polymer, prefabricated sheet, 250 g/m^2.

.2 Type 1.

.3 Class A-granule surfaced.

.1 Colour for granular surface: Gray.

.4 Grade 1-standard service.

.5 Bottom surface polyethylene.

.5 Fireguard Tape

.1 Modified bituminous membrane supplied in strips, 150 mm wide, 1.6 mm thick, glass fleece reinforced with self-adhesive underside.

.2 Standard of acceptance or approved equivalent:

.1 Sopraguard by Soprema.

2.6 ADHESIVES

.1 Adhesive for securing protection board and insulation: To be fully compatible with all materials in the roofing assembly. Applicability of use to adhere the different materials in the roofing assembly to be included in the manufacturer's literature.

.1 Standard of acceptance or approved equivalent:

.1 Thermostik 880-33 by Henry Bakor

.2 Duotack by Soprema

.3 Millenium by IKO

.4 Fas-n-free or Elite by Tremco

.5 Insta-Stick by Instafoam Inc.

.6 Roof Assembly Adhesive by Chemlink

2.7 POLYISOCYANURATE INSULATION (INORGANIC)

.1 Rigid foam board Type II, Class 2, Grade 2, manufactured with HC blowing agent meeting requirements of CAN/ULC S-126 and CAN/ULC S107. Conforming to CAN/ULC S704 and CAN/ULC S770 for LTTR values. Approved and listed by Factory Mutual Global for 1-60 and 1-90 wind classification and FM 4450 requirements for Class 1 fire. Thickness as specified or shown with maximum board size 1200 mm x 1200 mm. Fibre-reinforced **inorganic facers** on both major surfaces of the core foam.

2.8 SLOPED INSULATION (INORGANIC)

.1 Polyisocyanurate rigid foam board Type II, Class 2, Grade 2, manufactured with HC blowing agent meeting requirements of CAN/ULC S-126 and CAN/ULC S107. Conforming to CAN/ULC S704 and CAN/ULC S770 for LTTR values. Approved and listed by Factory Mutual Global for 1-60 and 1-90 wind classification and FM 4450 requirements for Class 1 fire. Thickness as specified or shown with maximum board size 1200 mm x 1200 mm. Fibre-reinforced **inorganic facers** on both major surfaces of the core foam.

.2 Insulation slopes shall be as indicated on the detailed drawings and roof plans. Modules shall be factory cut to correct slopes.

.3 Sloped insulation must terminate at 0 thickness. Supply an additional nosing piece if required, factory fabricated of compatible, flame-resistant sloped rigid insulation material, to smoothly terminate sloped insulation at 0 thickness.

2.9 PROTECTION BOARD

.1 Protection Board: 6 mm thick asphalt based protection board with non-woven glass facers, as recommended by the membrane manufacturer.

2.10 SEMI-RIGID MINERAL WOOL INSULATION

.1 Semi-rigid mineral wool, rockwool, or slagwool boards, to CAN/ULC 702.2.

2.11 SEALERS

.1 Plastic cement: Asphalt, to CAN/CGSB-37.5.

.2 Sealants: See Section 07 92 00 - Joint Sealants.

2.12 WALKWAY MATERIALS / PROTECTION MATERIALS

.1 One additional ply of cap sheet membrane.

.2 Rubber protection pad: Heavy duty grade, 550 mm x 550 mm or for size as indicated, 13 mm thick, masticated recycled rubber with reinforcement and UV resistant, dimpled surface.

2.13 CONCRETE PAVERS

.1 Concrete pavers: To CSA A231.1, 600 x 600 x 50 mm thick of sizes indicated natural, air entrained precast concrete paving slabs having non-slip finish with 51 mm plain margin around perimeter.

2.14 FASTENERS

.1 Vertical membrane flashing fasteners: Spiral nails, screws or masonry anchors with 25 mm solid caps. Minimum length 38 mm. Corrosion resistant.

.2 Fasteners for sheet metal and wood to wood: Corrosion resistant #10 wood screws or nails to suit application.

2.15 PLUMBING VENTS

.1 2-piece spun aluminum with integral flange, diameter to suit existing pipe size

.1 Standard of acceptance or approved equivalent:

.1 Flash-tite by Lexcor, EVF-1 by Thaler.

2.16 LOUVRED VENT

.1 0.94 mm (20 ga.) galvanized steel with engineered deflector system, built-in galvanized wire screen mesh, interior and exterior powder coated polyester baked paint. Opening with flange and trim to cap curb edges. Size to match existing.

.1 Standard of acceptance or approved equivalent:

.1 VMAX Standard Louvered Penthouse by Maximum.

2.17 ROOF DRAINS

.1 See Section 22 05 11 – Plumbing and Drainage.

2.18 SCUPPERS AND OVERFLOWS

.1 See Section 07 62 00 – Sheet Metal Flashing and Trim.

.2 Size and materials as specified or shown, fabricated from 0.65 mm (24 ga.) prefinished steel, with minimum 125 mm roof flange to Consultant's approval. Make all seams continuous and watertight by soldering or heat welding. Scupper to have a minimum width of 200 mm to allow proper drainage.

2.19 ROOF ACCESSORIES

.1 Bituminous metal paint: To isolate metal from concrete and masonry surfaces, to CAN/CGSB-1.108-M89 Type II.

.1 Standard of acceptance or approved equivalent:

.1 810-07 by Henry Inc.

2.20 LIGHTNING PROTECTION CONDUCTOR ATTACHMENT

.1 Components to reinstate lightning protection system shall comply with CAN/CSA B72-M87 Installation Code for Lightning Protection Systems.

.2 Report system deficiencies in writing prior to commencing roofing demolition phase. Commencement of demolition in the absence of any reported deficiencies will be considered such that the pre-construction conditions met current code requirements.

.3 Include for all copper/brass base plates, anchorage, straps, rods and connectors to reinstate the lightning protection system to comply with CAN/CSA B72-M87 and provide copy of certification prior to contract close-out.

.4 Standard of acceptance or approved equivalent:

.1 C711 Cast Adhesive Conductor Holder by KLP Inc.

Part 3 Execution

3.1 QUALITY OF WORK

.1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual.

.2 Do priming in accordance with manufacturer's written recommendations.

.3 Fit the interface of all walls and roof assemblies with durable rigid material sheet metal or plywood providing connection point for continuity of air barrier.

.4 Make assembly, component and material connections in consideration of appropriate design loads, with reversible mechanical attachments.

.5 In the event that any product contains a manufacturing defect or anomaly, the Contractor shall notify the Consultant and manufacturer immediately and request direction.

3.2 REMOVAL OF EXISTING ROOFING

.1 Remove all roofing, flashing and insulation materials down to existing air/vapour barrier. Leave existing blocking and parapet construction in place where indicated. Where a built-up air/vapour barrier is present, remove this from the deck unless agreement is otherwise obtained from the Consultant to leave in place.

3.3 EXAMINATION OF ROOF DECKS

.1 Verification of Conditions:

.1 Inspect with Consultant deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.

.2 Evaluation and Assessment:

.1 Prior to beginning of work ensure:

.1 Decks are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.

.2 Curbs have been built.

.3 Roof drains have been installed at proper elevations relative to finished roof surface.

.4 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.

.3 Do not install roofing materials during rain or snowfall or when such weather is imminent.

3.4 PROTECTION OF IN-PLACE CONDITIONS

.1 Cover walls, walks and adjacent work where materials hoisted or used.

.2 Use warning signs and barriers. Maintain in good order until completion of Work.

.3 Protect roof from traffic and damage. Comply with precautions deemed necessary by Consultant.

.4 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.

.5 Metal connectors and decking will be treated with rust proofing or galvanization.

.6 Fit the interface of the walls and roof assemblies with durable rigid material sheet metal or plywood providing connection point for continuity of air barrier.

3.5 PRIMING

.1 Unless otherwise indicated or directed by Consultant, prime all surfaces which will be in direct contact with bituminous materials at the rate of 0.15 L/m^2 to manufacturer's recommendations. For self-adhering membrane, install primer at a rate recommended by manufacturer. Ensure that surfaces are tack-free before proceeding.

.2 Limit quantity of primer at deck openings and points of termination and provide supplemental protection to prevent bleedthrough to the building interior.

.3 Roll primer into surface.

.4 Re-prime all surfaces, including pre-primed surfaces, that become contaminated with dust or become marred due to their exposure to roof traffic or weather.

3.6 SELF-ADHESIVE AIR/VAPOUR BARRIER ON SLOPED WOOD DECK

.1 Ensure all surfaces to be covered with self-adhering membrane are complete and free of moisture and contaminants, and are above 5°C (40°F). At temperatures below 5°C (40°F) heat materials to be covered with hot air gun. Store all materials in heated storage when temperatures fall below 5°C (40°F) and remove only as much material that can be used before cooling.

.2 Working up slope from drain, remove paper backing and install membrane true to line to completely cover the area intended to be protected to points shown on the drawing.

.3 Install temporary nailing at headlap area of each roll to hold in place during installation.

.4 Ensure end laps and side laps are fully supported and roll or work material into place by hand to ensure a positive bond.

.5 Membrane is to be installed without air blisters and wrinkles. Rework, repair or replace all poorly installed membrane. Do not stretch material that would result in pull back and deformity of the membrane at intersections.

.6 Lap all side laps 75 mm and end laps 150 mm.

.7 Turn up membrane at edge where horizontal surface meets vertical planes, as shown on Drawings. Lap onto existing surfaces as required to provide continuity of air/vapour barrier at terminations.

.8 Seal all points of termination at horizontal planes and vertical surfaces with sealant Type 'A'. Tool sealant to consistent smooth and even surface.

3.7 INSULATION – ALL LAYERS – ADHESIVE ADHERED

.1 Attach insulation as per the OBC Wind Uplift Attachment detail illustrated on the drawings.

.2 Install base insulation layer over air/vapour barrier to specified design intent and thickness. Secure insulation laid with adhesive, in pattern as per adhesive manufacturer's directions and as indicated. Apply boards before adhesive cures, skims over or loses adhesive qualities.

.3 For subsequent layers of insulation, secure insulation laid with adhesive, in pattern as per adhesive manufacturer's recommendations and as indicated.

.4 Stagger all joints of insulation a minimum 300 mm.

.5 Stagger both end and side joints between insulation layers.

.6 Butt sheets of insulation with moderate contact. Do not force insulation into place. Cut neatly at projections and points of termination. Replace all broken, damaged or misfit boards as work progresses.

.7 Where necessary, back-cut insulation to allow it to conform and stay bonded to irregular surfaces without bridging. Subsequent to placement, walk insulation into place to ensure positive bonding is achieved.

3.8 SLOPED INSULATION

.1 Attach boards as per the OBC Wind Uplift Attachment detail illustrated on the drawings.

.2 At all locations of sloped insulation provide shop drawings from sloped insulation manufacturer for Consultant's review prior to installation.

.3 At all new and existing drain locations, provide sloped polyisocyanurate insulation sump around drain to promote positive drainage. Total sump size to be as shown on drawings, with maximum depression of 25 mm, unless otherwise indicated.

.4 Installation methods for sloped insulation to be same as for upper layers of base insulation, using adhesive as specified.

3.9 PROTECTION BOARD

.1 Attach boards as per the OBC Wind Uplift Attachment detail illustrated on the drawings.

.2 Adhere protection board to insulation with with adhesive at the rate and pattern specified, as for insulation.

.3 Place boards in parallel rows with end joints staggered. Tape joints in protection board with fireguard membrane where combustible surfaces are directly below.

.4 Where protection board is specified on nailable vertical surfaces, secure protection board using large-head roofing nails at 200 mm centres each direction and tape all joints with fireguard tape.

3.10 MODIFIED BITUMINOUS MEMBRANE - GENERAL APPLICATION

.1 Inspect and seal all substrates to eliminate fire hazard. Use fireguard tape as required or recommended by manufacturer.

.2 Mechanical spreaders are not permitted to install modified membranes.

.3 Use only bitumen, sealants, adhesive or mastics as specified by membrane manufacturer. Provide written approval from manufacturer when proposing any alternatives or substitutions.

.4 Lay out all sheets as to allow them to relax a minimum of 30 minutes. When temperatures are below 4.4°C keep and lay out rolls in heated storage. Install rolls before temperature fallback of the sheet occurs.

.5 Roof membrane to be installed in one sheet if possible.

.6 Lay all membrane starting at low point to ensure that seams do not face water flow. Roll all membrane into place, true to line, free of buckles, air pockets, fishmouths and tears.

.7 Overlap all end laps minimum 150 mm and side laps 75 mm.

.8 Offset all side laps between plies by 50%.

.9 Offset all end laps between plies minimum 1200 mm.

.10 At valley locations, run membrane continuously with the slope of the main roof. Lay out all sheets to ensure minimum side laps are maintained through valley area and short section of roof beyond. At these locations the side laps for the main roof will increase. Install membrane to details and Consultant's direction onsite.

.11 Ensure that a watertight seal is achieved at all overlaps and points of termination.

.12 Carry base sheet flashing over face of building as shown on the drawings.

.13 Carry membrane up all vertical surfaces to point shown. Cut off corners at 45° at end laps to be covered by the next roll prior to installation of following sheet.

.14 Verify procedure with Consultant on site. Seal fasteners through membrane immediately with Type 'A' sealant.

.15 Do not walk on membrane during applications and until sufficient cooling has taken place as to allow for traffic without doing damage or marking surface.

3.11 MEMBRANE APPLICATION

.1 In accordance with Summary of Work, drawings and details, install new membrane and flashings system.

.2 Install all membrane in strict accordance with manufacturer's latest printed instructions and application methods.

3.12 BASE SHEET (TORCH APPLICATION)

.1 Install 1-ply base sheet membrane running with the roof slope, starting at the low point. Layout roll in place to verify alignment and proper overlap and re-roll prior to torching.

.2 Fully torch in place base sheet membrane using proper application techniques as specified by membrane manufacturer.

.3 Install membrane true to line and free of wrinkles, air pockets, voids, excessive bitumen flow or other irregularities. Ensure the membrane is not overheated at any location. Should any of these conditions occur, immediately stop membrane application and correct the deficiency before proceeding. Notify Consultant and obtain his approval for proposed repair methods. Questionable areas will require to be cut out and replaced.

.4 Ensure that a watertight seal of all membrane joints and points of termination is achieved with a torch and trowel.

.5 Terminate base sheet up all verticals 50 mm, secure on vertical with 38 mm nails with 25 mm metal heads at 225 mm c/c.

.6 Review base membrane for low areas (ponding) and correct with additional base sheet membrane.

3.13 BASE SHEET FLASHINGS (SELF-ADHERED APPLICATION)

.1 All flashings to be cut across the roll in 1 m sections. Cut off corners at end laps to be covered by next flashing piece.

.2 Provide chalk lines and install all membrane true to line. Install gusset reinforcement pieces at all corner locations.

.3 Ensure wall or eave surfaces are clean and dry, free of contaminants or other irregularities. Re-prime as necessary.

.4 Commence flashings from the drain or low points and overlap all side laps minimum 75 mm. Base sheet flashings to extend 100 mm onto roof surface and terminate as shown in drawings.

.5 Place sheet into primer or adhesive and press into place using hand roller to ensure uniform adhesion. Use hot air welder on all seams and joints to ensure a waterproof seal on all points of termination. Apply flashings free of air pockets, voids, wrinkles or fishmouths.

3.14 CAP SHEET (TORCH APPLICATION)

.1 Prior to installation, unroll the cap sheet and check for granular embedment width and alignment.

.2 Layout membrane to ensure side lap of cap sheet does not occur within 150 mm of roof drain.

.3 Install specified cap sheet membrane running with the roof slope, starting at the low point. Layout roll in place to verify alignment and proper overlap and re-roll prior to torching. Offset cap sheet side laps 50% to base sheet side laps, ensure lap does not lie within 150 mm of a roof drain.

.4 Install 1-ply cap sheet membrane full torched in place using proper application techniques as specified by the membrane manufacturer.

.5 Install membrane by softening both contact surfaces simultaneously with recommended torching equipment. During application, unroll membranes slowly into fluid bitumen ensuring consistent 3 mm to 6 mm flow protrudes each side of the roll.

.6 Install membrane true to line and free of wrinkles, air pockets, voids, excessive bitumen flow or other irregularities. Ensure the membrane is not overheated at any location. Should any of these conditions occur, immediately stop membrane application and correct the deficiency before proceeding. Notify Consultant and obtain his approval for proposed repair methods. Questionable areas will require to be cut out and replaced

.7 Using a torch and trowel, embed granules at end laps and where required on surface of cap sheet to ensure proper bonding of membrane overlaps.

3.15 CAP SHEET FLASHINGS (TORCH APPLICATION)

.1 All flashings to be cut across the roll in 1 m sections. Cut off corners at end laps to be covered by next flashing piece.

.2 Provide chalk lines and install all membrane true to line. Install base sheet gusset reinforcement at all corner locations.

.3 Commence flashings from the drain or low points and overlap all side laps minimum 75 mm. Cap sheet flashings to extend 150 mm onto roof surface and terminate as shown in drawings. At wall locations, unless otherwise specified, cap sheet flashings to extend up 50 mm higher than base sheet flashings.

.4 Where required by Summary of Work and details, install 50 mm wide continuous strip of Type ‘A’ sealant to the tops of parapets or eaves to prevent bitumen spillage on the building exterior.

.5 Install membrane by softening both contact surfaces simultaneously with recommended torching equipment. During application, unroll membrane slowly into fluid bitumen ensuring consistent 6 mm flow protrudes each side of the roll.

.6 Unroll and work sheet into place using torch, trowel and wet sponge to ensure proper placement and adhesion.

.7 Install membrane true to line and free of wrinkles, air pockets, voids, excessive bitumen flow or other irregularities. Ensure the membrane is not overheated at any location. Should any of these conditions occur, immediately stop membrane application and correct the deficiency before proceeding. Notify Consultant and

obtain his approval for proposed repair methods. *Questionable* areas will require to be cut out and replaced.

.8 Touch up bare spots, corners, scuffs and bleedout runs on cap sheet with granules matching membrane colour, immediately following installation. Use hot air welder, torch or Type 'A' sealant to adhere granules to sheet.

3.16 ROOF DRAINS

.1 See Section 22 05 11 – Plumbing and Drainage for plumbing work.

.2 Install self-adhered membrane air seal around drain and extend onto air/vapour barrier minimum 150 mm.

.3 Unless otherwise specified or shown, provide prefabricated sump of sloped polyisocyanurate insulation 1200 mm each side of the centre of the drain. Reduce polyisocyanurate insulation thickness to minimum 19 mm at drain to provide positive roof drainage (make allowance for thickness of all flanges and clamps) and ensure water flow will not be impeded.

.4 Complete roof membrane, installing additional 1 m x 1 m base sheet flashing centred over drain opening.

.5 Fully coat drain flange to receive roofing with modified sealant and continue modified bitumen over flange. Neatly trim and work membrane to interior face and seal with Type 'A' sealant.

.6 Set clamping ring in solid bed of Type 'A' sealant. Secure clamp ring and integral screen as dictated by drain design immediately after membrane is installed. Tighten bolts to ensure a permanent watertight compression seal.

.7 Install and bolt strainers with heavy iron mechanical bracket to ensure the drain screen remains permanently in place to the Consultant's approval.

.8 Install test plug, water test roof and repair leaks. Remove test plug once complete.

3.17 PLUMBING VENTS, STACKS AND SLEEVES

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

.2 Protect exposed surface during roofing operation and clean surfaces free of bitumen before leaving site.

.3 Make all penetrations air and watertight at air/vapour barrier by installing self-adhesive membrane flashings 150 mm onto air/vapour barrier and carry up and around projection. Clamp in place and caulk.

.4 Trim base sheet at roof projections.

.5 Adjust existing pipes to new flashing heights by either cutting down or extending pipes with matching materials attached with mechanical couplers. Ensure pipes are 38 mm higher than flashing to allow for sealing to prevent condensation.

.6 Clear all projections free of contaminants and seal junction of base sheet and roof projections with trowel applications of sealant as shown on drawings.

.7 Install all metal flanges to be built into the membrane before the installation of cap sheet. Insulate sleeves in accordance with drawings as specified. Where required, install telescoping caps to detail.

.8 Prime topside and underside of all flanges to be incorporated with roofing prior to application. Use primer supplied by the membrane manufacturer. All primer to be dry before installation of membrane roofing or flashing.

.9 Before installing flashings, install 1-ply base sheet extending to opening. Set flanges in bed of Type 'A' sealant prior to membrane installation, as per manufacturer's recommendations.

.10 Install 1-ply of base sheet flashings thermofused to the flange to within 25 mm from upturn and continuing a minimum of 225 mm beyond flange. Continue cap sheet to metal upturn. Seal around upturn junction with sealant and touch up with matching granules, as per manufacturer's recommendations.

3.18 CONCRETE PAVERS

.1 Install concrete pavers where shown to requirements of Summary of Work, drawings and details.

.2 Set pavers on rubber protection pad, in turn on sacrificial ply of cap sheet membrane.

3.19 CLEAN UP

.1 At all times, keep the premises free from accumulation of waste materials or rubbish. Stock piling of debris on the roof will not be permitted.

.2 Repair defects in surface and bitumen runs with granules to match existing to leave the roof in an even consistent finish.

.3 Leave roof clear of debris and bitumen left by spills and machine tracking.

.4 Leave grounds and building free of debris and bitumen spread by pedestrian traffic where applicable.

.5 Clean surfaces and penetrations of all contaminants and touch up to the satisfaction of the Owner. Include rooftop equipment, curbs, soil stacks, sleeves, gas lines, vents, drains and ladders.

.6 Check drains to ensure they are functional and where required remove all debris by vacuum.

.7 At the completion of the work remove all rubbish, tools, equipment and surplus materials.

.8 Be responsible to repair and pay all costs and fees required to rectify damage caused by work of the Contract with materials and finish to match original.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 52 00 - Modified Bituminous Membrane Roofing.

.3 Section 07 92 00 – Joint Sealants.

1.2 REFERENCES

.1 The Aluminum Association Inc. (AAI)

.1 AAI-Aluminum Sheet Metal Work in Building Construction-2002.

.2 American Society for Testing and Materials International (ASTM)

.1 ASTM A240/A240M-07e1, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

.2 ASTM A653/A653M-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.3 ASTM D523-08, Standard Test Method for Specular Gloss.

.3 Canadian Standards Association (CSA International)

.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.

.2 CAN/CGSB-93.1-M85, Sheet Aluminum Alloy, Prefinished, Residential.

.5 Canadian Roofing Contractors Association (CRCA)

.1 Roofing Specifications Manual 1997.

.6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.7 SMACNA – Architectural Sheet Manual – 1993 Edition.

1.3 COORDINATION

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

1.4 EXAMINATION

.1 Do not commence work until surface to be covered has been inspected.

.2 Inspect work and advise the Consultant of conditions that would adversely affect the work of this trade.

.3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepts responsibility for appearances and performance of completed work.

.4 Repair damaged and inferior work caused by work of this Contract with materials and finish to match original to the Consultant's approval.

1.5 SUBMITTALS

.1 Submit to the Consultant a list of materials intended for use before they are ordered.

.2 Product Data:

.1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit copies of WHMIS MSDS - Material Safety Data Sheets.

.3 Samples:

.1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours.

.4 Quality assurance submittals:

.1 Submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.

.3 Manufacturer's recommendations for handling and storing products are to be considered a minimum requirement.

.4 Materials shall be delivered to the site, undamaged and in their original packages, with manufacturer's labels visible, attesting to their conformity to specific standards.

Part 2 Products

2.1 GENERAL

.1 All standards, regulations and specifications listed herein are considered to be the latest available edition.

.2 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.

2.2 PREFINISHED SHEET METAL FLASHING

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

2.3 ACCESSORIES

.1 Metal cleat: same material as metal flashings, 50 mm wide @ 600 mm c/c.

.2 Continuous metal starter strip: 0.71 mm (24 ga.) galvanized steel, secured at 400 mm c/c.

.3 Use galvanized, copper, aluminum or stainless steel nails or screws as most compatible with materials and preservatives being utilized.

.4 Nails: Annular threaded nails of length to penetrate into bases minimum 25 mm. No. 8 screws to penetrate wood 19 mm at 600 mm c/c.

.5 Masonry fasteners: Tapcon, Permagrip or Tapgrip or Rawl. Spike sized to penetrate concrete 38 mm minimum as specified or shown.

.6 Screws for starter strips and fascia: #8 @ 400 mm c/c.

.7 Wedges: Rolled plumber sheet lead.

.8 Sealant: Refer to Drawings and Section 07 92 00 – Joint Sealants.

.9 Bitumen paint: To CAN/CGSB-1.108 Type II. Gilsonite asphalt paint.

.1 Acceptable product: 810-07 by Henry or approved equivalent.

.10 Touch-up paint: As recommended by prefinished material manufacturer.

2.4 FABRICATION

.1 Fabricate metal flashings and other sheet metal work in accordance with applicable details, as indicated. Where not indicated, follow applicable CRCA 'FL' series details.

.2 Metal shall be formed on a bending brake, shaping trimmed and hard seaming shall be done on bench, as far as practicable, with proper sheet metal working tools. Angles of bends and folds for interlocking metal shall be made with full regard to expansion and contraction to avoid buckling and to avoid damaging metal surfaces.

.3 Fabricate all possible work in shop in maximum 2400 mm lengths by brake forming, bench cutting, drilling and shaping. Match existing profiles where metal flashing is to be repaired.

.4 Hem exposed edges on underside 13 mm. Mitre and seal corners with sealant.

.5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.6 Dry joints are to be tight but not dented so as to permit slight adjustments of sheets and yet remain watertight.

.7 Lock seams at all corners.

.8 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

.9 Supply all accessories required for installation of sheet metal work of this Section. Fabricate accessories of same material to which they will be used.

2.5 REGLETS AND SCUPPERS

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

.2 Scupper to have minimum 125 mm roof flange to Consultant's approval. Make all seams continuous and watertight by soldering or heat welding.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 SHEET METAL FLASHING INSTALLATION

.1 Install sheet metal flashings at copings, walls, expansion joints, roof openings and other components required to protect the membrane flashings as shown on the drawings or otherwise required. Where not indicated, follow applicable CRCA 'FL' series details or 'AAI-Aluminum Sheet Metal Work in Building Construction' details.

.2 Install continuous concealed starter strips at all exterior faces. Install cleats between lock joints and as indicated to permanently hold flashing in place. Install hook strip fasteners with 2 fasteners per cleat.

.3 Sheet metal work shall be installed to cover the entire area it protects and shall be watertight under all service and weather conditions. Install in a uniform manner, true to line, free of dents, warping and distortion.

.4 Back-paint sheet metal that comes into contact with another kind of metal, masonry or concrete with bituminous paint at the rate of 0.15 L/m^2.

.5 Install sheet metal with concealed fasteners at lock joints. Exposed fastening will only be permitted with the approval of the Consultant. When exposed fasteners

are shown, space all fasteners evenly in an approved manner. Use lead plugs and screws with neoprene washers where fasteners are exposed, otherwise use concrete drive fasteners where metal flashings are installed over concrete masonry.

.6 Join sheet metal by “S” lock seams, to permit thermal movement. Seal all fasteners and completely fill all joints with Type ‘B’ sealant as flashing is being installed. Clean off all excessive visible material subsequent to installation.

.7 When flashing is being installed in more than one piece, offset joints in adjacent flashings by approximately 50%.

.8 Form inside and outside corners by means of locked seams. Do not use pop rivets unless accepted by Consultant.

.9 Slope all metal to interior of roof area to maintain slope, unless otherwise indicated. Do not form open joints or pockets that fail to drain water.

.10 Where existing reglets are to be re-used, remove existing sealant and re-cut to conform to the size requirements specified herein.

3.3 REGLETS

.1 Cut reglets in existing mortar joint or other materials as indicated. Unless otherwise indicated, cut continuous rectangular slot 25 mm deep height of mortar joint where metal flashings are to terminate. Clean free of dust and contaminants.

.2 Install membrane flashing materials as indicated. Form metal flashing to fit into reglet slot with return.

.3 Install lead wedges at maximum 300 mm c/c, keep back 6 mm from face of joint.

.4 Install backer rod and sealant Type ‘B’ to fill reglet slot and shed water out onto metal flashing face. Tool uniformly.

.5 Fasten metal flashing to vertical walls as indicated below reglet level, maximum 900 mm on centre.

3.4 CLEANING

.1 Remove protective film (if any) from exposed surfaces of copper promptly upon installation. Strip with care to avoid damage to finishes.

.2 Clean exposed copper surfaces, removing substances that might cause abnormal discoloration of metal.

.3 Upon completion of each area of soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing clear water rinse. Use special care to neutralize and clean crevices.

.4 Clean exposed metal surfaces of substances that would interfere with uniform oxidation and weathering.

.5 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.6 Leave work areas clean, free from grease, finger marks and stains.

3.5 PROTECTION

.1 Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 52 00 - Modified Bituminous Membrane Roofing.

.3 Section 07 62 00 – Sheet Metal Flashing and Trim.

.4 Section 22 05 11 – Plumbing and Drainage.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-19.13-M87, Sealing Compound, One Component, Elastomeric, Chemical Curing.

.2 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

1.3 COORDINATION

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

1.4 EXAMINATION

.1 Do not commence work until surface to be covered has been inspected.

.2 Inspect work and advise the Consultant of conditions that would adversely affect the work of this trade.

.3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepts responsibility for appearances and performance of completed work.

1.5 DELIVERY, STORAGE AND HANDLING

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

1.6 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity and substrate moisture content for application and curing of sealants including special conditions governing use.

.3 In confined spaces provide portable supply of outside air and exhaust fans to ensure fumes will not impact workmen or building occupants.

.4 Compatibility is essential in use of any materials that will be compatible when incorporated in finished assembly.

Part 2 Products

2.1 MATERIALS

.1 Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers.

.2 Modified bitumen sealant (Sealant Type 'A'):

.1 For penetration and terminations of bituminous and modified bituminous membrane: To CAN/CGSB-37.5. As recommended by membrane manufacturer.

.2 Standard of acceptance or approved equivalent:

.1 Sopramastic 200 by Soprema.

.2 MBR Flashing Cement by Johns Manville.

.3 Polybitume 570-05 by Henry Bakor.

.3 Urethanes one part (Sealant Type 'B'):

.1 Non-sag: To CAN/CGSB-19.13, Type 2, MCG-2-25, colour to match surfaces.

.2 Standard of acceptance or approved equivalent:

.1 Dymonic by Tremco.

.2 Sonolastic NP1 Ultra by Sonneborn.

2.2 JOINT CLEANER

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

2.3 PRIMER

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

Part 3 Execution

3.1 PROTECTION

.1 Protect installed work of other trades from staining or contamination.

3.2 PREPARATION OF JOINT SURFACES

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful substances including dust, rust, oil, grease and other matter, which may impair work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

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

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 APPLICATION

.1 Sealant - General:

.1 Apply sealant when air and substrate temperatures are not forecast to be less than minimum recommended by manufacturer. Do not work during inclement weather. Perform all work in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets and embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.9 The use of liquid tooling aids, such as soapy water or alcohols, are prohibited as they may impact effective sealant cure, adhesion and potentially cause aesthetic issues.

.2 Sealant Type 'A':

.1 Install sealant Type 'A' to the top of membrane flashings where required or as shown on drawings. Modified sealant to be installed around finished

flashings at all protrusions including soil stacks, sleeves, pitch boxes and fasteners securing membrane to walls.

.2 Apply sealant Type 'A' with hand trowel to achieve a 25 mm width and minimum 3 mm thickness.

.3 Apply sealant Type 'A' immediately after flashings have been installed and are still warm. No membrane flashings shall be left uncovered at the end of any work period. *(Non-compliance with this mandate may result in rejection, removal and replacement of the membrane flashings to the affected area).*

.4 Trowel sealant Type 'A' in two directions to ensure proper adhesion to substrate and that all surface irregularities are filled. Tool surface of modified sealant to smooth finish.

.5 Install sealant Type 'A' at the underside of drains, metal sleeves and other location where specified on drawings.

.3 Curing:

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.4 Install sealant Type 'B' at sheet metal terminations.

3.5 CLEANING

.1 Clean adjacent surfaces immediately and leave work neat and clean.

.2 Remove excess droppings using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

.4 Clean all contaminated surfaces to Owner's acceptance.

.5 Remove all rubbish and surplus materials from the job site on a daily basis.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 52 00 - Modified Bituminous Membrane Roofing.

.3 Section 07 92 00 – Joint Sealants.

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM C547-12. Standard Specification for Mineral Fiber Pipe Insulation.

.2 American Water Works Association (AWWA).

.1 ANSI/AWWA C110/A21.10-08, American National Standard for Ductile-Iron and Gray-Iron Fittings for Water.

.2 ANSI/AWWA C111/A21.11-12, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

.3 Cast Iron Soil Pipe Institute (CISPI)

.1 CISPI 310-12, Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

.4 Canadian Standards Association (CSA International)

.1 CAN/CSA-B70-12, Cast Iron Soil Pipe, Fittings, and Means of Joining.

.2 CSA B79-08 (R2013), Commercial and residential drains and cleanouts.

.3 CAN/CSA B1800-11, Thermoplastic Nonpressure Piping Compendium.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTAL / APPROVAL

.1 Do not commence work until satisfactory installation of related work has been completed and approved.

.2 Inspect work and advise Consultant of conditions that would adversely affect the work of this trade.

.3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepted responsibility for appearance and performance of completed work.

.4 Defective work resulting from work on unsatisfactory surfaces will be considered the responsibility of those performing the work of this Section.

.5 Repair damage and inferior work caused by the work of this Contract with materials and finish to match the original to Consultant's approval.

.6 Submit to the Consultant a list of materials intended for use before they are ordered.

.7 Provide samples of material without additional cost, to the Consultant for review as requested.

1.4 QUALITY ASSURANCE

.1 All drain installations shall be completed by plumbing subtrades licensed to undertake plumbing work in Ontario.

.2 Equipment and materials must be new and free of imperfections.

Part 2 Products

2.1 MATERIALS

.1 All standards, regulations and specifications listed herein are considered to be the latest available edition.

.2 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.

.3 Cast iron roof drains, at existing or new drain locations: Cast iron body, under deck clamp and sump receiver to suit roof construction, flashing clamp ring with bearing pan, and cast iron dome.

.1 Standard of acceptance or approved equivalent:

.1 Watts Drain RD-100.

.2 Drain connector:

.1 Mechanical connection using double clamp to drain body and rainwater leader.

.2 Standard of acceptance or approved equivalent:

.1 Fernco Couplings.

.4 Provide control flow weir at all drains unless otherwise indicated. Weir to be supplied by drain manufacturer.

.5 Pipe hangers: Adjustable type wrought iron design to allow pipe movement and insulation to pass unbroken through hanger.

.6 Mechanical joints: Neoprene or butyl rubber gasket with stainless steel clamp type joint to CISPI 310-12.

.7 Insulation for pipes: 25 mm thick performed type mineral fibre insulation to ASTM C547.

.1 Standard of acceptance or approved equivalent:

.1 Roxul Techton 1200 or SSL II Fiberglas by Owens Corning.

.8 Insulation for underside of drain: 2-component, 1 kg density polyurethane foam as detailed.

.9 Insulation covering:

.1 Cover pipe insulation with canvas membrane wrap and paint.

.2 Where exposed, use preformed PVC.

.10 Firestop sealant: Approved by manufacturer for use in fire-rated firestop assembly.

.1 Standard of acceptance or approved equivalent:

.1 A/D Firebarrier Silicone.

.2 3M Fire Barrier.

.11 Firestop insulation: Mineral wool approved by manufacturer for use in fire-rated firestop assembly.

.1 Standard of acceptance or approved equivalent:

.1 Roxul 'Safe'.

.2 AD Firebarrier.

2.2 DRAIN ACCESS DOOR

.1 New access panels shall be of galvanized steel construction with hinged openings and a decorative flange to cover the ceiling cut edges. Units shall have a factory applied white paint finish. Minimum steel thickness shall be 0.7 mm and have self-locking access.

Part 3 Execution

3.1 PREPARATION

.1 Inspect surfaces and ensure that:

.1 Roof deck is level or sloped to provide proper and complete drainage from the roofing system in conformity to design intent.

.2 Roof drains are set at a level to allow for positive drainage and are connected or capped.

.3 Plumbing is accessible and work can be completed as specified. Notify Consultant of any adverse conditions.

.4 Existing roof drains are open and functioning properly.

.2 Contractor shall advise Consultant in the event that the existing system or materials do not meet current code requirements.

.3 Unless indicated otherwise, the plumbing sub-trade shall be responsible for the removal and reinstatement of furniture, plants and interior equipment, excluding computers, monitors, copiers and the like.

.4 Contractor to provide interior protection to all areas where plumbing work is being completed. Provide sufficient dust and debris and include for any supplemental clean up to return interiors to pre-construction conditions.

.5 Remove and discard all existing drains and plumbing not designated for re-use. Notify Owner of any hazardous materials encountered.

3.2 INSTALLATION AT EXISTING DRAIN LOCATIONS

.1 Increase openings in structures to facilitate plumbing as required.

.2 Join pipe by means of rubber gaskets or mechanical couplings.

.3 Fill voids around drain opening on concrete or lightweight concrete decks with quick dry concrete grout flush with top and bottom of deck.

.4 Where area is inaccessible to install couplings, advise and request Consultant to obtain a ruling on acceptability. Where directed by Consultant, install anti-backflow seals to match pipe size and secure in place.

.5 Extend insulation from pipes to drain hub. Cover with pipe wrapping and finish to general standards. If blanket insulation is used, ensure that all insulation fits tight to drain hub. Seal overlaps, edges and joints with reinforced vapour proof tape suitable to permanently hold insulation in place. Alternatively, in conformance with drawings, protect hubs with spray foam insulation, minimum thickness 38 mm unless otherwise specified or shown. Provide metal protection pan over deck as detailed.

.6 Install PVC covering over insulated piping where plumbing is exposed on the interior of the building.

.7 Ensure each roof is provided with operational drainage at the end of each work day.

3.3 DRAIN ACCESS DOOR

.1 Cut access opening in existing finished ceiling in most optimum location to access new drain/piping or as indicated on drawings. Cut edges neatly and install hatch, ensuring that door opening is in the direction of the larger area of ceiling space to facilitate ease of future ladder use. Install hatch plumb level with decorative flange flush with ceiling and anchor in position in accordance with manufacturers printed instructions.

3.4 PIPING TEST

.1 Perform water tests before restoring interior ceilings and finishes.

.2 Install plumbing line plugs below the level of connection and water test new plumbing installation. Correct all leaks.

.3 Make leaks watertight while systems are still under test. If this is impossible, remove and refit defective parts. Caulking of threaded joints will not be permitted.

.4 After leaks have been repaired, repeat tests as often as necessary to obtain approval and to ensure watertightness of each system.

.5 Correct level of drains or pipes, if roof or pipes hold water.

3.5 FINISH

.1 Restore and clean all existing surfaces affected by the work to match existing materials and finish.

END OF SECTION

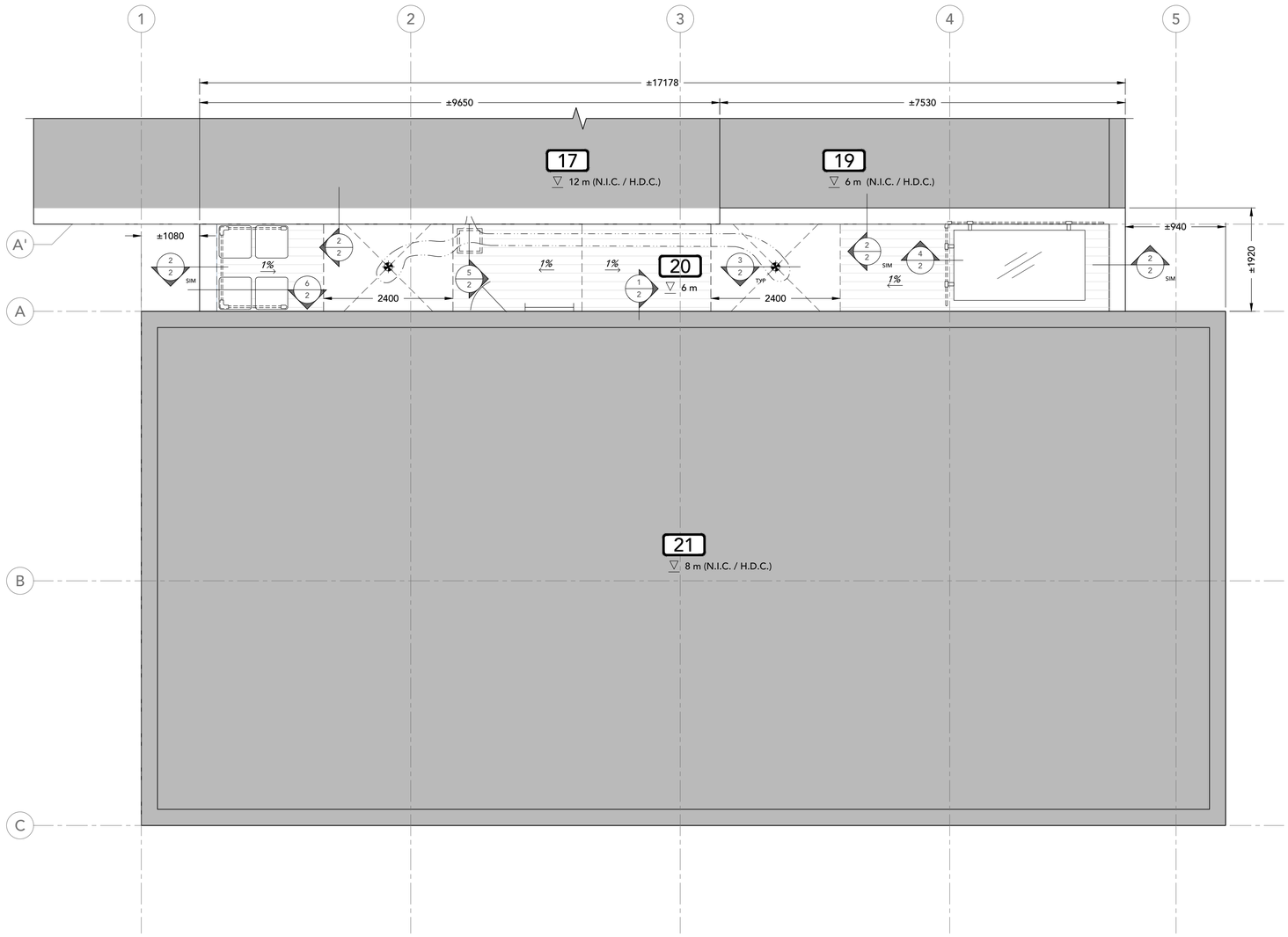
APPENDIX A

Project: **Roof Replacement, Roof Area 20**
Réfection de Toiture, Toit 20

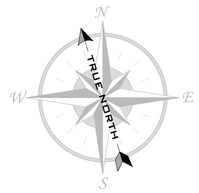
Main Building
Ottawa

ROOF AREA 20 – PHOTOS
TOIT 20 - IMAGES

T: 613-831-7293
F: 613-831-3812
www.fsaeng.com
110-150 Katimavik Road
Ottawa, Ontario
K2L 2N2



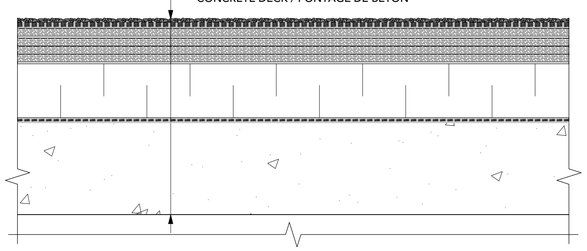
ROOF PLAN
1:50



LEGEND / LÉGENDE

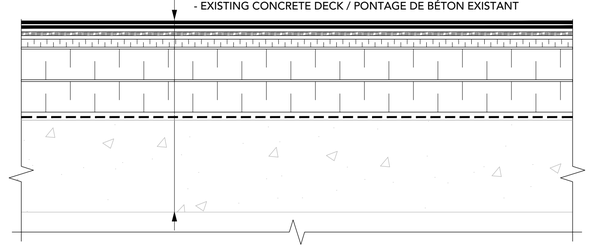
SYMBOL / SYMBOLE	DESCRIPTION
	BALLASTED GUARDRAIL GARDE-CORPS STATIONNAIRE
	B-VENT ÉVENT DE TYPE B
	CONCRETE PAVER DALLE DE BÉTON
	CONDUIT AND SUPPORT TUYAUTERIE ET CONDUIT ET SUPPORT
XXXX	EXTENT AND DIRECTION OF STRUCTURAL SLOPE AIRE ET DIRECTION DE LA PENTE STRUCTURALE
	PLUMBING VENT ÉVENT DE PLOMBERIE
	ROOF DRAIN WITH SUMP DRAIN DE TOIT ET PUISARD
	ROOF LADDER ÉCHELLE FIXE
XX XX	ROOF NUMBER AND ELEVATION NUMÉRO ET HAUTEUR DU TOIT
	SKYLIGHT PUITS DE LUMIÈRE
	LIGHT FIXTURE/CAMERA MOUNTED ON PAVER LAMPE / CAMÉRA INSTALLÉE SUR DALLE DE BÉTON
	ROOF ANCHOR ANCRAGE DE TOIT

EXISTING ROOF SYSTEM / SYSTÈME DE TOITURE EXISTANTE E1:
- 4-PLY BUR MEMBRANE WITH GRAVEL / MEMBRANE MULTICOUCHE DE 4-PLIES AVEC GRAVIER
- 13 mm FIBREBOARD / PANNEAU DE FIBRE DE BOIS DE 13 mm
- SLOPED FIBREBOARD / PANNEAUX DE FIBRE DE BOIS EN PENTE
- 88 mm FIBREGLASS INSULATION / ISOLANT DE FIBRE DE VERRE DE 88 mm
- 2-PLY BUR AIR/VAPOUR BARRIER / PARE-VAPEUR MULTICOUCHE DE 2-PLIES
- CONCRETE DECK / PONTAGE DE BÉTON



E1 / 1 EXISTING ROOF SYSTEM / SYSTÈME DE TOITURE EXISTANTE E1
1:5 ROOF AREA 20 / TOIT 20

TYPICAL ROOF SYSTEM / SYSTÈME DE TOITURE TYPIQUE R1:
- 2-PLY MOD. BIT. MEMBRANE / MEMBRANE DE BITUME MODIFIÉ 2-PLIES
- 6 mm PROTECTION BOARD / PANNEAU DE PROTECTION 6 mm
- SLOPED POLYISO. INSULATION / ISOLANT DE POLYISO EN PENTE
- 50 mm POLYISO INSULATION / ISOLANT DE POLYISO DE 50 mm
- 50 mm POLYISO INSULATION / ISOLANT DE POLYISO DE 50 mm
- 1-PLY MOD. BIT. AIR/VAPOUR BARRIER / PARE-VAPEUR 1-PLIE MBM
- EXISTING CONCRETE DECK / PONTAGE DE BÉTON EXISTANT



R1 / 1 TYPICAL ROOF SYSTEM / SYSTÈME DE TOITURE TYPIQUE R1
1:5 ROOF AREA 20 / TOIT 20

NCC CCN
Canada

Capital Planning and Real Asset Management Branch
Direction de l'aménagement de la capitale et gestion de l'immobilier

Design and Construction Division
Division design et construction

director - Claude Robert - directeur

consultant
expert-conseil

Fishburn Sheridan & Associates Ltd.
110 - 150 Katimavik Road, Ottawa, Ontario, K2L 2N2
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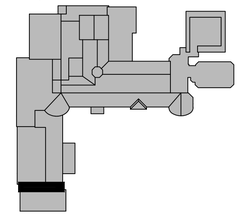
Key Plan
Plan Repère



NOTES:
1. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL DIMENSIONS AND CONFIRM EXISTING CONDITIONS.
2. NOTIFY CONSULTANT IMMEDIATELY OF ANY DEVIATIONS FROM ASSUMED EXISTING CONDITIONS AS THEY ARE ENCOUNTERED ON SITE.
3. TEMPORARILY SUPPORT EXISTING ELECTRICAL HEAT TRACE CABLES. REINSTATE UPON COMPLETION TO MATCH PRE-CONSTRUCTION LAYOUT.
4. DRAWINGS ARE NOT TO BE SCALED.

issued or revised
émis ou revisé

no.	description	date
2	FOR TENDER / POUR SOUMISSION	2017-10-16
1	FOR REVIEW / POUR RÉVISION 90%	2017-09-21

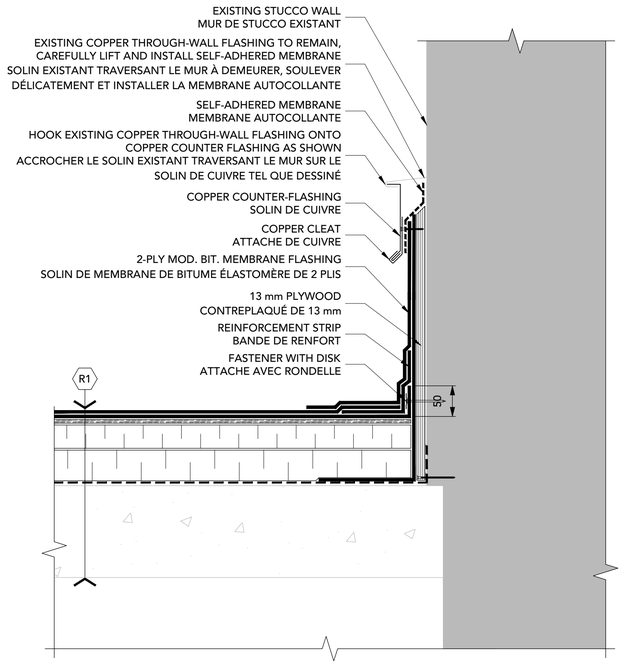
project
projet

MAIN BUILDING LOWER ROOF
OTTAWA, ONTARIO
ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 20 / TOIT 20

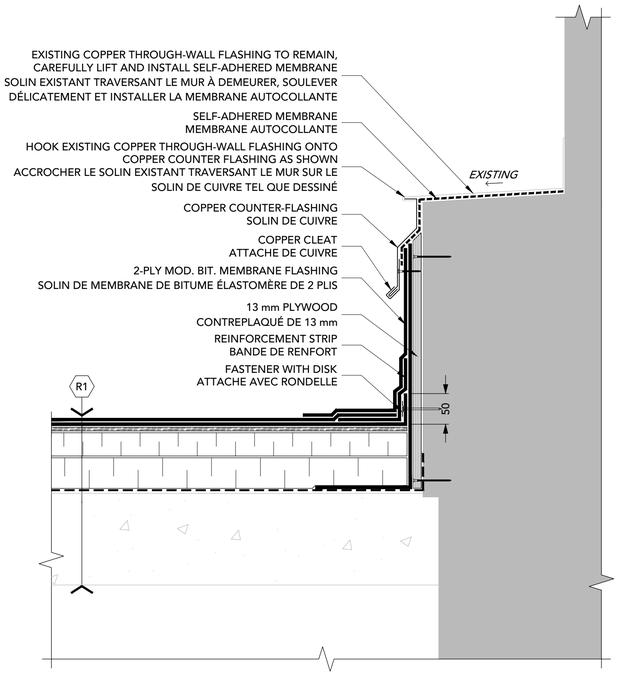
drawing
dessin

ROOF PLAN / PLAN DU TOIT

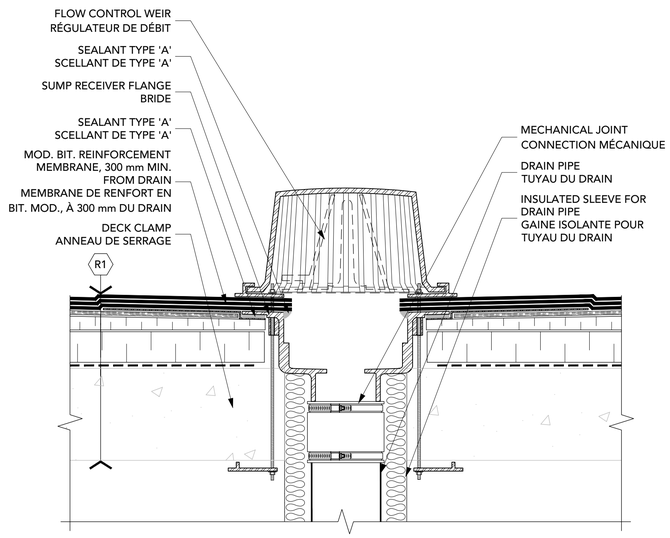
reviewed by révisé par	J. C.
designed by conçu par	M. P.
drawn by dessiné par	J. M.
FSA #	17345DO
date	SEPTEMBER, 2017
scale échelle	AS SHOWN
NCC project no. no. du projet de la CCN	---
sheet no. no. de la feuille	1



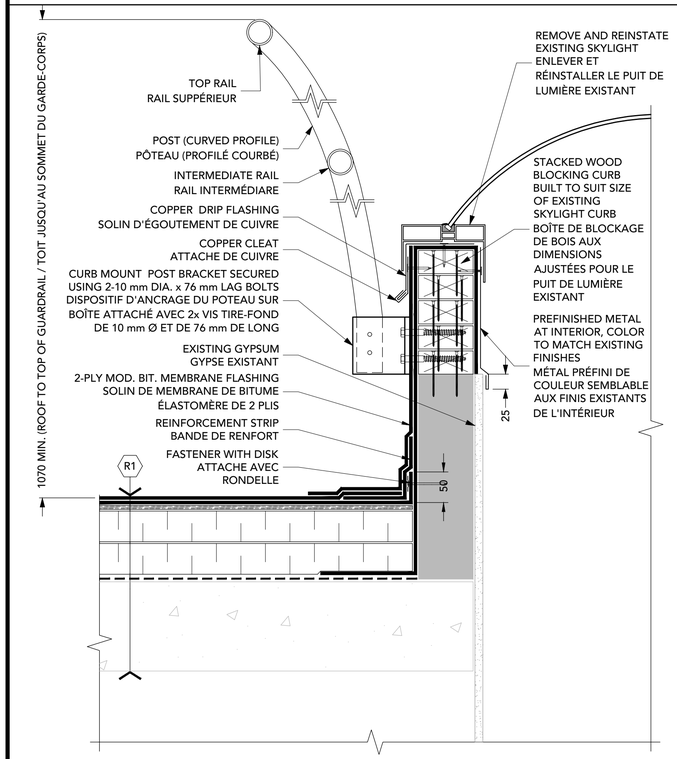
1 / 2 WALL TIE-IN / TERMINAISON AU MUR
1:5



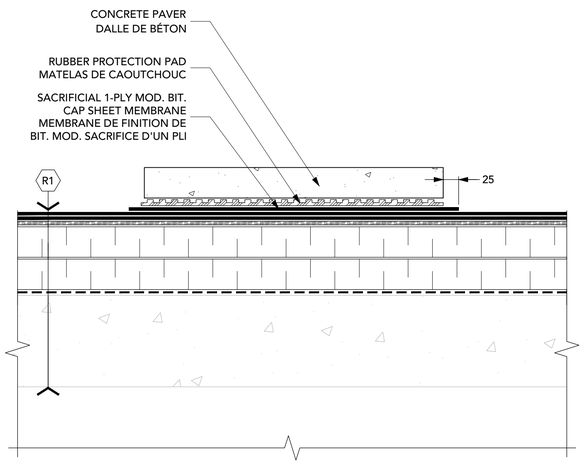
2 / 2 PARAPET TIE-IN / TERMINAISON AU PARAPET
1:5



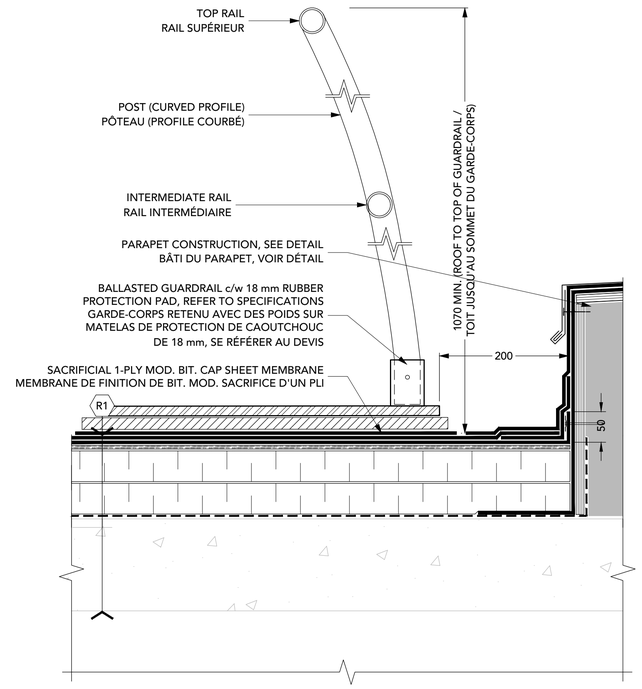
3 / 2 ROOF DRAIN / DRAIN DE TOIT
1:5



4 / 2 GUARDRAIL ON SKYLIGHT / GARDE-CORPS SUR PUIT DE LUMIÈRE
1:5



5 / 2 CONCRETE PAVER / DALLE DE BÉTON
1:5



6 / 2 BALLASTED GUARDRAIL / GARDE-CORPS RETENU PAR POIDS
1:5

NCC CCN
Canada

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Key Plan
Plan Repère

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project
projet

MAIN BUILDING LOWER ROOF
OTTAWA, ONTARIO
ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 20 / TOIT 20

drawing
dessin

DETAILS

reviewed by / révisé par	J. C.
designed by / conçu par	M. P.
drawn by / dessiné par	J. M.
FSA #	17345DO
date	SEPTEMBER, 2017
scale / échelle	AS SHOWN
NCC project no. / no. du projet de la CCN	---
sheet no. / no. de la feuille	2

SPECIFICATIONS FOR

ROOF REPLACEMENT
ROOF AREA 20

MAIN BUILDING, LOWER ROOF
OTTAWA, ONTARIO

Prepared for:

National Capital Commission
202-40 Elgin Street
Ottawa, Ontario K1P 1C7

Prepared by:

Fishburn Sheridan & Associates Ltd.

110 – 150 Katimavik Road, Ottawa, Ontario K2L 2N2
T: 613-831-7293 | F: 613-831-3812 | www.fsaeng.com

FSA Project No.: 17345DO

October 2017

END OF SECTION

Part 1 General

1.1 GENERAL DESCRIPTION OF THE WORK

.1 Work to be carried out under this Contract, Roof Replacement in Ottawa, Ontario.

.2 Provide the necessary labour and materials to complete the removal of the existing roofing system, existing curbs, sheet metal flashings and membrane down to the existing structural deck and install new roofing system as specified herein.

.3 The new roof system shall be as follows and as specified in the areas indicated on the drawings:

.1 Typical Roof System R1:

.1 Existing concrete deck.

.2 Air/vapour barrier.

.3 2 x 50 mm polyiso insulation.

.4 Sloped polyiso insulation as indicated on the drawings.

.5 6 mm protection board.

.6 2-ply modified bituminous membrane.

.4 Supply and installation of related rough carpentry at parapets, walls and curbs.

.5 Supply and install all sheet metal and copper flashings and all other roof related metal flashings required to complete roof installation.

.6 Supply and installation of all sealants required to seal the transition of membrane and related metal detailing and the termination of sheet metal and non-membrane surfaces.

.7 Supply and installation of new roof drains as detailed and indicated on the drawings. New drains shall be in the same locations and shall include all required clamps, hangers, insulation, vapour wrap and all other items required to complete the new drain installation.

.8 Supply and installation of self-ballasting guardrail and curb mount guardrail as indicated on the drawings.

1.2 DEFINITIONS

.1 "CONSULTANT" and “Fishburn Sheridan & Associates Ltd.” and “FSA” are synonymous.

.2 "OWNER" and **“**National Capital Commission” and “NCC” are synonymous.

.3 “CONSTRUCTOR” and “CONTRACTOR” are synonymous.

1.3 OTHER CONTRACTORS

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

1.4 USE OF THE SITE

.1 Carry out the Work so as to have the least possible interference and disturbance to the normal use of the premises. The successful bidder is expected to include in the bid an allowance for the performance of off-hours work should it be required to conform with the above.

.2 Maintain services to existing building and provide for personnel and vehicle access.

.3 Restrict construction access to and from site to approved location. Do not allow construction traffic to block entrances or exits for any reason.

.4 Co-ordinate any interference with Owner's operation in this area and abide by Owner's direction in this regard. In cases of conflicting requirements, Owner's operation takes precedence but all reasonable effort to accommodate Contractor's needs will be made.

1.5 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.

.2 Remove abandoned service lines within 2.4 m of structures. Cap or otherwise seal lines at cut-off points as directed by Consultant.

.3 Services are to be left operational unless otherwise authorized by Owner.

.4 Unless otherwise specified, the Contractor will be responsible for disconnection, relocation, re-installation and extending all services required to facilitate work under this Contract. Co-ordinate work with the Owner and provide minimum 48 hours notification if services are to be interrupted.

1.6 CUTTING AND PATCHING

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

1.7 PROTECTION OF PROPERTY

.1 Protect surrounding private and public property from damage during the performance of the Work.

.2 Be responsible for damage incurred.

1.8 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during the performance of the Work as required by insurance companies and governing codes, regulations and by-laws having jurisdiction.

.2 Work requiring the generation of open flames (welding, soldering, etc…) cannot be performed until an Owner’s Permit has been issued. It is the responsibility of the successful bidder to apply for here said permit.

.3 Open fires and burning of rubbish are not permitted on site.

1.9 OCCUPATIONAL HEALTH AND SAFETY

.1 Follow the Ontario Provincial Occupational Health and Safety Act and Regulations for Construction Projects. For the purposes of the act, the person or company contracted to carry out the work shall be deemed the **"Constructor".**

.2 Hazardous materials, not identified by the Owner, may be encountered at the worksite. Use all necessary precautions when handling such material. It is possible that asbestos may exist in some form and if encountered the Contractor is responsible to notify the Owner and to follow Ontario Ministry of Labour regulations governing the handling of asbestos in the workplace.

.3 The Owner may cause those who do not comply with the O.H.S.A. and Regulations to be escorted from the site.

1.10 PROTECTION OF BUILDING FINISHES AND EQUIPMENT

.1 Prevent movement, settlement, or other damage to other adjacent structures, utilities, and parts of building to remain in place. Provide bracing and shoring if required.

.2 Keep noise, dust, and inconvenience to occupants to a minimum.

.3 Protect building systems, services and equipment. Protect all furnishings within work area with (6 mil) polyethylene film during construction. Remove film during non-construction hours and leave premises in clean, unencumbered and safe manner for normal daytime function.

.4 Provide temporary dust tight screens, partitions, covers, railings, barricades, supports and/or other protection as required. Protect workers, finished areas of work and public.

1.11 PARKING

.1 Parking is available on site.

.2 All vehicles must be parked in designated parking areas (except for reasonable loading and unloading of equipment and/or materials to a local entrance). Failure to observe these requirements may result the vehicle being ticketed and/or towed.

1.12 SIGNS AND ADVERTISEMENTS

.1 No signs or advertisements of any description other than notices regarding safety shall be displayed at the Work Site without permission of the Owner.

.2 Upon completion of the Work, all signs shall be removed except those specifically directed by the Owner to remain.

1.13 CLEAN-UP

.1 Maintain the work area in tidy condition, free from the accumulation of waste products and debris.

.2 Remove waste and materials regularly so as to maintain a tidy work site. Do not dispose of any waste in the Owner's facilities unless specifically directed to do so by authorised personnel.

.3 Store materials in areas specially designated by the Owner. Dispose of this debris in a legal manner so as to avoid causing a hazard to occupants and visitors on site.

1.14 MATCHING

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

1.15 PERMITS, FEES, CERTIFICATES

.1 A Building Permit will not be required for this project.

.2 Arrange and pay for all inspection certificates required by Authorities having jurisdiction, (i.e., Electrical Safety Authority Certificate). Provide the Owner with copies of these certificates upon completion.

1.16 DISRUPTION OF SERVICES

.1 The Contractor is responsible to provide adequate written notice to the Owner of any interruption of services (i.e., mechanical, electrical etc.) for the connection of new services or the alteration of existing.

.2 The Contractor is expected to co-operate reasonably with the Owner in the scheduling of service interruptions.

1.17 SANITARY FACILITIES

.1 Temporary sanitary facilities will be provided by the Constructor in compliance with the Occupational Health and Safety Act and Regulations for Construction Projects.

1.18 POWER

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

1.19 WATER SUPPLY

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

1.20 TEMPORARY FACILITIES

.1 Any temporary facilities provided at the site by the Contractor must be removed upon completion of the work and the area used must be returned to the original condition.

1.21 DOCUMENTS REQUIRED

.1 Maintain at the job site, one copy each of the following:

.1 Original Plans and Specifications and completed Form of Tender.

.2 Building Department stamped drawings if required.

.3 Any changes to Drawings or Details.

.4 Shop Drawings and any changes.

.5 Addenda.

.6 Change Orders.

.7 Site Instructions.

.8 Contractor's Safety Policy.

.9 Safety Data Sheets.

1.22 WORK SCHEDULE

.1 Within 5 working days of intent to award, provide a schedule showing anticipated progress stages and final completion of the Work within the specified time period, indicating each trade and inter-phasing. Allow for expected poor weather days.

1.23 CHANGES IN WORK

.1 All changes to the Contract Documents which result in an extra or credit to the Contract amount or time are not to be executed until written instructions have been received and the extra or credit agreed to in writing by all parties.

.2 Execute variations, alterations and substitutions that do not affect the intent, function, duration, or Contract amount, as instructed by the Consultant.

.3 Changes to the work that are considered urgent by the Owner shall be acted upon by the Contractor on the basis of a written field instruction to be confirmed by a Change Order. Costs are to be kept and presented along with all appropriate timesheet vouchers and bills of materials, or fixed sum if, work is done by a Sub-Contractor on a lump sum basis.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 American National Standard / American Society of Safety Engineers (ANSI/ASSE):

.1 ANSI/ASSE A1264.1-2007 Safety Requirements for Workplace Walking/Working Surfaces and their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrail Systems.

.2 ASTM International

.1 A27/A27M-13 Standard Specification for Steel Castings, Carbon, for General Application

.2 ASTM A 47-2014, Standard Specification for Ferritic Malleable Iron Castings.

.3 ASTM A500-13 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

.4 ASTM B 221M-13, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

.5 ASTM B429//B241M-10e1, Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

.6 ASTM E935-13e1, Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.

.3 National Research Council Canada (NRC)

.1 National Building Code of Canada 2015 (NBC).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with the following:

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for guarddrails and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit manufacturer’s installation instructions with project specific annotations to suit project conditions.

.3 Shop Drawings:

.1 Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

.2 Indicate installation of guardrails including but not limited to plans, elevations, sections, details of components, anchor details and clearances to adjacent assemblies. Indicate critical field dimensions and conflicts.

.3 Indicate installation conditions at obstructions or at junction with adjacent construction as necessary to provide continuity of protection.

.4 Parts List:

.1 Submit parts list indicating manufacturer's name, part number and name, quantity required for complete installation.

.5 Certifications:

.1 Submit certification that modular guardrail system has been tested in accordance with ASTM E935, that it conforms to requirements of ANSI/ASSE A1264.1 and to workplace safety requirements of authority having jurisdiction.

.6 Modular guardrail system shall be the standard product of a manufacturer regularly engaged in the engineering design and manufacture of such products. System shall consist of components that have been in satisfactory use for at least 2 years prior to date of tender issue.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements:

.1 Deliver products to site in original factory packaging, labelled with manufacturer's name and address, and list of contents of each package.

.2 Inspect products for any damage or deformation. Remove damaged products from site and replace with matching undamaged products.

.3 Check package contents list against submitted parts list to ensure all components necessary for a complete installation have been delivered.

.3 Storage and Handling Requirements:

.1 Store material in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect guardrail components from all damage. Protect finish from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MANUFACTURED UNITS

.1 Acceptable manufacturer and product list:

.1 KeeGuard, by Kee Safety Inc.

.2 RoofBarrier, by Skyline Group.

2.2 DESIGN CRITERIA

.1 Installed guardrail assembly and anchorage shall conform to ANSI/ASSE A1264.1, structural requirements of NBC 2015 and workplace safety requirements of authority having jurisdiction.

.1 In case of conflicting requirements, the more stringent requirement shall apply.

2.3 MODULAR STEEL GUARDRAIL SYSTEM

.1 Refer to drawings for proposed design concept.

.2 Rails: 32 or 38 mm diameter structural steel to ASTM A53.

.3 Posts: 32 or 38 mm diameter structural steel tubing to ASTM A500 curved profile as indicated.

.4 Fittings: elbows, T-shapes, couplings, machined steel castings to ASTM A27 with locking stainless steel set screws.

.5 Non-Penetrating (Ballasted) Installation: weighted base mounting plate with non-abrasive non-slip resilient pad, with integral receivers to secure and fasten posts.

.6 Curb Mount Installation: pre-fabricated bracket component, with integral receivers to secure posts. Brackets shall come complete with anchors to suit installation conditions in accordance with accepted manufacturer’s shop drawings.

.7 Exposed Fasteners: flush countersunk screws or bolts; consistent with design of railing.

.8 Splice Connectors: collar with locking set screws, galvanized steel.

.9 Galvanizing: to ASTM A153, provide minimum 600 g/sq m galvanized coating.

.1 Touch-Up Primer for Galvanized Surfaces: SPCC 20 Type I Inorganic zinc rich.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for handrail installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Consultant.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant.

3.2 INSTALLATION

.1 Assemble and install modular guardrail system in accordance with manufacturer's instructions, accepted shop drawings and as necessary to provide continuity of protection.

.2 Install components plumb and level, in proper alignment with adjacent assemblies.

.3 Ensure guardrails extend beyond posts as required to leave no more than 100 mm gap to adjacent walls.

.4 At non-penetrating or freestanding guardrail, set posts into weighted base plates and secure.

.5 At curb mount guardrail, set mounting bracket in roof mastic and secure to skylight curb as shown on the drawings.

.6 Conceal bolts and screws whenever possible.

.7 Assemble with fittings, spigots, sleeves and set-screws to produce secure, vibration-resistant installation.

3.3 CLEANING

.1 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by hand rail installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 52 00 – Modified Bituminous Membrane Roofing.

.2 Section 07 62 00 – Sheet Metal Flashing and Trim.

.3 Section 07 92 00 – Joint Sealants.

.4 Section 22 05 11 – Plumbing and Drainage.

1.2 REFERENCES

.1 ASTM International

.1 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 CSA International

.1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
.2 CSA O141-05 (R2009), Softwood Lumber.
.3 CSA O151-09, Canadian Softwood Plywood.

.3 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber 2010.

.4 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S702-14, Standard for Mineral Fibre Thermal Insulation for Buildings.
.2 CAN/ULC-S702.2-10, Standard for Mineral Fibre Thermal Insulation for Buildings, Part 2: Application.
.3 CAN/ULC-S705.1-01, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.
.4 CAN/ULC-S705.2-05, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Application.

1.3 QUALITY ASSURANCE

.1 Lumber identification: By grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood identification: By grade mark in accordance with applicable CSA Standards.

1.4 PRECAUTIONS

.1 Provide temporary protection, to the satisfaction of the Consultant, to render all wood blocking watertight, if for any reason permanent membrane protection cannot be provided within the same day. Ensure the base of any curbs are

temporarily sealed to prevent water from entering below the curb assembly, or behind sheathing, should the roof assembly not be completed on the same day as the carpentry work.

Part 2 Products

2.1 LUMBER MATERIAL

.1 Lumber: Unless specified otherwise, softwood, S2S, moisture content 19% or less in accordance with following standards:

.1 CSA O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Furring, blocking, nailing strips, grounds, rough bucks, curbs:

.1 S2S is acceptable for all surfaces.

.2 Board sizes: "Standard" or better grade.

.3 Dimension sizes: "Standard" light framing or better grade.

.4 Post and timbers sizes: "Standard" or better grade.

2.2 PANEL MATERIALS

.1 Canadian softwood plywood (CSP): To CSA 0151.

.1 Urea-formaldehyde free.

2.3 FASTENERS

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

.2 Plywood to concrete, brick or hollow masonry fasteners: Tapcon 6 mm diameter screws. Length to provide minimum 32 mm and maximum 40 mm embedment into substrate as required. Drill holes 13 mm deeper than depth of fastener penetration. Type to be approved subject to results of pull tests.

.3 Nails, spikes and staples: To CSA B111.

2.4 ACCESSORIES

.1 Semi-rigid insulation: semi-rigid mineral wool, rockwool, or slagwool boards, to CAN/ULC 702.2.

2.5 FINISHES

.1 Galvanizing: To ASTM A653/A653M, use galvanized fasteners for all work.

Part 3 Execution

3.1 GENERAL INSTALLATION

.1 Extend air/vapour barrier seals up vertical surfaces and curbs and onto the deck as shown on the Drawings, to provide continuity.

.2 Slope the top of all wood blocking at the roof perimeter in towards the roof at a minimum of 5%, unless otherwise shown on the Drawings.

.3 Comply with requirements of NBC, supplemented by the following paragraphs.

.4 Align and plumb faces of furring and blocking to tolerance of 1:600.

.5 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

.6 Install wood nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.

3.2 SECUREMENT OF WOOD BLOCKING

.1 Comply with more stringent requirements as required by drawings or Ontario Building Code requirements. Increase number and spacing of all fasteners by 50% for 2400 mm from all outside roof corners.

.2 Install fasteners to the design intent to hold all wood blocking permanently in place to prevent warping, deflection and to resist all wind and weather conditions.

.3 Install fasteners in two rows in the direction of the grain, offset one to another in a staggered fashion by approximately 50%. All fasteners shall be placed minimum 10 mm from any edge of framing.

3.3 SHEATHING INSTALLATION

.1 Plywood:

.1 Not less than 2 mm gaps shall be provided between sheets, to allow for material expansion.

.2 Unless otherwise indicated, fasten plywood with a minimum of thirty-six fasteners per 1200 mm x 2400 mm sheet.

3.4 ERECTION

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Countersink bolts where necessary to provide clearance for other work.

.3 Bevel leading edge of wood panel products on vertical applications to facilitate membrane installation and as detailed on drawings.

END OF SECTION

Part 1 General

1.1 GENERAL

.1 Contractor to provide an original, complete insurance policy identifying specific coverage for torch applied systems.

1.2 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 62 00 – Sheet Metal Flashing and Trim.

.3 Section 07 92 00 – Joint Sealants.

.4 Section 22 05 11 – Plumbing and Drainage.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM A653/A653M-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian Standards Association (CSA International)

.1 CSA A231.1-14/A231.2-14, Precast Concrete Paving Slabs / Precast Concrete Pavers.

.2 CSA O151-09, Canadian Softwood Plywood.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.

.2 CGSB 37-GP-56M-80b(A1985), Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.

.3 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

.4 Factory Mutual (FM Global)

.1 Hot Work Permit Form F2630.

.2 FM 4450, Approval Standard for Class 1 Insulated Steel Roof Decks.

.5 Underwriters Laboratories' of Canada (ULC)

.1 CAN/ULC-S107-10, Standard Methods of Fire Tests of Roof Coverings.

.2 CAN/ULC-S126-06, Standard Method for Test for Fire Spread Under Roof Deck Assemblies.

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

.4 CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning roofing Work, with roofing contractor's representative and Consultant to:

- .1 Verify project requirements.
- .2 Review installation and substrate conditions.
- .3 Co-ordination with other building subtrades.
- .4 Review manufacturer's installation instructions and warranty requirements.

1.5 COORDINATION

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

1.6 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with the following.

.2 System summary:

- .1 Provide a one page synopsis of each roof type that lists the assembly components in order from top to bottom.

.3 Product Data:

- .1 Provide two copies or an electronic copy of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations for all products to be incorporated in the new system.
- .2 Provide two copies or an electronic copy of WHMIS for:
  - .1 Primers.
  - .2 Sealers.
  - .3 Liquid membrane.
  - .4 Adhesives.

.4 Provide shop drawings:

- .1 Provide layout for sloped insulation.
- .2 Provide shop drawing or submittal indicating mechanical attachment and adhesive pattern specified by manufacturer for the required wind uplift pressures indicated on the Drawings.

.5 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.7 QUALITY ASSURANCE

.1 Installer qualifications: Company or person specializing in application of modified bituminous roofing systems with 5 years documented experience, approved by manufacturer.

.2 Only certified applicators are permitted to use torch welding equipment.

.3 Hold a pre-installation meeting prior to the start of roofing works, with the roofing contractor's representative and the Consultant, to review installation conditions particular to this project.

.4 Roof membrane manufacturer shall delegate a representative to visit the work site at the start of roofing installation. Contractor shall engage membrane manufacturer's technical representative as required to provide technical guidance for and inspection of membrane application. The Contractor shall at all times enable and facilitate access to the worksite by this representative.

1.8 FIELD QUALITY CONTROL

.1 Adhesion Testing:

.1 If requested by the Consultant, at each roof drainage area, following installation of membrane base sheet, carry out adhesion tests to confirm adhesion of membrane to substrate and substrate layers to each other, down to first mechanically attached layer.

.2 Locations and timing of tests will be directed by Consultant. Provide labour and materials as required to assist Consultant in conducting tests.

.3 If inadequate adhesion is found, conduct further testing to determine the extent of the inadequate adhesion. Replace all defective areas to the satisfaction of the Consultant. Replace substrate materials as necessary with new materials, and patch cut tests with membrane patches extending at least 150 mm beyond the cut.

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

.2 Sample Testing:

.1 If requested by the Consultant, at each roof drainage area, following installation of membrane base sheet, carry out sample tests to confirm materials and installation of roof assembly components. Sample size to be 300 mm x 300 mm.

.2 Locations and timing of tests will be directed by Consultant.

.3 If inadequate construction is found, conduct further testing to determine the extent of the inadequate adhesion. Replace all defective areas to the satisfaction of the Consultant. Replace substrate materials as necessary with new materials, and patch cut tests with membrane patches extending at least 150 mm beyond the cut.

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

1.9 FIRE PROTECTION

.1 Fire Extinguishers:

.1 Pressure rechargeable type with hose and shut-off nozzle,

.2 ULC labeled for ABC class protection.

.3 ULC labeled for A class protection, for wood, paper and fibreboard.

.4 Size 14 kg.

.5 Have one fully charged ABC extinguisher and one fully charged Type A extinguisher on roof per torch applicator, within 3 m of the propane source.

.2 Maintain fire watch for 2 hours after each day's torching operations cease.

1.10 GENERAL REQUIREMENTS

.1 Comply with the General Requirements, General Instructions and Supplementary Conditions.

.2 Execute work in accordance with this Section and other related Sections, Drawings and Details.

.3 Attach roofing to structure to meet requirements of insurance underwriter and authorities having jurisdiction.

.4 Regard manufacturer’s printed recommendations as minimum requirement for materials, methods and workmanship not otherwise specified.

.5 Contact the Consultant if the specifications conflict with the manufacturer’s recommendations. Otherwise it will be assumed that the Contractor and manufacturer are in agreement with procedures outlined.

.6 Advise the Consultant of adjustments to specified roofing procedures caused by weather and site conditions. Make adjustment to specified procedures only after review with the Consultant.

.7 Maintain equipment in good working order to ensure control of roofing operations and protection of work. Types of roofing equipment and laying techniques to be employed are to meet the approval of the Consultant.

.8 Do not penetrate roof deck with any fastening devices that would do damage or impair the function of the assembly.

.9 All temporary drains shall be connected with a mechanical connection (MJ coupling) or a U-flow connection, until new drains are installed.

1.11 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of, sealing compounds, primers and caulking materials.

.3 Manufacturer’s recommendations for handling and storing products are to be considered a minimum requirement.

.4 Materials shall be delivered to the site, undamaged and in their original packages, with manufacturer’s labels visible, attesting to their conformity to specific standards.

.5 Ensure that shelf life of materials has not expired.

.6 Provide bill of lading for bulk loads of bitumen clearly showing Equiviscous Temperatures (EVT), Flash Point (FP) and Final Blowing Temperature (FBT).

.7 Remove damaged material from site and replace all rejected materials with new product.

.8 Elevate on raised platform and store as to prevent deformation of materials.

.9 Provide and maintain dry, off-ground weatherproof storage.

.10 Store rolls of membrane in upright position. Store membrane rolls with selvage edge up.

.11 Remove only in quantities required for same day use.

.12 Place plywood runways over completed Work and over areas not in Contract, as required, to enable movement of material and other traffic.

.13 Store sealants at +5°C minimum.

.14 Store insulation protected from daylight and weather and deleterious materials.

.15 Handle roofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.

.16 Avoid stockpiling of materials or use of equipment on decks in a way which could cause overloading.

1.12 ENVIRONMENTAL REQUIREMENTS

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

.2 Ensure protection of the building from weather at all times. If inclement weather is forecast or appears imminent, postpone work that would risk the building from moisture damage.

.3 If it becomes apparent that work would threaten the building watertightness, the Owner has the right to stop work. Any additional expenses due to work stoppage or postponement of work will be at the Contractor’s expense.

.4 Ambient Conditions

.1 Do not install roofing when ambient temperature remains below -18°C for torch application.

.2 Minimum ambient temperature for solvent-based adhesive is -5°C.

.5 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.13 COMPATIBILITY

.1 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a complete assembly. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.

.2 Defective work resulting from work with incompatible materials will be considered the responsibility of the Contractor.

.3 Repair all work that could result in damage or interfere with performance.

1.14 EXISTING SUBSTRATES

.1 Following removal of existing material to the substrate, inspect the deck for soundness and notify the Consultant of any deck found unsound and not suitable for roofing. Do not commence work until conditions are documented and the Consultant rules on the acceptability of surfaces and/or corrective measures required. The cost of any delays due to postponement of work that results from investigating the site problem or obtaining a ruling will be at the Owner's expense.

.2 The commencement of work is proof that the Contractor has accepted surfaces as satisfactory and accepts responsibility for appearance and performance of completed work.

.3 Defective work resulting from application of material on unsatisfactory surfaces will be considered the responsibility of the Contractor.

.4 The Contractor will be responsible for all repairs, costs and pay all cost and fees required to rectify damage or defective work. Use materials and finish to match the original preconstruction conditions.

1.15 DAILY OPERATIONS

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

1.16 EXAMINATION

.1 Before proceeding with roofing application, ensure that:

.1 All surfaces are clean and free of debris, snow, frost and moisture.

.2 The deck is clean and sufficiently dry to ensure specified adhesion will be obtained.

.3 Adjacent construction and installation of related work (i.e. curbs, drains, penetrations, wood nailers, etc.) incorporated with the roof are complete.

.4 Roof deck is sound, existing fasteners are tight and irregularities are corrected to provide a suitable surface for new roofing.

.2 Ensure substrate is smooth. Remove sharp edges or protrusions that could impair the function of the roof assembly.

.3 Inform Owner/Consultant in writing of any defects.

1.17 DRAINS AND DRAINAGE PLANE

.1 Inspect surfaces and ensure that roof deck is level or sloped to drains in conforming to design intent.

.2 Inspect surfaces and ensure that roof drains are set at a level to drain and are connected or capped.

.3 Take spot levels to verify that pools of water in excess of 13 mm depth will not form.

.4 Tabulate levels and submit to Consultant.

.5 Ensure plumbing is accessible and work can be completed as specified.

.6 Inspect roof drains to ensure they are open and working properly.

.7 Where specified or shown for areas with only one drain, provide overflow scuppers or drains to detail and specified requirements.

1.18 EQUIPMENT

.1 Inspect equipment affected by the work, including but not limited to curbs, existing drains and plumbing, skylight, mechanical and electrical to ensure they are in good repair and working order. Record any damage and advise the Consultant.

.2 During re-roofing, ensure that all electrical lighting/cameras and conduits are properly supported.

.3 Notify Owner and/or Consultant of any equipment which is not operational or damaged prior to the commencement of work.

1.19 ADVISE CONSULTANT

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

1.20 PROTECTION OF ROOFTOP EQUIPMENT

.1 Remove any equipment and flashing intended for re-use and save from harm. Store in approved location and reset at project conclusion unless specified or shown to be removed.

.2 Protect all openings, vents and stacks from weather and contamination from debris.

.3 Provide temporary plumbers plugs to protect drains during roofing operations. Ensure that temporary protection is removed at completion of work period and/or at the end of each days work.

1.21 WARRANTY

.1 Contractor's Warranty for Labour and Material:

.1 For Work of this Section 07 52 00 - Modified Bituminous Membrane Roofing, 12 months warranty period is extended to 24 months.

.2 Make all necessary repairs and replacements within 48 hours of receipt of written notification.

.3 Nothing contained in this Article shall be construed as in any way restricting or limiting the liability in common law and statutory liability of the Contractor.

.4 Provide these written warranties, confirming above, issued on the corporate letterhead, signed and sealed by an authorized signing officer. The warranties will specifically reference the name of the Building, location and Owner.

.2 Manufacturer's Warranty:

.1 Provide a 10-year membrane warranty.

Part 2 Products

2.1 GENERAL

.1 All standards, regulations and specifications listed herein are considered to be the latest available edition.

.2 For sealants, mastic, adhesives or caulk, refer to Section 07 92 00 – Joint Sealants.

2.2 PRIMERS

.1 Asphalt Primer: To manufacturer's recommendations.

.2 Self-adhesive membrane primer. As recommended by membrane manufacturer. Use low VOC, polymer emulsion-based primer, unless directed otherwise by Consultant on site.

2.3 AIR/VAPOUR BARRIER MEMBRANE

.1 For concrete decks and torchable gypsum board surfaces:

.1 Torch grade modified bituminous air/vapour barrier, with polyester or glass fleece reinforcement, minimum thickness 3 mm, top side sanded, having nominal weight of 180 g/m^2.

.1 Type 2.

.2 Class C - plain surfaced.

.3 Grade 1 - standard service.

.4 Top and bottom surfaces: sanded/polyethylene.

2.4 SELF-ADHERED MEMBRANE

.1 To CSA A123.22, self-adhering membrane consisting of SBS rubberized asphalt compound laminated to a polyethelene film. Minimum thickness 1 mm.

.1 Standard of acceptance or approved equivalent:

.1 Blueskin SA by Henry Bakor.

.2 GoldShield by IKO.

.3 Soprastick 1100 by Soprema.

2.5 MEMBRANE AND MEMBRANE FLASHINGS

.1 Acceptable membrane manufacturers:

.1 Soprema Group.

.2 IKO Industries Ltd.

.3 Henry Bakor.

.2 Base sheet membrane and base sheet membrane flashing (non-combustible substrates): To CGSB 37-GP-56M.

.1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer polyester reinforcement, having nominal weight of 180 g/m^2.

.2 Type 2.

.3 Class C - plain surfaced.

.4 Grade 1 - standard service.

.5 Top and bottom surfaces:

.1 polyethylene/polyethylene.

.3 Self-Adhesive base sheet membrane flashing (combustible substrates): To CGSB 37-GP-56M.

.1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, polyester and glass reinforcement.

.2 Type 2, adhered.

.3 Class C - plain surfaced.

.4 Grade 2 – heavy duty service.

.5 Top and bottom surfaces:

.1 Polyethylene/release paper.

.4 Cap sheet membrane and membrane flashing: To CGSB 37-GP-56M

.1 Styrene-Butadiene-Styrene(SBS) elastomeric polymer, prefabricated sheet, 250 g/m^2.

.2 Type 1.

.3 Class A-granule surfaced.

.1 Colour for granular surface: Gray.

.4 Grade 1-standard service.

.5 Bottom surface polyethylene.

.5 Fireguard Tape

.1 Modified bituminous membrane supplied in strips, 150 mm wide, 1.6 mm thick, glass fleece reinforced with self-adhesive underside.

.2 Standard of acceptance or approved equivalent:

.1 Sopraguard by Soprema.

2.6 ADHESIVES

.1 Adhesive for securing protection board and insulation: To be fully compatible with all materials in the roofing assembly. Applicability of use to adhere the different materials in the roofing assembly to be included in the manufacturer's literature.

.1 Standard of acceptance or approved equivalent:

.1 Thermostik 880-33 by Henry Bakor

.2 Duotack by Soprema

.3 Millenium by IKO

.4 Fas-n-free or Elite by Tremco

.5 Insta-Stick by Instafoam Inc.

.6 Roof Assembly Adhesive by Chemlink

2.7 POLYISOCYANURATE INSULATION (INORGANIC)

.1 Rigid foam board Type II, Class 2, Grade 2, manufactured with HC blowing agent meeting requirements of CAN/ULC S-126 and CAN/ULC S107. Conforming to CAN/ULC S704 and CAN/ULC S770 for LTTR values. Approved and listed by Factory Mutual Global for 1-60 and 1-90 wind classification and FM 4450 requirements for Class 1 fire. Thickness as specified or shown with maximum board size 1200 mm x 1200 mm. Fibre-reinforced **inorganic facers** on both major surfaces of the core foam.

2.8 SLOPED INSULATION (INORGANIC)

.1 Polyisocyanurate rigid foam board Type II, Class 2, Grade 2, manufactured with HC blowing agent meeting requirements of CAN/ULC S-126 and CAN/ULC S107. Conforming to CAN/ULC S704 and CAN/ULC S770 for LTTR values. Approved and listed by Factory Mutual Global for 1-60 and 1-90 wind classification and FM 4450 requirements for Class 1 fire. Thickness as specified or shown with maximum board size 1200 mm x 1200 mm. Fibre-reinforced **inorganic facers** on both major surfaces of the core foam.

.2 Insulation slopes shall be as indicated on the detailed drawings and roof plans. Modules shall be factory cut to correct slopes.

.3 Sloped insulation must terminate at 0 thickness. Supply an additional nosing piece if required, factory fabricated of compatible, flame-resistant sloped rigid insulation material, to smoothly terminate sloped insulation at 0 thickness.

2.9 PROTECTION BOARD

.1 Protection Board: 6 mm thick asphalt based protection board with non-woven glass facers, as recommended by the membrane manufacturer.

2.10 SEMI-RIGID MINERAL WOOL INSULATION

.1 Semi-rigid mineral wool, rockwool, or slagwool boards, to CAN/ULC 702.2.

2.11 SEALERS

.1 Plastic cement: Asphalt, to CAN/CGSB-37.5.

.2 Sealants: See Section 07 92 00 - Joint Sealants.

2.12 WALKWAY MATERIALS / PROTECTION MATERIALS

.1 One additional ply of cap sheet membrane.

.2 Rubber protection pad: Heavy duty grade, 550 mm x 550 mm or for size as indicated, 13 mm thick, masticated recycled rubber with reinforcement and UV resistant, dimpled surface.

2.13 CONCRETE PAVERS

.1 Concrete pavers: To CSA A231.1, 600 x 600 x 50 mm thick of sizes indicated natural, air entrained precast concrete paving slabs having non-slip finish with 51 mm plain margin around perimeter.

2.14 FASTENERS

.1 Vertical membrane flashing fasteners: Spiral nails, screws or masonry anchors with 25 mm solid caps. Minimum length 38 mm. Corrosion resistant.

.2 Fasteners for sheet metal and wood to wood: Corrosion resistant #10 wood screws or nails to suit application.

2.15 ROOF DRAINS

.1 See Section 22 05 11 – Plumbing and Drainage.

2.16 ROOF ACCESSORIES

.1 Bituminous metal paint: To isolate metal from concrete and masonry surfaces, to CAN/CGSB-1.108-M89 Type II.

.1 Standard of acceptance or approved equivalent:

.1 810-07 by Henry Inc.

Part 3 Execution

3.1 QUALITY OF WORK

.1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual.

.2 Do priming in accordance with manufacturer's written recommendations.

.3 Fit the interface of all walls and roof assemblies with durable rigid material sheet metal or plywood providing connection point for continuity of air barrier.

.4 Make assembly, component and material connections in consideration of appropriate design loads, with reversible mechanical attachments.

.5 In the event that any product contains a manufacturing defect or anomaly, the Contractor shall notify the Consultant and manufacturer immediately and request direction.

3.2 REMOVAL OF EXISTING ROOFING

.1 Remove all roofing, flashing and insulation materials down to deck. Leave existing blocking and parapet construction in place where indicated. Where a built-up air/vapour barrier is present, remove this from the deck unless agreement is otherwise obtained from the Consultant to leave in place.

3.3 EXAMINATION OF ROOF DECKS

.1 Verification of Conditions:

.1 Inspect with Consultant deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.

.2 Evaluation and Assessment:

.1 Prior to beginning of work ensure:

.1 Decks are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.

.2 Curbs have been built.

.3 Roof drains have been installed at proper elevations relative to finished roof surface.

.4 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.

.3 Do not install roofing materials during rain or snowfall or when such weather is imminent.

3.4 PROTECTION OF IN-PLACE CONDITIONS

.1 Cover walls, walks and adjacent work where materials hoisted or used.

.2 Use warning signs and barriers. Maintain in good order until completion of Work.

.3 Protect roof from traffic and damage. Comply with precautions deemed necessary by Consultant.

.4 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.

.5 Metal connectors and decking will be treated with rust proofing or galvanization.

.6 Fit the interface of the walls and roof assemblies with durable rigid material sheet metal or plywood providing connection point for continuity of air barrier.

3.5 PRIMING

.1 Unless otherwise indicated or directed by Consultant, prime all surfaces which will be in direct contact with bituminous materials at the rate of 0.15 L/m^2 to manufacturer's recommendations. For self-adhering membrane, install primer at a rate recommended by manufacturer. Ensure that surfaces are tack-free before proceeding.

.2 Limit quantity of primer at deck openings and points of termination and provide supplemental protection to prevent bleedthrough to the building interior.

.3 Roll primer into surface.

.4 Re-prime all surfaces, including pre-primed surfaces, that become contaminated with dust or become marred due to their exposure to roof traffic or weather.

3.6 TORCH-APPLIED AIR/VAPOUR BARRIER ON SHEATHING OR CONCRETE DECK

.1 Ensure all surfaces to be covered with self-adhering membrane are complete and free of moisture and contaminants and surfaces are above 5°C (40°F). At temperatures below 5°C (40°F) heat materials to be covered with hot air gun. Store all materials in heated storage when temperatures fall below 5°C (40°F) and remove only as much material that can be used before cooling.

.2 Prime all vertical surfaces to be covered with torch-applied membrane, and horizontal surfaces as required. Use roller application – no spray application permitted. Let primer tack dry and complete thumb test to test set-up.

.3 Use fireguard tape or protection board to protect all open joints in substrate and all combustible surfaces.

.4 Working up slope from drain, install air/vapour barrier membrane using torch methods, true to line to completely cover the area intended to be protected to points shown on the drawing.

.5 Membrane is to be installed without air blisters and wrinkles. Rework, repair or replace all poorly installed membrane. Do not stretch material that would result in pullback and deformity of the membrane at intersections.

.6 Lap all side laps 75 mm and end laps 150 mm. Torch all seams to achieve bleedout. At nailable surfaces, secure all membrane on vertical surface at points of termination at 150 mm c/c, using large head roofing nails.

.7 Turn up membrane 150 mm at edge where horizontal surface meets vertical planes. Lap onto existing surfaces as required to provide continuity of air/vapour barrier at terminations. Use fireguard tape or protection board to protect all open joints in deck and all combustible surfaces

.8 Seal all points of termination at horizontal planes and vertical surfaces with modified sealant. Tool sealant to consistent smooth and even surface.

.9 Seal all perimeters and penetrations, and ensure drains are operational and prevent backflow, if air/vapour barrier is to be left exposed as an overnight temporary waterproofing.

3.7 INSULATION – ALL LAYERS – ADHESIVE ADHERED

.1 Attach insulation as per the OBC Wind Uplift Attachment detail illustrated on the drawings.

.2 Install base insulation layer over air/vapour barrier to specified design intent and thickness. Secure insulation laid with adhesive, in pattern as per adhesive manufacturer's directions and as indicated. Apply boards before adhesive cures, skims over or loses adhesive qualities.

.3 For subsequent layers of insulation, secure insulation laid with adhesive, in pattern as per adhesive manufacturer's recommendations and as indicated.

.4 Stagger all joints of insulation a minimum 300 mm.

.5 Stagger both end and side joints between insulation layers.

.6 Butt sheets of insulation with moderate contact. Do not force insulation into place. Cut neatly at projections and points of termination. Replace all broken, damaged or misfit boards as work progresses.

.7 Where necessary, back-cut insulation to allow it to conform and stay bonded to irregular surfaces without bridging. Subsequent to placement, walk insulation into place to ensure positive bonding is achieved.

3.8 SLOPED INSULATION

.1 Attach boards as per the OBC Wind Uplift Attachment detail illustrated on the drawings.

.2 At all locations of sloped insulation provide shop drawings from sloped insulation manufacturer for Consultant's review prior to installation.

.3 At all new and existing drain locations, provide sloped polyisocyanurate insulation sump around drain to promote positive drainage. Total sump size to be as shown on drawings, with maximum depression of 25 mm, unless otherwise indicated.

.4 Installation methods for sloped insulation to be same as for upper layers of base insulation, using adhesive as specified.

3.9 PROTECTION BOARD

.1 Attach boards as per the OBC Wind Uplift Attachment detail illustrated on the drawings.

.2 Adhere protection board to insulation with with adhesive at the rate and pattern specified, as for insulation.

.3 Place boards in parallel rows with end joints staggered. Tape joints in protection board with fireguard membrane where combustible surfaces are directly below.

.4 Where protection board is specified on nailable vertical surfaces, secure protection board using large-head roofing nails at 200 mm centres each direction and tape all joints with fireguard tape.

3.10 MODIFIED BITUMINOUS MEMBRANE - GENERAL APPLICATION

.1 Inspect and seal all substrates to eliminate fire hazard. Use fireguard tape as required or recommended by manufacturer.

.2 Mechanical spreaders are not permitted to install modified membranes.

.3 Use only bitumen, sealants, adhesive or mastics as specified by membrane manufacturer. Provide written approval from manufacturer when proposing any alternatives or substitutions.

.4 Lay out all sheets as to allow them to relax a minimum of 30 minutes. When temperatures are below 4.4°C keep and lay out rolls in heated storage. Install rolls before temperature fallback of the sheet occurs.

.5 Roof membrane to be installed in one sheet if possible.

.6 Lay all membrane starting at low point to ensure that seams do not face water flow. Roll all membrane into place, true to line, free of buckles, air pockets, fishmouths and tears.

.7 Overlap all end laps minimum 150 mm and side laps 75 mm.

.8 Offset all side laps between plies by 50%.

.9 Offset all end laps between plies minimum 1200 mm.

.10 At valley locations, run membrane continuously with the slope of the main roof. Lay out all sheets to ensure minimum side laps are maintained through valley area and short section of roof beyond. At these locations the side laps for the main roof will increase. Install membrane to details and Consultant's direction onsite.

.11 Ensure that a watertight seal is achieved at all overlaps and points of termination.

.12 Carry base sheet flashing over face of building as shown on the drawings.

.13 Carry membrane up all vertical surfaces to point shown. Cut off corners at 45° at end laps to be covered by the next roll prior to installation of following sheet.

.14 Verify procedure with Consultant on site. Seal fasteners through membrane immediately with Type 'A' sealant.

.15 Do not walk on membrane during applications and until sufficient cooling has taken place as to allow for traffic without doing damage or marking surface.

3.11 MEMBRANE APPLICATION

.1 In accordance with Summary of Work, drawings and details, install new membrane and flashings system.

.2 Install all membrane in strict accordance with manufacturer's latest printed instructions and application methods.

3.12 BASE SHEET (TORCH APPLICATION)

.1 Install 1-ply base sheet membrane running with the roof slope, starting at the low point. Layout roll in place to verify alignment and proper overlap and re-roll prior to torching.

.2 Fully torch in place base sheet membrane using proper application techniques as specified by membrane manufacturer.

.3 Install membrane true to line and free of wrinkles, air pockets, voids, excessive bitumen flow or other irregularities. Ensure the membrane is not overheated at any location. Should any of these conditions occur, immediately stop membrane application and correct the deficiency before proceeding. Notify Consultant and obtain his approval for proposed repair methods. Questionable areas will require to be cut out and replaced.

.4 Ensure that a watertight seal of all membrane joints and points of termination is achieved with a torch and trowel.

.5 Terminate base sheet up all verticals 50 mm, secure on vertical with 38 mm nails with 25 mm metal heads at 225 mm c/c.

.6 Review base membrane for low areas (ponding) and correct with additional base sheet membrane.

3.13 BASE SHEET FLASHINGS (SELF-ADHERED APPLICATION)

.1 All flashings to be cut across the roll in 1 m sections. Cut off corners at end laps to be covered by next flashing piece.

.2 Provide chalk lines and install all membrane true to line. Install gusset reinforcement pieces at all corner locations.

.3 Ensure wall or eave surfaces are clean and dry, free of contaminants or other irregularities. Re-prime as necessary.

.4 Commence flashings from the drain or low points and overlap all side laps minimum 75 mm. Base sheet flashings to extend 100 mm onto roof surface and terminate as shown in drawings.

.5 Place sheet into primer or adhesive and press into place using hand roller to ensure uniform adhesion. Use hot air welder on all seams and joints to ensure a waterproof seal on all points of termination. Apply flashings free of air pockets, voids, wrinkles or fishmouths.

3.14 CAP SHEET (TORCH APPLICATION)

.1 Prior to installation, unroll the cap sheet and check for granular embedment width and alignment.

.2 Layout membrane to ensure side lap of cap sheet does not occur within 150 mm of roof drain.

.3 Install specified cap sheet membrane running with the roof slope, starting at the low point. Layout roll in place to verify alignment and proper overlap and re-roll prior to torching. Offset cap sheet side laps 50% to base sheet side laps, ensure lap does not lie within 150 mm of a roof drain.

.4 Install 1-ply cap sheet membrane full torched in place using proper application techniques as specified by the membrane manufacturer.

.5 Install membrane by softening both contact surfaces simultaneously with recommended torching equipment. During application, unroll membranes slowly into fluid bitumen ensuring consistent 3 mm to 6 mm flow protrudes each side of the roll.

.6 Install membrane true to line and free of wrinkles, air pockets, voids, excessive bitumen flow or other irregularities. Ensure the membrane is not overheated at any location. Should any of these conditions occur, immediately stop membrane application and correct the deficiency before proceeding. Notify Consultant and obtain his approval for proposed repair methods. Questionable areas will require to be cut out and replaced

.7 Using a torch and trowel, embed granules at end laps and where required on surface of cap sheet to ensure proper bonding of membrane overlaps.

3.15 CAP SHEET FLASHINGS (TORCH APPLICATION)

.1 All flashings to be cut across the roll in 1 m sections. Cut off corners at end laps to be covered by next flashing piece.

.2 Provide chalk lines and install all membrane true to line. Install base sheet gusset reinforcement at all corner locations.

.3 Commence flashings from the drain or low points and overlap all side laps minimum 75 mm. Cap sheet flashings to extend 150 mm onto roof surface and terminate as shown in drawings. At wall locations, unless otherwise specified, cap sheet flashings to extend up 50 mm higher than base sheet flashings.

.4 Where required by Summary of Work and details, install 50 mm wide continuous strip of Type 'A' sealant to the tops of parapets or eaves to prevent bitumen spillage on the building exterior.

.5 Install membrane by softening both contact surfaces simultaneously with recommended torching equipment. During application, unroll membrane slowly into fluid bitumen ensuring consistent 6 mm flow protrudes each side of the roll.

.6 Unroll and work sheet into place using torch, trowel and wet sponge to ensure proper placement and adhesion.

.7 Install membrane true to line and free of wrinkles, air pockets, voids, excessive bitumen flow or other irregularities. Ensure the membrane is not overheated at any location. Should any of these conditions occur, immediately stop membrane application and correct the deficiency before proceeding. Notify Consultant and obtain his approval for proposed repair methods. *Questionable* areas will require to be cut out and replaced.

.8 Touch up bare spots, corners, scuffs and bleedout runs on cap sheet with granules matching membrane colour, immediately following installation. Use hot air welder, torch or Type 'A' sealant to adhere granules to sheet.

3.16 ROOF DRAINS

.1 See Section 22 05 11 – Plumbing and Drainage for plumbing work.

.2 Install self-adhered membrane air seal around drain and extend onto air/vapour barrier minimum 150 mm.

.3 Unless otherwise specified or shown, provide prefabricated sump of sloped polyisocyanurate insulation 1200 mm each side of the centre of the drain. Reduce polyisocyanurate insulation thickness to minimum 19 mm at drain to provide positive roof drainage (make allowance for thickness of all flanges and clamps) and ensure water flow will not be impeded.

.4 Complete roof membrane, installing additional 1 m x 1 m base sheet flashing centred over drain opening.

.5 Fully coat drain flange to receive roofing with modified sealant and continue modified bitumen over flange. Neatly trim and work membrane to interior face and seal with Type 'A' sealant.

.6 Set clamping ring in solid bed of Type 'A' sealant. Secure clamp ring and integral screen as dictated by drain design immediately after membrane is installed. Tighten bolts to ensure a permanent watertight compression seal.

.7 Install and bolt strainers with heavy iron mechanical bracket to ensure the drain screen remains permanently in place to the Consultant's approval.

.8 Install test plug, water test roof and repair leaks. Remove test plug once complete.

3.17 CONCRETE PAVERS

.1 Install concrete pavers where shown to requirements of Summary of Work, drawings and details.

.2 Set pavers on rubber protection pad, in turn on sacrificial ply of cap sheet membrane.

3.18 CLEAN UP

.1 At all times, keep the premises free from accumulation of waste materials or rubbish. Stock piling of debris on the roof will not be permitted.

.2 Repair defects in surface and bitumen runs with granules to match existing to leave the roof in an even consistent finish.

.3 Leave roof clear of debris and bitumen left by spills and machine tracking.

.4 Leave grounds and building free of debris and bitumen spread by pedestrian traffic where applicable.

.5 Clean surfaces and penetrations of all contaminants and touch up to the satisfaction of the Owner. Include rooftop equipment, curbs, soil stacks, sleeves, gas lines, vents, drains and ladders.

.6 Check drains to ensure they are functional and where required remove all debris by vacuum.

.7 At the completion of the work remove all rubbish, tools, equipment and surplus materials.

.8 Be responsible to repair and pay all costs and fees required to rectify damage caused by work of the Contract with materials and finish to match original.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 52 00 - Modified Bituminous Membrane Roofing.

.3 Section 07 92 00 – Joint Sealants.

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM A653/A653M-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM B370-12, Standard Specification for Copper Sheet and Strip for Building Construction.

.2 Canadian Roofing Contractors Association (CRCA)

.1 Roofing Specifications Manual 1997.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

1.3 COORDINATION

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

1.4 EXAMINATION

.1 Do not commence work until surface to be covered has been inspected.

.2 Inspect work and advise the Consultant of conditions that would adversely affect the work of this trade.

.3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepts responsibility for appearances and performance of completed work.

.4 Repair damaged and inferior work caused by work of this Contract with materials and finish to match original to the Consultant’s approval.

1.5 SUBMITTALS

.1 Submit to the Consultant a list of materials intended for use before they are ordered.

.2 Product Data:

.1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit copies of WHMIS MSDS - Material Safety Data Sheets.

.3 Samples:

.1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours.

.4 Quality assurance submittals:

.1 Submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.

.3 Manufacturer’s recommendations for handling and storing products are to be considered a minimum requirement.

.4 Materials shall be delivered to the site, undamaged and in their original packages, with manufacturer’s labels visible, attesting to their conformity to specific standards.

Part 2 Products

2.1 GENERAL

.1 All standards, regulations and specifications listed herein are considered to be the latest available edition.

.2 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.

2.2 SHEET METAL MATERIALS

.1 Copper sheet: to ASTM B370 temper designation H00 with mass of 4.88 kg/m^2 (16 oz/ft^2) minimum mass.

2.3 ACCESSORIES

.1 Metal cleat: same material as metal flashings, 50 mm wide @ 600 mm c/c.

.2 Continuous copper starter strip: Copper, same temper and thickness as flashing, secured at 400 mm c/c.

.3 Use galvanized, copper, aluminum or stainless steel nails or screws as most compatible with materials and preservatives being utilized.

.4 Nails: Annular threaded nails of length to penetrate into bases minimum 25 mm. No. 8 screws to penetrate wood 19 mm at 600 mm c/c.

.5 Masonry fasteners: Stainless steel, spike sized to penetrate concrete 38 mm minimum as specified or shown.

.6 Screws for starter strips and fascia: Brass screws, #8 @ 400 mm c/c.

.7 Wedges: Rolled plumber sheet lead.

.8 Sealant: Refer to Drawings and Section 07 92 00 – Joint Sealants.

.9 Solder: ASTM B 32; Provide 50-50 tin/lead or lead free alternative of similar or greater strength solder. Killed acid flux.

.10 Flux: Muriatic acid neutralized with zinc or approved brand of soldering flux.

.11 Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

.12 Bituminous Coating: SSPC-Paint 12, Cold-Applied Asphalt Mastic (Extra Thick Film), nominally free of sulfur, compounded for 15-mil dry film thickness per coat.

.13 Metal Accessories: Provide cleats, straps, hangers, anchoring devices, and similar accessory units as required for installation of work, noncorrosive, size and gage required for performance.

.14 Rivets:

.1 Pop Rivets: 1/8-inch (3-mm) to 3/16-inch (4.5-mm) diameter, with solid brass mandrels.

.2 Provide solid copper rivet (tinner's rivets) where structural integrity of seam is required.

2.4 FABRICATION

.1 Fabricate metal flashings and other sheet metal work in accordance with applicable details, as indicated. Where not indicated, follow applicable CRCA ‘FL’ series details and as recommendations of ‘Copper and Common Sense’.

.2 Metal shall be formed on a bending brake, shaping trimmed and hard seaming shall be done on bench, as far as practicable, with proper sheet metal working tools. Angles of bends and folds for interlocking metal shall be made with full regard to expansion and contraction to avoid buckling and to avoid damaging metal surfaces.

.3 Fabricate all possible work in shop in maximum 2400 mm lengths by brake forming, bench cutting, drilling and shaping.

.4 Hem exposed edges on underside 13 mm. Mitre and seal corners with sealant.

.5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.6 Dry joints are to be tight but not dented so as to permit slight adjustments of sheets and yet remain watertight.

.7 Lock seams at all corners.

.8 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

.9 General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with the "Copper in Architecture" handbook published by the Copper Development Association (CDA). Anchor units of work securely in place by methods indicated, providing for thermal expansion of units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

.10 Install units plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction; except install gutters with required slope.

.11 Apply asphalt mastic on copper surfaces of units in contact with cementitious materials and dissimilar metals.

.12 Miter, lap seam and close corner joints with solder. Seal seams and joints watertight with solder

.13 Install expansion joints at frequency recommended by the CDA "Copper in Architecture" handbook. Do not fasten moving seams such that movement is restricted.

.14 Coordinate with installation of roofing system and roof accessories.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

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

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

.2 Use concealed fastenings except where approved before installation.

.3 Install continuous concealed starter strips at all exterior faces. Install cleats between lock joints and as indicated to permanently hold flashing in place. Install hook strip fasteners with 2 fasteners per cleat.

.4 Join sheet metal by "S" lock seams, to permit thermal movement. Seal all fasteners and completely fill all joints with Type 'B' sealant as flashing is being installed. Clean off all excessive visible material subsequent to installation.

.5 When flashing is being installed in more than one piece, offset joints in adjacent flashings by approximately 50%.

.6 Form inside and outside corners by means of locked seams. Do not use pop rivets unless accepted by Consultant.

.7 Slope all metal to interior of roof area to maintain slope, unless otherwise indicated. Do not form open joints or pockets that fail to drain water.

3.3 CLEANING

.1 Remove protective film (if any) from exposed surfaces of copper promptly upon installation. Strip with care to avoid damage to finishes.

.2 Clean exposed copper surfaces, removing substances that might cause abnormal discoloration of metal.

.3 Upon completion of each area of soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing clear water rinse. Use special care to neutralize and clean crevices.

.4 Clean exposed metal surfaces of substances that would interfere with uniform oxidation and weathering.

.5 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.6 Leave work areas clean, free from grease, finger marks and stains.

3.4 PROTECTION

.1 Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 52 00 - Modified Bituminous Membrane Roofing.

.3 Section 07 62 00 – Sheet Metal Flashing and Trim.

.4 Section 22 05 11 – Plumbing and Drainage.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-19.13-M87, Sealing Compound, One Component, Elastomeric, Chemical Curing.

.2 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

1.3 COORDINATION

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

1.4 EXAMINATION

.1 Do not commence work until surface to be covered has been inspected.

.2 Inspect work and advise the Consultant of conditions that would adversely affect the work of this trade.

.3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepts responsibility for appearances and performance of completed work.

1.5 DELIVERY, STORAGE AND HANDLING

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

1.6 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity and substrate moisture content for application and curing of sealants including special conditions governing use.

.3 In confined spaces provide portable supply of outside air and exhaust fans to ensure fumes will not impact workmen or building occupants.

.4 Compatibility is essential in use of any materials that will be compatible when incorporated in finished assembly.

Part 2 Products

2.1 MATERIALS

.1 Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers.

.2 Modified bitumen sealant (Sealant Type 'A'):

.1 For penetration and terminations of bituminous and modified bituminous membrane: To CAN/CGSB-37.5. As recommended by membrane manufacturer.

.2 Standard of acceptance or approved equivalent:

.1 Sopramastic 200 by Soprema.

.2 MBR Flashing Cement by Johns Manville.

.3 Polybitume 570-05 by Henry Bakor.

.3 Urethanes one part (Sealant Type 'B'):

.1 Non-sag: To CAN/CGSB-19.13, Type 2, MCG-2-25, colour to match surfaces.

.2 Standard of acceptance or approved equivalent:

.1 Dymonic by Tremco.

.2 Sonolastic NP1 Ultra by Sonneborn.

2.2 JOINT CLEANER

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

2.3 PRIMER

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

Part 3 Execution

3.1 PROTECTION

.1 Protect installed work of other trades from staining or contamination.

3.2 PREPARATION OF JOINT SURFACES

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful substances including dust, rust, oil, grease and other matter, which may impair work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

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

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 APPLICATION

.1 Sealant - General:

.1 Apply sealant when air and substrate temperatures are not forecast to be less than minimum recommended by manufacturer. Do not work during inclement weather. Perform all work in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets and embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.9 The use of liquid tooling aids, such as soapy water or alcohols, are prohibited as they may impact effective sealant cure, adhesion and potentially cause aesthetic issues.

.2 Sealant Type 'A':

.1 Install sealant Type 'A' to the top of membrane flashings where required or as shown on drawings. Modified sealant to be installed around finished

flashings at all protrusions including soil stacks, sleeves, pitch boxes and fasteners securing membrane to walls.

.2 Apply sealant Type 'A' with hand trowel to achieve a 25 mm width and minimum 3 mm thickness.

.3 Apply sealant Type 'A' immediately after flashings have been installed and are still warm. No membrane flashings shall be left uncovered at the end of any work period. *(Non-compliance with this mandate may result in rejection, removal and replacement of the membrane flashings to the affected area).*

.4 Trowel sealant Type 'A' in two directions to ensure proper adhesion to substrate and that all surface irregularities are filled. Tool surface of modified sealant to smooth finish.

.5 Install sealant Type 'A' at the underside of drains, metal sleeves and other location where specified on drawings.

.3 Curing:

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.4 Install sealant Type 'B' at sheet metal terminations.

3.5 CLEANING

.1 Clean adjacent surfaces immediately and leave work neat and clean.

.2 Remove excess droppings using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

.4 Clean all contaminated surfaces to Owner's acceptance.

.5 Remove all rubbish and surplus materials from the job site on a daily basis.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 52 00 - Modified Bituminous Membrane Roofing.

.3 Section 07 92 00 – Joint Sealants.

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM C547-12. Standard Specification for Mineral Fiber Pipe Insulation.

.2 American Water Works Association (AWWA).

.1 ANSI/AWWA C110/A21.10-08, American National Standard for Ductile-Iron and Gray-Iron Fittings for Water.

.2 ANSI/AWWA C111/A21.11-12, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

.3 Cast Iron Soil Pipe Institute (CISPI)

.1 CISPI 310-12, Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

.4 Canadian Standards Association (CSA International)

.1 CAN/CSA-B70-12, Cast Iron Soil Pipe, Fittings, and Means of Joining.

.2 CSA B79-08 (R2013), Commercial and residential drains and cleanouts.

.3 CAN/CSA B1800-11, Thermoplastic Nonpressure Piping Compendium.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTAL / APPROVAL

.1 Do not commence work until satisfactory installation of related work has been completed and approved.

.2 Inspect work and advise Consultant of conditions that would adversely affect the work of this trade.

.3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepted responsibility for appearance and performance of completed work.

.4 Defective work resulting from work on unsatisfactory surfaces will be considered the responsibility of those performing the work of this Section.

.5 Repair damage and inferior work caused by the work of this Contract with materials and finish to match the original to Consultant’s approval.

.6 Submit to the Consultant a list of materials intended for use before they are ordered.

.7 Provide samples of material without additional cost, to the Consultant for review as requested.

1.4 QUALITY ASSURANCE

.1 All drain installations shall be completed by plumbing subtrades licensed to undertake plumbing work in Ontario.

.2 Equipment and materials must be new and free of imperfections.

Part 2 Products

2.1 MATERIALS

.1 All standards, regulations and specifications listed herein are considered to be the latest available edition.

.2 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.

.3 Cast iron roof drains, at existing or new drain locations: Cast iron body, under deck clamp and sump receiver to suit roof construction, flashing clamp ring with bearing pan, and cast iron dome.

.1 Standard of acceptance or approved equivalent:

.1 Watts Drain RD-100.

.2 Drain connector:

.1 Mechanical connection using double clamp to drain body and rainwater leader.

.2 Standard of acceptance or approved equivalent:

.1 Fernco Couplings.

.4 Provide control flow weir at all drains unless otherwise indicated. Weir to be supplied by drain manufacturer.

.5 Pipe hangers: Adjustable type wrought iron design to allow pipe movement and insulation to pass unbroken through hanger.

.6 Mechanical joints: Neoprene or butyl rubber gasket with stainless steel clamp type joint to CISPI 310-12.

.7 Insulation for pipes: 25 mm thick performed type mineral fibre insulation to ASTM C547.

.1 Standard of acceptance or approved equivalent:

.1 Roxul Techton 1200 or SSL II Fiberglas by Owens Corning.

.8 Insulation for underside of drain: 2-component, 1 kg density polyurethane foam as detailed.

.9 Insulation covering:

.1 Cover pipe insulation with canvas membrane wrap and paint.

.2 Where exposed, use preformed PVC.

.10 Firestop sealant: Approved by manufacturer for use in fire-rated firestop assembly.

.1 Standard of acceptance or approved equivalent:

.1 A/D Firebarrier Silicone.

.2 3M Fire Barrier.

.11 Firestop insulation: Mineral wool approved by manufacturer for use in fire-rated firestop assembly.

.1 Standard of acceptance or approved equivalent:

.1 Roxul 'Safe'.

.2 AD Firebarrier.

2.2 DRAIN ACCESS DOOR

.1 New access panels shall be of galvanized steel construction with hinged openings and a decorative flange to cover the ceiling cut edges. Units shall have a factory applied white paint finish. Minimum steel thickness shall be 0.7 mm and have self-locking access.

Part 3 Execution

3.1 PREPARATION

.1 Inspect surfaces and ensure that:

.1 Roof deck is level or sloped to provide proper and complete drainage from the roofing system in conformity to design intent.

.2 Roof drains are set at a level to allow for positive drainage and are connected or capped.

.3 Plumbing is accessible and work can be completed as specified. Notify Consultant of any adverse conditions.

.4 Existing roof drains are open and functioning properly.

.2 Contractor shall advise Consultant in the event that the existing system or materials do not meet current code requirements.

.3 Unless indicated otherwise, the plumbing sub-trade shall be responsible for the removal and reinstatement of furniture, plants and interior equipment, excluding computers, monitors, copiers and the like.

.4 Contractor to provide interior protection to all areas where plumbing work is being completed. Provide sufficient dust and debris and include for any supplemental clean up to return interiors to pre-construction conditions.

.5 Remove and discard all existing drains and plumbing not designated for re-use. Notify Owner of any hazardous materials encountered.

3.2 INSTALLATION AT EXISTING DRAIN LOCATIONS

.1 Increase openings in structures to facilitate plumbing as required.

.2 Join pipe by means of rubber gaskets or mechanical couplings.

.3 Fill voids around drain opening on concrete or lightweight concrete decks with quick dry concrete grout flush with top and bottom of deck.

.4 Where area is inaccessible to install couplings, advise and request Consultant to obtain a ruling on acceptability. Where directed by Consultant, install anti-backflow seals to match pipe size and secure in place.

.5 Extend insulation from pipes to drain hub. Cover with pipe wrapping and finish to general standards. If blanket insulation is used, ensure that all insulation fits tight to drain hub. Seal overlaps, edges and joints with reinforced vapour proof tape suitable to permanently hold insulation in place. Alternatively, in conformance with drawings, protect hubs with spray foam insulation, minimum thickness 38 mm unless otherwise specified or shown. Provide metal protection pan over deck as detailed.

.6 Install PVC covering over insulated piping where plumbing is exposed on the interior of the building.

.7 Ensure each roof is provided with operational drainage at the end of each work day.

3.3 DRAIN ACCESS DOOR

.1 Cut access opening in existing finished ceiling in most optimum location to access new drain/piping or as indicated on drawings. Cut edges neatly and install hatch, ensuring that door opening is in the direction of the larger area of ceiling space to facilitate ease of future ladder use. Install hatch plumb level with decorative flange flush with ceiling and anchor in position in accordance with manufacturers printed instructions.

3.4 PIPING TEST

.1 Perform water tests before restoring interior ceilings and finishes.

.2 Install plumbing line plugs below the level of connection and water test new plumbing installation. Correct all leaks.

.3 Make leaks watertight while systems are still under test. If this is impossible, remove and refit defective parts. Caulking of threaded joints will not be permitted.

.4 After leaks have been repaired, repeat tests as often as necessary to obtain approval and to ensure watertightness of each system.

.5 Correct level of drains or pipes, if roof or pipes hold water.

3.5 FINISH

.1 Restore and clean all existing surfaces affected by the work to match existing materials and finish.

END OF SECTION

2017-10-18 FSA Project #: 17345DO

APPENDIX A

Project: **Roof Replacement, Roof Area 21**
Réfection de Toiture, Toit 21

Main Building
Ottawa

ROOF AREA 21 – PHOTOS
TOIT 21 - IMAGES

T: 613-831-7293
F: 613-831-3812
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110-150 Katimavik Road
Ottawa, Ontario
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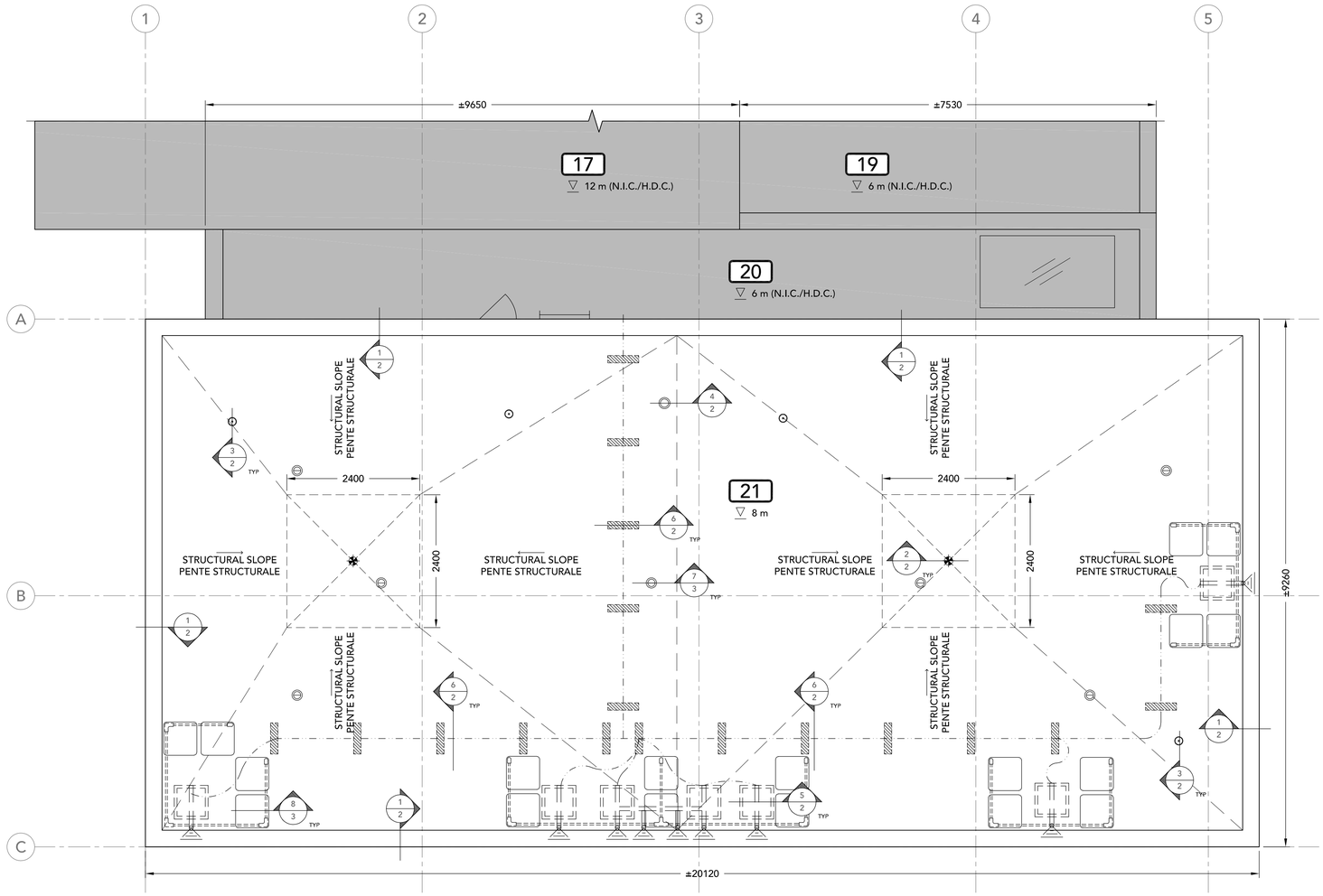


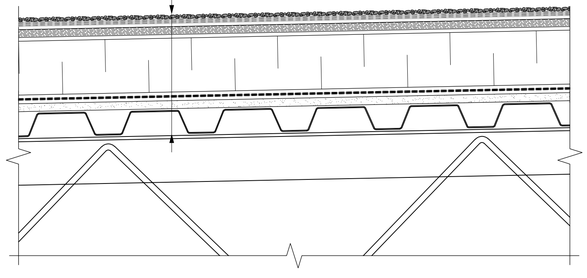
ROOF PLAN / PLAN DU TOIT

1:50

LEGEND / LÉGENDE

SYMBOL / SYMBOLE	DESCRIPTION
	BALLASTED GUARDRAIL GARDE-CORPS STATIONNAIRE
	B-VENT ÉVENT DE TYPE B
	CONCRETE PAVER DALLE DE BÉTON
	CONDUIT AND SUPPORT TUYAUTERIE ET CONDUIT ET SUPPORT
XXXX	EXTENT AND DIRECTION OF STRUCTURAL SLOPE AIRE ET DIRECTION DE LA PENTE STRUCTURALE
	PLUMBING VENT ÉVENT DE PLOMBERIE
	ROOF DRAIN WITH SUMP DRAIN DE TOIT ET PUISARD
	ROOF LADDER ÉCHELLE FIXE
XX / ▽ xx	ROOF NUMBER AND ELEVATION NUMÉRO ET HAUTEUR DU TOIT
	SKYLIGHT PUITS DE LUMIÈRE
	LIGHT FIXTURE/CAMERA MOUNTED ON PAVER LAMPE / CAMÉRA INSTALLÉE SUR DALLE DE BÉTON
	ROOF ANCHOR ANCRAGE DE TOIT

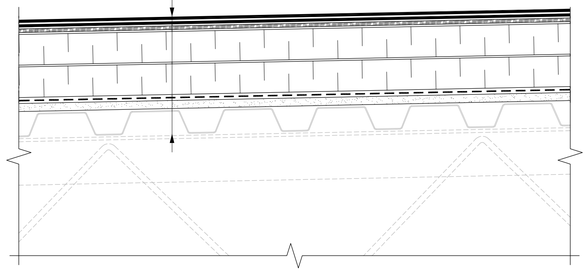
EXISTING ROOF SYSTEM / SYSTÈME DE TOITURE EXISTANTE E1:
- 4-PLY BUR MEMBRANE WITH GRAVEL / MEMBRANE MULTICOUCHE DE 4-PLIES AVEC GRAVIER
- 13 mm FIBREBOARD / PANNEAU DE FIBRE DE BOIS DE 13 mm
- 88 mm FIBREGLASS INSULATION / ISOLANT DE FIBRE DE VERRE DE 88 mm
- 2-PLY BUR AIR/VAPOUR BARRIER / PARE-VAPEUR MULTICOUCHE DE 2-PLES
- 13 mm GYPSUM BOARD / PANNEAU DE GYPSE DE 13 mm
- SLOPED STEEL DECK / PONTAGE MÉTALLIQUE EN PENTE



E1 / 1 EXISTING ROOF SYSTEM / SYSTÈME DE TOITURE EXISTANTE E1

1:5 ROOF AREA / TOIT 21

TYPICAL ROOF SYSTEM / SYSTÈME DE TOITURE TYPIQUE R1:
- 2-PLY MOD. BIT. MEMBRANE / MEMBRANE DE BITUME MODIFIÉ 2-PLIES
- 6 mm PROTECTION BOARD / PANNEAU DE SUPPORT DE 6 mm
- 50 mm POLYISO INSULATION / ISOLANT DE POLYISO DE 50 mm
- 50 mm POLYISO INSULATION / ISOLANT DE POLYISO DE 50 mm
- 1-PLY MOD. BIT. AIR/VAPOUR BARRIER / PARE-VAPEUR 1-PLIE MBM
- 13 mm GYPSUM BOARD / PANNEAU DE GYPSE DE 13 mm
- EXISTING STEEL DECK / PONTAGE MÉTALLIQUE EXISTANT



R1 / 1 TYPICAL ROOF SYSTEM / SYSTÈME DE TOITURE TYPIQUE R1

1:5 ROOF AREA / TOIT 21

NCC CCN

Canada

Capital Planning and Real Asset Management Branch
Direction de l'aménagement de la capitale et gestion de l'immobilier

Design and Construction Division
Division design et construction

director Pierre Vaillancourt directeur

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Fishburn Sheridan & Associates Ltd.

110 - 150, rue Katimavik Road, Ottawa, Ontario, K2L 2N2
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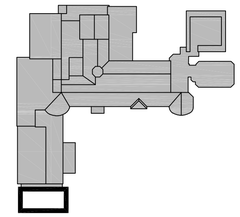
Key Plan
Plan Repère



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4. DRAWINGS ARE NOT TO BE SCALED.
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issued or revised
émis ou revisé

no.	description	date
2	FOR TENDER / POUR SOUMISSION	2017-10-16
1	FOR REVIEW / POUR RÉVISION 90%	2017-09-21

project
projet

MAIN BUILDING

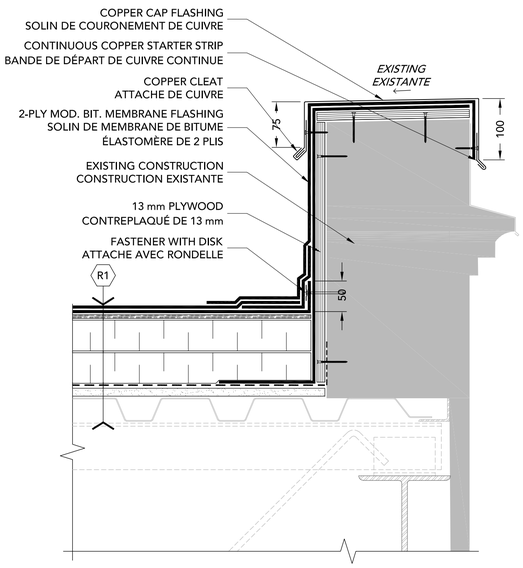
OTTAWA, ONTARIO

ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 21 / TOIT 21

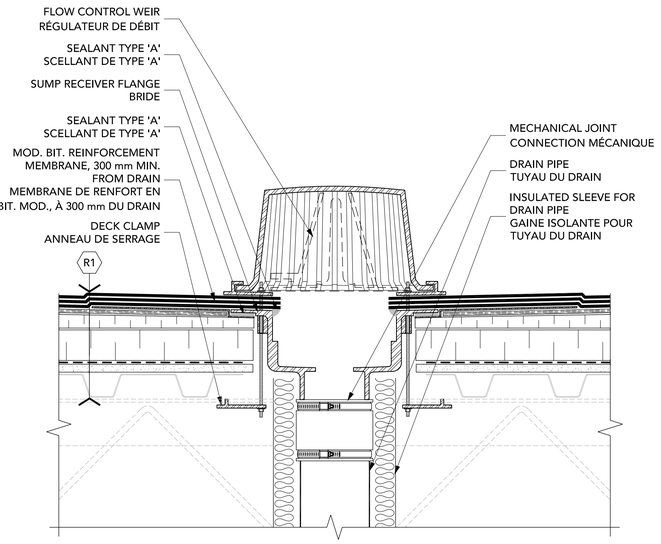
drawing
dessin

ROOF PLAN / PLAN DU TOIT

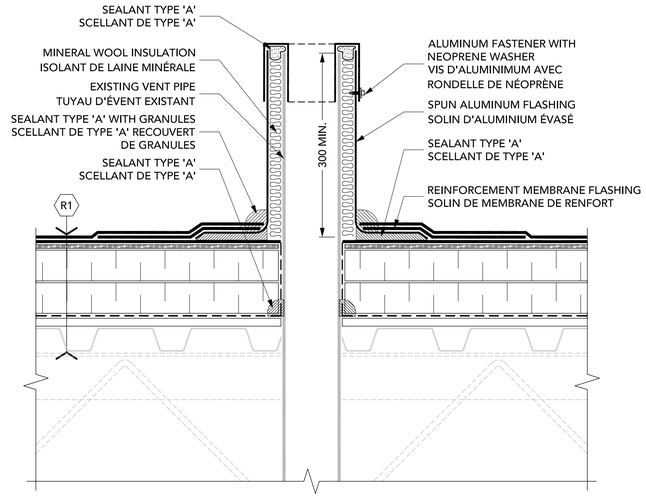
reviewed by révisé par	J. C. / R. S.
designed by conçu par	M. P.
drawn by dessiné par	J. M.
FSA #	17345DO
date	2017-10-04
scale échelle	VAR.
NCC project no. no. du projet de la CCN	---
sheet no. no. de la feuille	1



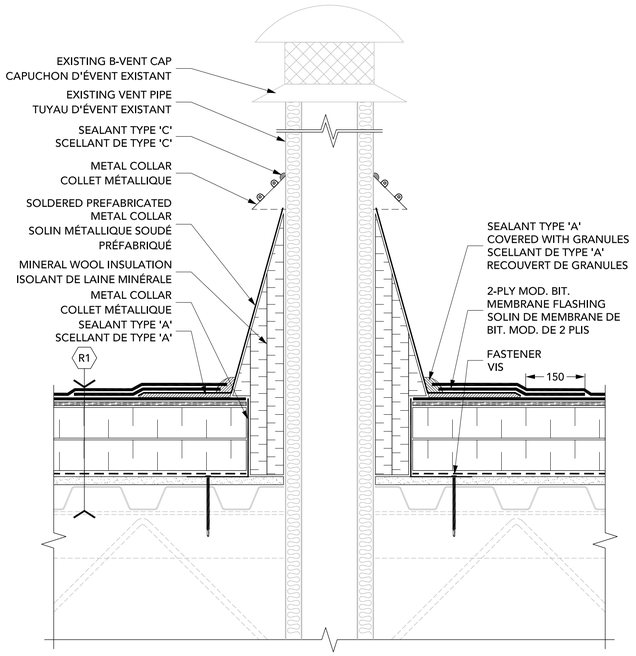
1/2 PARAPET
1:5



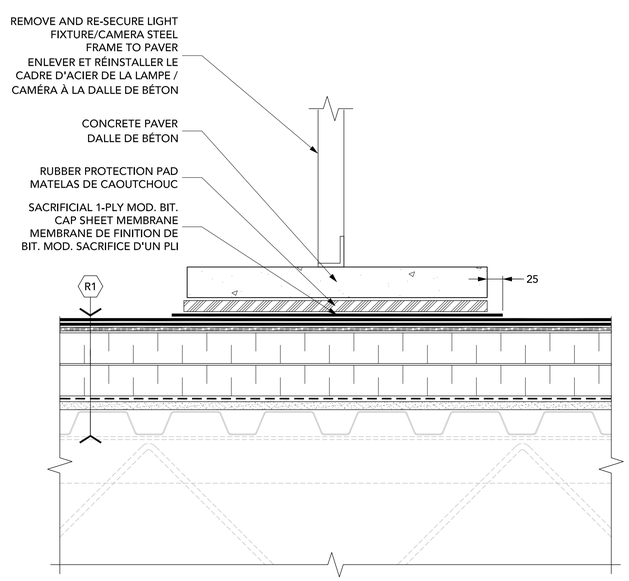
2/2 ROOF DRAIN / DRAIN DE TOIT
1:5



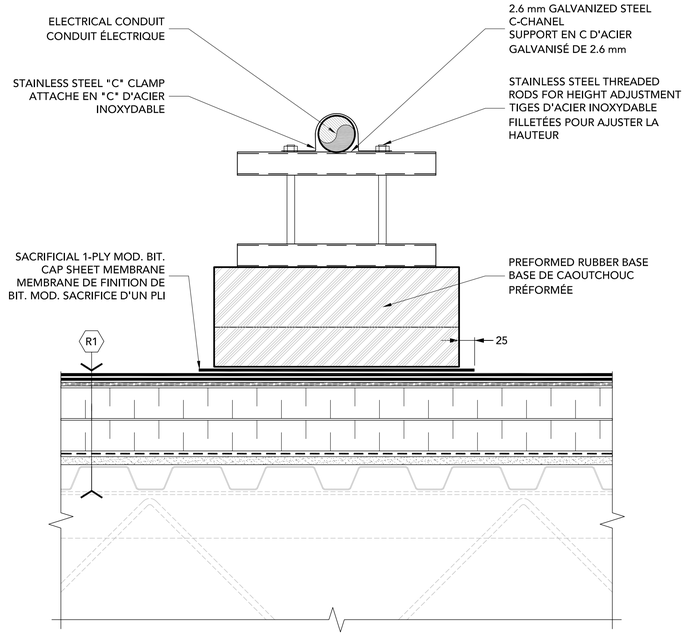
3/2 PLUMBING VENT / ÉVENT DE PLOMBERIE
1:5



4/2 B-VENT / ÉVENT DE TYPE B
1:5



5/2 CONCRETE PAVER / DALLE DE BÉTON
1:5



6/2 CONDUIT SUPPORT / SUPPORT POUR TUYAUTERIE DE CONDUIT
1:5

NCC CCN
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Key Plan
Plan Repère

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2	FOR TENDER / POUR SOUMISSION	2017-10-16
1	FOR REVIEW / POUR RÉVISION 90%	2017-09-21

project
projet

MAIN BUILDING

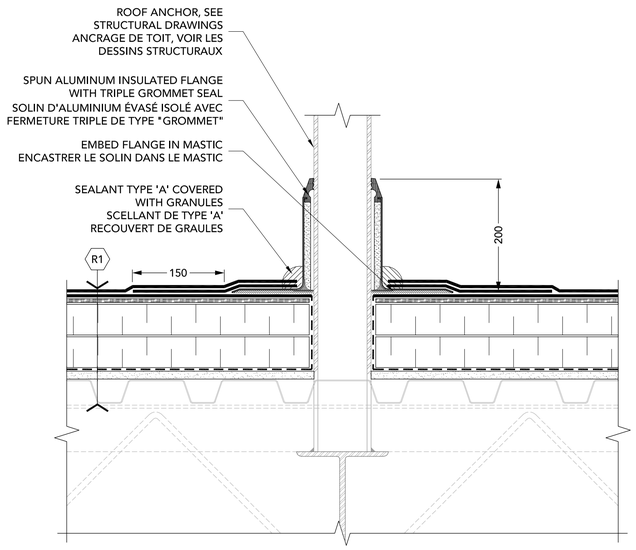
OTTAWA, ONTARIO

ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 21 / TOIT 21

drawing
dessin

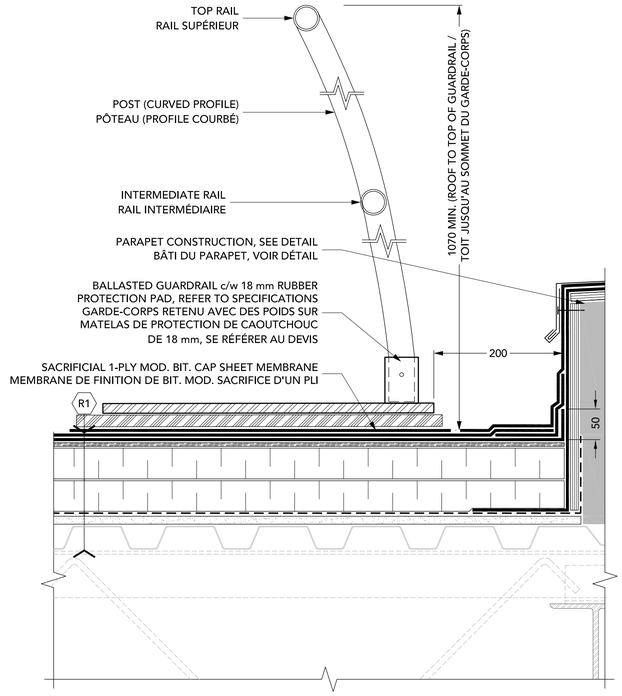
DETAILS / DÉTAILS

reviewed by / révisé par	J. C. / R. S.
designed by / conçu par	M. P.
drawn by / dessiné par	J. M.
FSA #	17345DO
date	2017-10-04
scale / échelle	VAR.
NCC project no. / no. du projet de la CCN	---
sheet no. / no. de la feuille	2



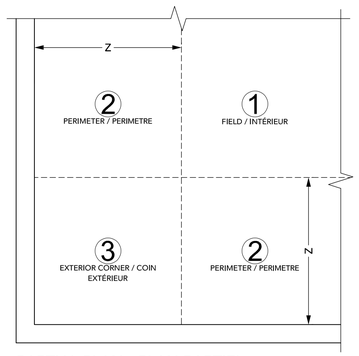
7/3 ROOF ANCHOR / ANCRAGE DE TOIT

1:5



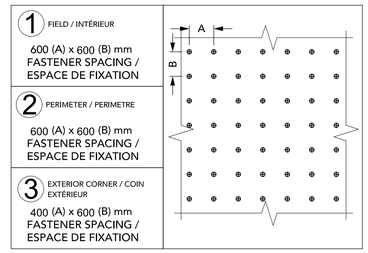
8/3 BALLASTED GUARDRAIL / GARDE-CORPS STATIONNAIRE

1:5



PARTIAL PLAN / PLAN PARTIEL

ROOF AREA / BASSIN		RA21
WIND LOAD FACTORS / FACTEURS DE SOULÈVEMENT	L	19.2 m
	W	9.3 m
	h	8.0 m
	z	1.0 m
	C_e	0.96
	C_pC_g (P1)	-1.8
	C_pC_g (P2)	-2.5
	C_pC_g (P3)	-5.4
	$C_{pi}C_{gi}$	-0.9
	I_w	1.0
	q	0.41 kPa
	P_1	-1.5 kPa
	P_2	-1.9 kPa
	P_3	-3.5 kPa



9/3 OBC WIND UPLIFT ATTACHMENT / SOULÈVEMENT AU VENT SELON LE CNB

1:50

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Canada

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projet

MAIN BUILDING

OTTAWA, ONTARIO

ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 21 / TOIT 21

drawing
dessin

DETAILS

reviewed by / révisé par	J. C. / R. S.
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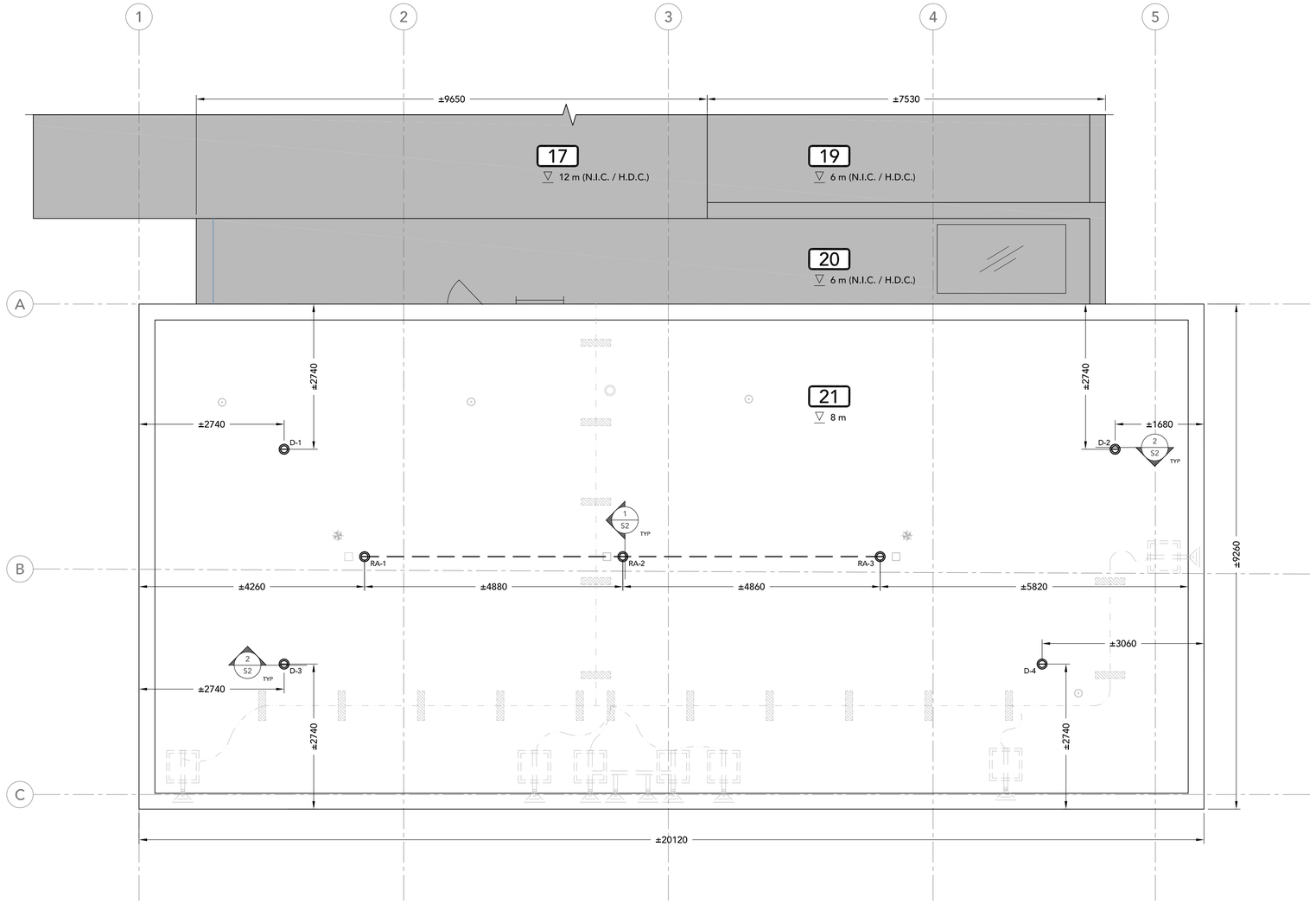

ROOF ANCHOR PLAN / PLAN DES ANCRAGES DE TOITS

1:50

LEGEND / LÉGENDE

SYMBOL / SYMBOLE	DESCRIPTION
	B-VENT ÉVENT DE TYPE B
	CONCRETE PAVER DALLE DE BÉTON
	CONDUIT AND SUPPORT TUYAUTERIE ET CONDUIT ET SUPPORT
	PLUMBING VENT ÉVENT DE PLOMBERIE
	ROOF DRAIN DRAIN DE TOIT
	ROOF LADDER ÉCHELLE FIXE
XX / ▽ xx	ROOF NUMBER AND ELEVATION NUMÉRO ET HAUTEUR DU TOIT
	SKYLIGHT PUITS DE LUMIÈRE
	LIGHT FIXTURE/CAMERA MOUNTED ON PAVER LAMPE / CAMÉRA INSTALLÉE SUR DALLE DE BÉTON
RA-#	ROOF ANCHOR ANCRAGE DE TOIT
D-#	DEFLECTOR ANCHOR DÉFLECTEUR DE CÂBLE D'ASSURANCE
----------	HORIZONTAL LIFELINE (HLL) CÂBLE D'ASSURANCE HORIZONTAL (CAH)

GENERAL NOTES / NOTES GÉNÉRALES :

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
   TOUTES LES DIMENSIONS SONT ENT MILLIMÈTRE À MOINS D'INDICATION CONTRAIRE.
2. PROVIDE SHOP DRAWINGS INDICATING FULL MEMBER DETAILS AND CONNECTIONS.
   FOURNIR DES DESSINS D'ATELIER DÉMONTRANT LES PLEIN MORCEAU ET LEURS CONNECTIONS.
3. ALL WORK SHALL COMPLY WITH CURRENT PROVISIONS OF THE ONTARIO BUILDING CODE OR NATIONAL BUILDING CODE - WHICHEVER IS MORE STRINGENT INCLUDING LATEST REVISIONS AND REFERENCED STANDARDS, CANADA LABOUR CODE, WORKERS' COMPENSATION ACT, MINISTRY OF LABOUR REQUIREMENTS, AND BEST TRADE PRACTICES.
   TOUS LES TRAVAUX DOIVENT RENCONTRER LES EXIGEANCES LES PLUS STRICTES DU CODE DU BATIMENT DE L'ONTARIO OU DU CODE DU BATIMENT NATIONAL INCLUANT LES RÉVISIONS AUX STANDARDS, LES RÉFÉRENCES AU CODE DU TRAVAIL DU CANADA, LA LOI DE LA COMPENSATION DES TRAVAILLEURS, LES EXIGEANCES DU MINISTÈRE DU TRAVAIL ET LES MEILLEURS PRATIQUES DE L'INDUSTRIE.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF EXISTING SITE FEATURES AND EQUIPMENT, AND FOR REMOVING EXCESS MATERIALS AND CLEANING UP ON COMPLETION OF THE WORK.
   L'ENTREPRENEUR EST RESPONSABLE DE PROTÉGER L'ÉQUIPEMENT ET LE PAYSAGEMENT EXISTANT DU SITE ET D'ENLEVER LES MATÉRIAUX SUPPLÉMENTAIRES ET DE NETTOYER UNE FOIS LE TRAVAIL COMPLÉTER.

DESIGN LOADS & CLEARANCES / CHARGES ET TOLÉRANCES DU DESIGN :

1. THE ANCHORS HAVE BEEN DESIGNED FOR THE FOLLOWING ULTIMATE LOAD:
   LES ANCRAGES ONT ÉTÉ CONÇU POUR LES CHARGES ULTIMES QUI SUIVENT :

- ANCHORS (DESIGNATED 'RA#') DESIGNED TO 5,000 LBS (22.2 KN).
  ANCRAGES (DÉSIGNÉ 'RA#') CONÇU POUR 5,000 LBS (22.2 KN).
- THE DEFLECTOR ANCHORS (DESIGNATED 'D#') DESIGNED TO 2,500 LBS (11.2 KN).
  DÉFLECTEURS D'ASSURANCE HORIZONTAL (DÉSIGNÉ 'D#') CONÇU POUR 2,500 LBS (11.2 KN).

2. THIS SYSTEM HAS BEEN DESIGNED FOR A MAXIMUM ARREST FORCE (MAF) OF 4 KN (FORCE TRANSMITTED TO THE WORKER), AND A MAXIMUM ARREST LOAD (MAL) OF 22.2 KN (LOAD TRANSMITTED TO ANCHORS).
   LE SYSTÈME A ÉTÉ CONÇU POUR UNE FORCE D'ARRÊT MAXIMALE (FAM) DE 4 KN (FORCE TRASMISE À L'OUVRIER) ET UNE CHARGE D'ARRÊT MAXIMALE DE 22.2 KN (CHARGE TRANSMISE AU POINT D'ANCRAGE).
3. CONSULT THE ENGINEER PRIOR TO PERFORMING ANY MODIFICATIONS TO THIS SYSTEM.
   CONSULTER L'INGÉNIEUR AVANT DE FAIRE DES MODIFICATIONS À CE SYSTÈME.

EXECUTION / EXÉCUTION :

1. UNDERTAKE EXECUTION OF ALL WORK IN ACCORDANCE WITH APPLICABLE REFERENCE STANDARDS AND REGULATIONS.
   ENTREPRENER L'EXÉCUTION DU TRAVAIL EN CONFORMITÉ AVEC LES STANDARDS DE RÉFÉRENCE ET LES RÉGULATIONS APPLICABLES.
2. DO NOT INCREASE OR DECREASE THE STEEL CABLE CUSP SAG INDICATED.
   NE PAS AUGMENTER OU DIMINUER LE "CUSP SAG" DU CÂBLE D'ACIER.

FABRICATION / FABRICATION :

3. PRIOR TO FABRICATION OF STRUCTURAL ELEMENTS SITE VERIFY EXISTING CONDITIONS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES AND AWAIT INSTRUCTIONS.
   VÉRIFIER LES CONDITIONS ACTUELLES DU SITE AVANT LA FABRICATION DES ÉLÉMENTS STRUCTURELS. INFORMER L'INGÉNIEUR DES DIVERGENCES ET ATTENDER DES INSTRUCTIONS.
4. WELDING: UNLESS INDICATED OTHERWISE PROVIDE 6 MM FILLET WELD OR FULL PENETRATION WELD. ALL PARTS TO BE FREE OF SHARP EDGES, BURRS, OR OTHER LIKE DETAILS. ALL WELDING INFORMATION IS TO BE CLEARLY INDICATED ON THE SHOP.
   SOUDURE : SAUF SI INDIQUÉ AUTREMENT, FOURNIR 6 mm DE SOUDURE EN ANGLE OU DE SOUDURE EN PÉNÉTRATION COMPLÈTE. TOUTES PIÈCES DOIVENT ÊTRE LIBRE DE BORD TRANCHANT OU AUTRES DÉTAILS SIMILAIRES. L'INFORMATION DE SOUDURE DOIT ÊTRE INCLUSE DANS LE DESSIN D'ATELIER.

ANCHORAGE SYSTEM USAGE NOTES / NOTES D'USAGES POUR LE SYSTÈME D'ANCRAGE :

1. THIS IS A TRAVEL RESTRAINT SYSTEM AND NOT A FALL ARREST SYSTEM.
   CECI EST UN SYSTÈME DE RETENUE, PAS UN SYSTÈME ANTICHUTE.
2. THIS SYSTEM IS NOT TO BE USED TO SUPPORT PRIMARY LOADS (SWING STAGES, BOATSWAIN'S CHAIR, EQUIPMENT, ETC.).
   NE PAS UTILISER CE SYSTÈME POUR SUPPORTER DES CHARGES PRIMAIRES (ÉCHAFAUDAGE VOLANT, CHAISE DE GABIER, ETC.)
3. USE OF THIS SYSTEM AND ASSOCIATED SAFETY EQUIPMENT SHALL CONFORM TO THE APPLICABLE STANDARDS AND REGULATIONS. WORKERS SHALL NOT USE THIS SYSTEM UNLESS THEY HAVE OBTAINED A CERTIFICATE ON FALL ARREST TRAINING.
   L'UTILISATION DE CE SYSTÈME ET DE TOUT ÉQUIPEMENT DE SÉCURITÉ ASSOCIÉ DOIT SE CONFORMER AUX STANDARDS DE RÉFÉRENCE ET AUX RÉGULATIONS APPLICABLES. LES OUVRIERS NE PEUVENT PAS UTILISER LE SYSTÈME SAUF S'ILS ONT OBTENUS UN CERTIFICAT DE FORMATION ANTICHUTE.
4. THE WORKERS MUST HAVE A WORK PLAN IN PLACE PRIOR TO COMMENCING ANY WORK THAT INVOLVES THE USE OF THIS SYSTEM.
   LES OUVRIERS DOIVENT AVOIR UN PLAN EN PLACE AVANT DE COMMENCER L'OUVRAGE QUI NÉCESSITE L'UTILISATION DE CE SYSTÈME.
5. THIS SYSTEM HAS BEEN DESIGNED TO BE USED WITH THE FOLLOWING CSA CERTIFIED SAFETY GEAR:
   CE SYSTÈME A ÉTÉ CONÇU POUR ÊTRE UTILISÉ AVEC L'ÉQUIPEMENT DE SÉCURITÉ CERTIFIÉ CSA QUI SUIT :

- A FULL-BODY HARNESS.
  HARNAIS DE SÉCURITÉ COMPLET.
- A 4-FEET LONG CLASS E4 SHOCK ABSORBER LANYARD, WITH A MAXIMUM DEPLOYMENT FORCE OF 4 KN (900 LBS).
  LONGE ANTICHUTE ET AMORTISSEUR DE CHOC DE 4 PIEDS DE LONG, CLASSE E4, AVEC UNE FORCE D'ACTIVATION MAXIMALE DE 4 KN (900 LBS).
- 16 mm DIAMETER POLYPROPYLENE ROPE (VLL).
  CÂBLE DE POLYPROPYLÈNE DE 16 mm DE DIAMÈTRE.
- FALL ARRESTER (ROPE GRAB) SECURED TO THE VERTICAL LIFELINE.
  COULISSEAU DE SÉCURITÉ ("ROPE GRAB") ATTACHÉ AU CÂBLE D'ASSURANCE VERTICAL.

  NEVER USE A SELF-RETRACTING LANYARD WITH THIS SYSTEM.
  N'UTILISER JAMAIS UN LOGE ANTICHUTE AUTO-RÉTRACTABLE AVEC CE SYSTÈME.

6. USE OF THIS SYSTEM MUST SATISFY THE FOLLOWING CRITERIA:
   L'UTILISATION DE CE SYSTÈME DOIT SATISFAIRE LES CRITÈRES SUIVANTS :

   - WORKERS SHALL BE TIED OFF DIRECTLY TO THE HORIZONTAL LIFE LINE (HLL), TO A VERTICAL LIFE LINE (VLL), OR TO THE ANCHORS AT ALL TIMES.
   - LES OUVRIERS DOIVENT ÊTRE ATTACHÉS DIRECTEMENT AU CÂBLE D'ASSURANCE HORIZONTAL, AU CÂBLE D'ASSURANCE VERTIAL OU À L'ANCRAGE DU TOIT.

7. THIS SYSTEM HAS BEEN DESIGNED FOR THE SECUREMENT OF TWO (2) WORKERS ON HLL, AND ONE WORKER PER VLL AT ANY GIVEN TIME.
   LE SYSTÈME A ÉTÉ CONÇU POUR DEUX (2) OUVRIERS PAR CÂBLE D'ASSURANCE HORIZONTAL ET UN (1) OUVRIER PAR CÇABLE D'ASSURANCE VERTICAL.
8. CORNER ANCHORS DESIGNATED D# ARE DEFLECTOR ANCHORS ONLY. NEVER TIE-OFF YOUR LANYARD OR VERTICAL LIFELINE DIRECTLY TO THESE ANCHORS.
   L'ANCRAGE DE TOIT DANS LES COINS DÉSIGNÉ D# SONT DES DÉFLECTEURS D'ASSURANCE HORIZONTAL SEULEMENT. NE SÉCURISER JAMAIS UNE LONGE ANTICHUTE OU UN CÂBLE D'ASSURANCE VERTICAL À CES ANCRAGES DE TOIT.
9. ENSURE THAT THE VERTICAL LIFE LINE DOES NOT RIDE OVER ANY SHARP EDGES.
   ASSURER QUE LE CÂBLE D'ASSURANCE VERTICAL NE SE FROTTE PAS CONTRE DES REBORDS TRANCHANTS.
10. THE VERTICAL LIFE LINE ROPE MUST NOT BE OFFSET FROM THE ANCHORAGE POINT MORE THAN 3 METERS OR 25 DEGREES (WHICHEVER COMES FIRST) FROM A LINE DRAWN PERPENDICULAR TO THE ROOF EDGE.
    LE CÂBLE D'ASSURANCE VERTICAL NE DOIT PAS ÊTRE DÉCALÉ DE L'ANCRAGE DE TOIT DE PLUS DE 3 MÈTRES OU DE 25 DEGRÉS (CELUI QUI SE PRODUIT EN PREMIER) D'UNE LIGNE DESSINÉE PERPENDICULAIREMENT AU BORD DU TOIT.
11. MINIMIZE SWING FALLS BY WORKING AS DIRECTLY BELOW THE ANCHORAGE POINT AS POSSIBLE.
    MINIMISER LES CHUTES "SWING" EN TRAVAILLANT DIRECTEMENT EN DESSOUS DE L'ANCRAGE DE TOIT.
12. MAINTAIN THE ROPE GRAB A MINIMUM DISTANCE OF 2.0 METER FROM THE EDGE OF THE ROOF AT ALL TIMES (REFER TO ROOF PLAN DETAIL).
    GARDER LE COULISSEAU DE SÉCURITÉ ("ROPE GRAB") À UN MINIMUM DE 2 MÈTRE DU BORD DU TOIT (RÉFÉRER AU DÉTAIL SUR LE PLAN.)
13. THIS SYSTEM MUST BE INSPECTED AND TESTED BY A PROFESSIONAL ENGINEER PRIOR TO INITIAL USE AND VISUALLY INSPECTED ON AN ANNUAL BASIS THEREAFTER. PRIOR TO EVERY USE, CONSULT THE ANCHOR LOGBOOK TO CONFIRM INSPECTION STATUS.
    LE SYSTÈME DOIT ÊTRE INSPECTÉ ET TESTÉ PAR UN INGÉNIEUR PROFESSIONNEL AVANT L'UTILISATION INITIAL, ET DOIT ÊTRE INSPECTÉ VISUELLEMENT ANNUELLEMENT PAR LA SUITE.

POST-FALL RESCUE PLAN / PLAN DE SECOURS APRÈS-CHUTE :

1. THE EMPLOYER MUST HAVE A POST-FALL RESCUE PLAN IN PLACE PRIOR TO THE USE OF THIS SYSTEM.
   L'EMPLOYEUR DOIT AVOIR UN PLAN DE SECOURS APRÈS-CHUTE MIE EN PLACE AVANT L'UTILISATION DU SYSTÈME.

NCC CCN
Canada

Capital Planning and Real Asset Management Branch
Direction de l'aménagement de la capitale et gestion de l'immobilier

Design and Construction Division
Division design et construction

director Pierre Vaillancourt directeur

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Fishburn Sheridan & Associates Ltd.
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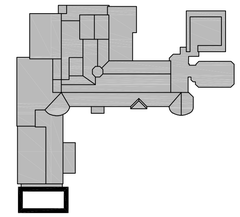
Key Plan
Plan Repère



NOTES / NOTES :

1. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL DIMENSIONS AND CONFIRM EXISTING CONDITIONS.
   L'ENTREPRENEUR EST RESPONSABLE DE VÉRIFIER TOUTES LES DIMENSSIONS ET DE CONFIRMER LES CONDITIONS EXISTANTES.
2. NOTIFY CONSULTANT IMMEDIATELY OF ANY DEVIATIONS FROM ASSUMED EXISTING CONDITIONS AS THEY ARE ENCOUNTERED ON SITE.
   INFORMER LE CONSULTANT IMMÉDIATEMENT POUR LES VARIANCES ENTRE LES CONDITIONS EXISTANTES ASSUMÉES ET CELLES RETROUVÉES AU CHANTIER.
3. TEMPORARILY REMOVE AND SUPPORT ELECTRICAL BOXES AND CONDUIT RUNNING ON ROOF SURFACES. REINSTATE UPON COMPLETION AND RE-SECURE AS REQUIRED.
   ENLEVER ET SUPPORTER TEMPORAIREMENT LES BOÎTES ET CONDUITS ÉLECTRIQUE QUI SE RETROUVENT SUR LE TOIT. RÉINSTALLER À LA FIN DES TRAVAUX ET LES FIXER AU BESOIN.
4. DRAWINGS ARE NOT TO BE SCALED.
   LES DESSINS PEUVENT NE PAS ÊTRE À L'ÉCHELLE.

issued or revised
émis ou revisé

no.	description	date
2	FOR TENDER / POUR SOUMISSION	2017-10-16
1	FOR REVIEW / POUR RÉVISION 90%	2017-09-21

project
projet

MAIN BUILDING

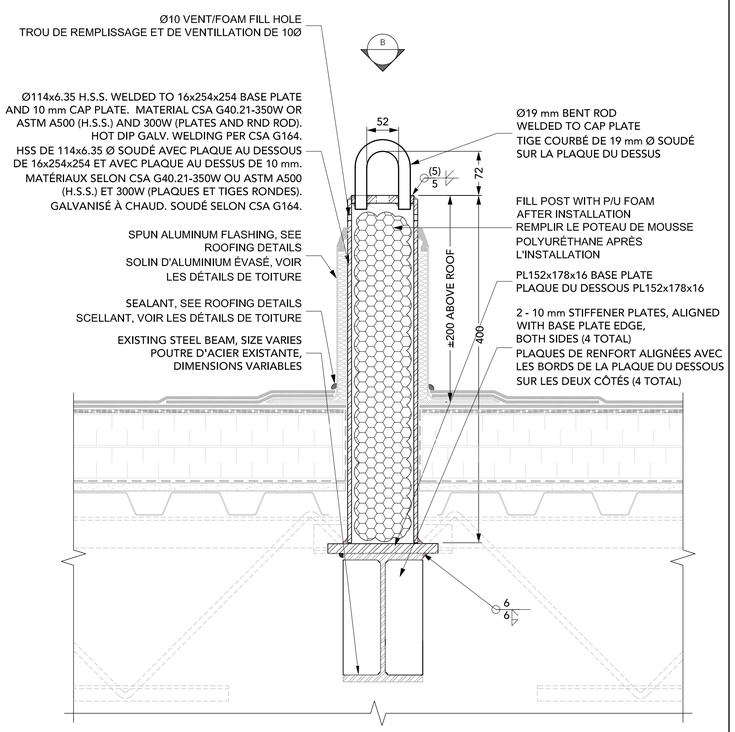
OTTAWA, ONTARIO

ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 21 / TOIT 21

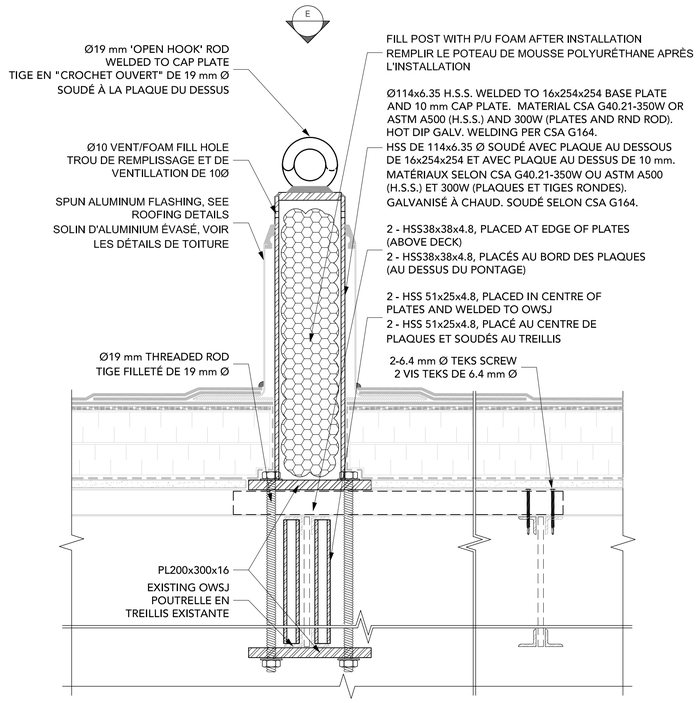
drawing
dessin

ROOF ANCHOR PLAN
PLAN DES ANCRAGES DE TOIT

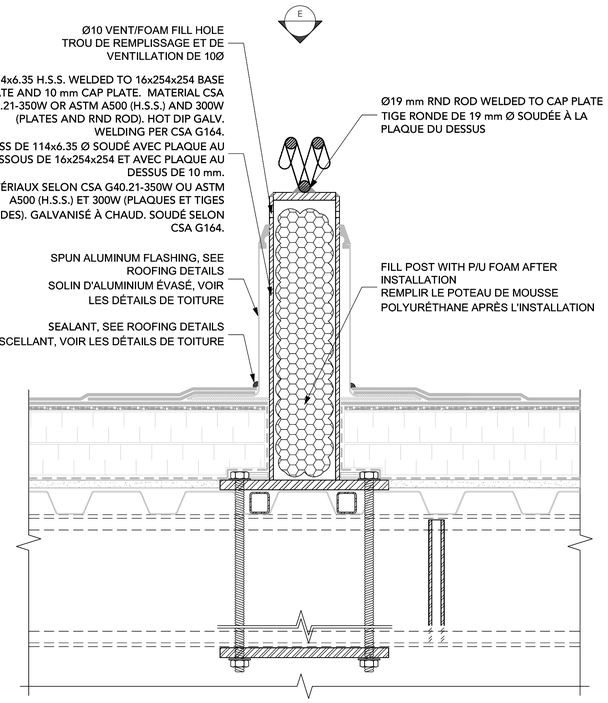
reviewed by révisé par	J. C. / R. S.
designed by conçu par	M. P.
drawn by dessiné par	J. M.
FSA #	17345DO
date 2017-10-04	scale / échelle VAR.
NCC project no. no. du projet de la CCN	sheet no. no. de la feuille
---	S1



A RA# ANCHOR / ANCRAGE DE TOIT RA#
1:5 SECTION VIEW / VUE EN COUPE

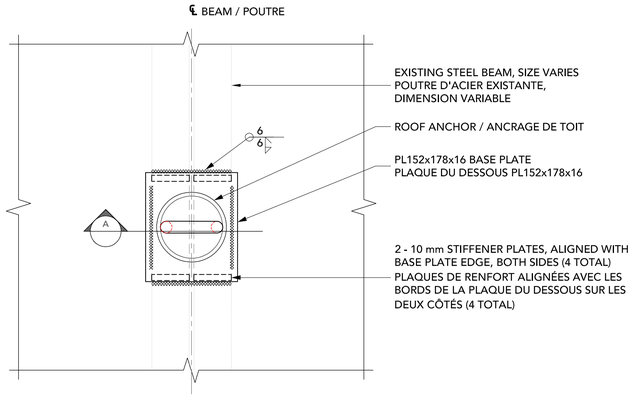


C D# ANCHOR DETAIL 1 / ANCRAGE DE TOIT D# DÉTAIL 1
1:5 SECTION VIEW / VUE EN COUPE

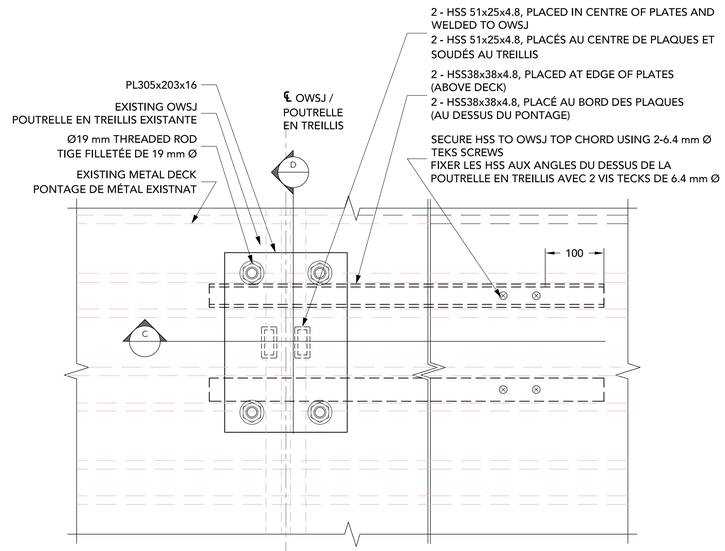


D D# ANCHOR DETAIL 2 / ANCRAGE DE TOIT D# DÉTAIL 2
1:5 SECTION DETAIL / VUE EN COUPE

NOTE: / NOTE :
EXISTING METAL DECK & OWSJ'S NOT SHOWN FOR CLARITY.
PONTAGE MÉTALLIQUE ET POUTRELLE EN TREILLIS ABSENT POUR UNE AMÉLIORER LA LISIBILITÉ.



B RA# ANCHOR / ANCRAGE DE TOIT RA#
1:5 PLAN DETAIL / VUE EN PLAN



E D# ANCHOR / DÉFLECTEUR D#
1:5 PLAN VIEW / VUE EN PLAN

1 ROOF ANCHOR / ANCRAGE DE TOIT
S2 1:5

2 DEFECTOR ANCHOR / DÉFLECTEUR DE CÂBLE D'ASSURANCE
S2 1:5

NCC CCN
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Key Plan
Plan Repère

NOTES / NOTES :
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no.	description	date
2	FOR TENDER / POUR SOUMISSION	2017-10-16
1	FOR REVIEW / POUR RÉVISION 90%	2017-09-21

project
projet
MAIN BUILDING
OTTAWA, ONTARIO
ROOF REPLACEMENT / RÉFECTION DE TOITURE, ROOF AREA 21 / TOIT 21

drawing
dessin
ANCHOR DETAILS

reviewed by / révisé par	J. C. / R. S.
designed by / conçu par	M. P.
drawn by / dessiné par	J. M.
FSA #	17345DO
date	2017-10-04
scale / échelle	VAR.
NCC project no. / no. du projet de la CCN	---
sheet no. / no. de la feuille	S2

LICENSED PROFESSIONAL ENGINEER
R. SAID
100148831
2017-10-04
PROVINCE OF ONTARIO

SPECIFICATIONS FOR

ROOF REPLACEMENT
ROOF AREA 21

MAIN BUILDING
OTTAWA, ONTARIO

Prepared for:

National Capital Commission
202-40 Elgin Street
Ottawa, Ontario K1P 1C7

Prepared by:

Fishburn Sheridan & Associates Ltd.

110 – 150 Katimavik Road, Ottawa, Ontario K2L 2N2
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FSA Project No.: 17345DO

October 2017

END OF SECTION

Part 1 General

1.1 GENERAL DESCRIPTION OF THE WORK

.1 Work to be carried out under this Contract, Roof Replacement, Roof Area 21 in Ottawa, Ontario.

.2 Provide the necessary labour and materials to complete the removal of the existing roofing system, existing curbs, sheet metal flashings and membrane down to the existing structural deck and install new roofing system as specified herein.

.3 The new roof system shall be as follows and as specified in the areas indicated on the drawings:

.1 Typical Roof System R1:

.1 Existing steel deck.

.2 13 mm gypsum board.

.3 Air/vapour barrier.

.4 2 x 50 mm polyiso insulation.

.5 6 mm protection board.

.6 2-ply modified bituminous membrane.

.4 Supply and installation of related rough carpentry at parapets and curbs.

.5 Supply and install all sheet metal and copper caps, counter flashings, scuppers, torch stops, fascia and all other roof related metal flashings required to complete roof installation.

.6 Supply and installation of all sealants required to seal the transition of membrane and related metal detailing and the termination of sheet metal and non-membrane surfaces.

.7 Supply and installation of new roof drains as detailed and indicated on the drawings. New drains shall be in the same locations and shall include all required clamps, hangers, insulation, vapour wrap and all other items required to complete the new drain installation.

.8 Supply and install roof anchors as per drawings and specifications.

.9 Supply and installation of self-ballasting guardrails as per drawings and specifications. *Alternative to roof anchors.*

.10 Temporarily disconnect all electrical as required to install new conduits as specified and indicated on the drawings. Coordinate all electrical work with NCC departmental representative.

1.2 DEFINITIONS

.1 "CONSULTANT" and “Fishburn Sheridan & Associates Ltd.” and “FSA” are synonymous.

.2 "OWNER" and **“**National Capital Commission” and “NCC” are synonymous.

.3 “CONSTRUCTOR” and “CONTRACTOR” are synonymous.

1.3 OTHER CONTRACTORS

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

1.4 USE OF THE SITE

.1 Carry out the Work so as to have the least possible interference and disturbance to the normal use of the premises. The successful bidder is expected to include in the bid an allowance for the performance of off-hours work should it be required to conform with the above.

.2 Maintain services to existing building and provide for personnel and vehicle access.

.3 Restrict construction access to and from site to approved location. Do not allow construction traffic to block entrances or exits for any reason.

.4 Co-ordinate any interference with Owner's operation in this area and abide by Owner's direction in this regard. In cases of conflicting requirements, Owner's operation takes precedence but all reasonable effort to accommodate Contractor's needs will be made.

1.5 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.

.2 Remove abandoned service lines within 2.4 m of structures. Cap or otherwise seal lines at cut-off points as directed by Consultant.

.3 Services are to be left operational unless otherwise authorized by Owner.

.4 Unless otherwise specified, the Contractor will be responsible for disconnection, relocation, re-installation and extending all services required to facilitate work under this Contract. Co-ordinate work with the Owner and provide minimum 48 hours notification if services are to be interrupted.

1.6 CUTTING AND PATCHING

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

1.7 PROTECTION OF PROPERTY

.1 Protect surrounding private and public property from damage during the performance of the Work.

.2 Be responsible for damage incurred.

1.8 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during the performance of the Work as required by insurance companies and governing codes, regulations and by-laws having jurisdiction.

.2 Work requiring the generation of open flames (welding, soldering, etc…) cannot be performed until an Owner's Permit has been issued. It is the responsibility of the successful bidder to apply for here said permit.

.3 Open fires and burning of rubbish are not permitted on site.

1.9 OCCUPATIONAL HEALTH AND SAFETY

.1 Follow the Ontario Provincial Occupational Health and Safety Act and Regulations for Construction Projects. For the purposes of the act, the person or company contracted to carry out the work shall be deemed the **"Constructor".**

.2 Hazardous materials, not identified by the Owner, may be encountered at the worksite. Use all necessary precautions when handling such material. It is possible that asbestos may exist in some form and if encountered the Contractor is responsible to notify the Owner and to follow Ontario Ministry of Labour regulations governing the handling of asbestos in the workplace.

.3 The Owner may cause those who do not comply with the O.H.S.A. and Regulations to be escorted from the site.

1.10 PROTECTION OF BUILDING FINISHES AND EQUIPMENT

.1 Prevent movement, settlement, or other damage to other adjacent structures, utilities, and parts of building to remain in place. Provide bracing and shoring if required.

.2 Keep noise, dust, and inconvenience to occupants to a minimum.

.3 Protect building systems, services and equipment. Protect all furnishings within work area with (6 mil) polyethylene film during construction. Remove film during non-construction hours and leave premises in clean, unencumbered and safe manner for normal daytime function.

.4 Provide temporary dust tight screens, partitions, covers, railings, barricades, supports and/or other protection as required. Protect workers, finished areas of work and public.

1.11 PARKING

.1 Parking is available on site.

.2 All vehicles must be parked in designated parking areas (except for reasonable loading and unloading of equipment and/or materials to a local entrance). Failure to observe these requirements may result the vehicle being ticketed and/or towed.

1.12 SIGNS AND ADVERTISEMENTS

.1 No signs or advertisements of any description other than notices regarding safety shall be displayed at the Work Site without permission of the Owner.

.2 Upon completion of the Work, all signs shall be removed except those specifically directed by the Owner to remain.

1.13 CLEAN-UP

.1 Maintain the work area in tidy condition, free from the accumulation of waste products and debris.

.2 Remove waste and materials regularly so as to maintain a tidy work site. Do not dispose of any waste in the Owner's facilities unless specifically directed to do so by authorised personnel.

.3 Store materials in areas specially designated by the Owner. Dispose of this debris in a legal manner so as to avoid causing a hazard to occupants and visitors on site.

1.14 MATCHING

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

1.15 PERMITS, FEES, CERTIFICATES

.1 A Building Permit will not be required for this project.

.2 Arrange and pay for all inspection certificates required by Authorities having jurisdiction, (i.e., Electrical Safety Authority Certificate). Provide the Owner with copies of these certificates upon completion.

1.16 DISRUPTION OF SERVICES

.1 The Contractor is responsible to provide adequate written notice to the Owner of any interruption of services (i.e., mechanical, electrical etc.) for the connection of new services or the alteration of existing.

.2 The Contractor is expected to co-operate reasonably with the Owner in the scheduling of service interruptions.

1.17 SANITARY FACILITIES

.1 Temporary sanitary facilities will be provided by the Constructor in compliance with the Occupational Health and Safety Act and Regulations for Construction Projects.

1.18 POWER

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

1.19 WATER SUPPLY

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

1.20 TEMPORARY FACILITIES

.1 Any temporary facilities provided at the site by the Contractor must be removed upon completion of the work and the area used must be returned to the original condition.

1.21 DOCUMENTS REQUIRED

.1 Maintain at the job site, one copy each of the following:

.1 Original Plans and Specifications and completed Form of Tender.
.2 Building Department stamped drawings if required.
.3 Any changes to Drawings or Details.
.4 Shop Drawings and any changes.
.5 Addenda.
.6 Change Orders.
.7 Site Instructions.
.8 Contractor's Safety Policy.
.9 Safety Data Sheets.

1.22 WORK SCHEDULE

.1 Within 5 working days of intent to award, provide a schedule showing anticipated progress stages and final completion of the Work within the specified time period, indicating each trade and inter-phasing. Allow for expected poor weather days.

1.23 CHANGES IN WORK

.1 All changes to the Contract Documents which result in an extra or credit to the Contract amount or time are not to be executed until written instructions have been received and the extra or credit agreed to in writing by all parties.

.2 Execute variations, alterations and substitutions that do not affect the intent, function, duration, or Contract amount, as instructed by the Consultant.

.3 Changes to the work that are considered urgent by the Owner shall be acted upon by the Contractor on the basis of a written field instruction to be confirmed by a Change Order. Costs are to be kept and presented along with all appropriate timesheet vouchers and bills of materials, or fixed sum if, work is done by a Sub-Contractor on a lump sum basis.

1.24 ADJUSTMENT OF CONTRACT PRICE BASED ON UNIT COST

.1 Provide a separate unit price as requested on the Form of Tender to adjust the cost for the quantity of work completed in comparison to that specified.

.2 The unit price shall be applied as an extra or credit to adjust the Contract price.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 American National Standard / American Society of Safety Engineers (ANSI/ASSE):

.1 ANSI/ASSE A1264.1-2007 Safety Requirements for Workplace Walking/Working Surfaces and their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrail Systems.

.2 ASTM International

.1 A27/A27M-13 Standard Specification for Steel Castings, Carbon, for General Application

.2 ASTM A 47-2014, Standard Specification for Ferritic Malleable Iron Castings.

.3 ASTM A500-13 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

.4 ASTM B 221M-13, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

.5 ASTM B429//B241M-10e1, Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

.6 ASTM E935-13e1, Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.

.3 National Research Council Canada (NRC)

.1 National Building Code of Canada 2015 (NBC).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for guarddrails and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit manufacturer’s installation instructions with project specific annotations to suit project conditions.

.2 Shop Drawings:

.1 Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

.2 Indicate installation of guardrails including but not limited to plans, elevations, sections, details of components, anchor details and clearances to adjacent assemblies. Indicate critical field dimensions and conflicts.

.3 Indicate installation conditions at obstructions or at junction with adjacent construction as necessary to provide continuity of protection.

.3 Parts List:

.1 Submit parts list indicating manufacturer's name, part number and name, quantity required for complete installation.

.4 Certifications:

.1 Submit certification that modular guardrail system has been tested in accordance with ASTM E935, that it conforms to requirements of ANSI/ASSE A1264.1 and to workplace safety requirements of authority having jurisdiction.

1.3 QUALITY ASSURANCE

.1 Modular guardrail system shall be the standard product of a manufacturer regularly engaged in the engineering design and manufacture of such products. System shall consist of components that have been in satisfactory use for at least 2 years prior to date of tender issue.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements:

.1 Deliver products to site in original factory packaging, labelled with manufacturer's name and address, and list of contents of each package.

.2 Inspect products for any damage or deformation. Remove damaged products from site and replace with matching undamaged products.

.3 Check package contents list against submitted parts list to ensure all components necessary for a complete installation have been delivered.

.3 Storage and Handling Requirements:

.1 Store material in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect guardrail components from all damage. Protect finish from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MANUFACTURED UNITS

.1 Acceptable manufacturer and product list:

.1 KeeGuard, by Kee Safety Inc.

.2 RoofBarrier, by Skyline Group.

2.2 DESIGN CRITERIA

.1 Installed guardrail assembly and anchorage shall conform to ANSI/ASSE A1264.1, structural requirements of NBC 2015 and workplace safety requirements of authority having jurisdiction.

.1 In case of conflicting requirements, the more stringent requirement shall apply.

2.3 MODULAR STEEL GUARDRAIL SYSTEM

.1 Refer to drawings for proposed design concept.

.2 Rails: 32 or 38 mm diameter structural steel to ASTM A53.

.3 Posts: 32 or 38 mm diameter structural steel tubing to ASTM A500 curved profile as indicated.

.4 Fittings: elbows, T-shapes, couplings, machined steel castings to ASTM A27 with locking stainless steel set screws.

.5 Non-Penetrating (Ballasted) Installation: weighted base mounting plate with non-abrasive non-slip resilient pad, with integral receivers to secure and fasten posts.

.6 Exposed Fasteners: flush countersunk screws or bolts; consistent with design of railing.

.7 Splice Connectors: collar with locking set screws, galvanized steel.

.8 Galvanizing: to ASTM A153, provide minimum 600 g/sq m galvanized coating.

.1 Touch-Up Primer for Galvanized Surfaces: SPCC 20 Type I Inorganic zinc rich.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for handrail installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Consultant.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant.

3.2 INSTALLATION

.1 Assemble and install modular guardrail system in accordance with manufacturer's instructions, accepted shop drawings and as necessary to provide continuity of protection.

.2 Install components plumb and level, in proper alignment with adjacent assemblies.

.3 At non-penetrating or freestanding guardrail set posts into weighted base plates and secure.

.4 Conceal bolts and screws whenever possible.

.5 Assemble with fittings, spigots, sleeves and set-screws to produce secure, vibration-resistant installation.

3.3 CLEANING

.1 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by hand rail installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 52 00 – Modified Bituminous Membrane Roofing.

.2 Section 07 62 00 – Sheet Metal Flashing and Trim.

.3 Section 07 92 00 – Joint Sealants.

.4 Section 22 05 11 – Plumbing and Drainage.

1.2 REFERENCES

.1 ASTM International

.1 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 CSA International

.1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
.2 CSA O141-05 (R2009), Softwood Lumber.
.3 CSA O151-09, Canadian Softwood Plywood.

.3 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber 2010.

.4 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S702-14, Standard for Mineral Fibre Thermal Insulation for Buildings.
.2 CAN/ULC-S702.2-10, Standard for Mineral Fibre Thermal Insulation for Buildings, Part 2: Application.
.3 CAN/ULC-S705.1-01, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.
.4 CAN/ULC-S705.2-05, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Application.

1.3 QUALITY ASSURANCE

.1 Lumber identification: By grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood identification: By grade mark in accordance with applicable CSA Standards.

1.4 PRECAUTIONS

.1 Provide temporary protection, to the satisfaction of the Consultant, to render all wood blocking watertight, if for any reason permanent membrane protection cannot be provided within the same day. Ensure the base of any curbs are

temporarily sealed to prevent water from entering below the curb assembly, or behind sheathing, should the roof assembly not be completed on the same day as the carpentry work.

Part 2 Products

2.1 LUMBER MATERIAL

.1 Lumber: Unless specified otherwise, softwood, S2S, moisture content 19% or less in accordance with following standards:

.1 CSA O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing and sleepers:

.1 S2S is acceptable for all surfaces.

.2 Board sizes: "Standard" or better grade.

.3 Dimension sizes: "Standard" light framing or better grade.

.4 Post and timbers sizes: "Standard" or better grade.

2.2 PANEL MATERIALS

.1 Canadian softwood plywood (CSP): To CSA 0151.

.1 Urea-formaldehyde free.

2.3 FASTENERS

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

.2 Wood to steel deck fasteners: Secure bottom nailer with minimum two rows of No. 10, galvanized steel screws at maximum spacing of 600 mm. Screws shall be of sufficient length to penetrate top flute of decking a minimum 13 mm and a maximum of 19 mm. Screws to be factory coated with an additional corrosion protection equivalent to ‘Climaseal’ or better.

.3 Plywood to concrete, brick or hollow masonry fasteners: Tapcon 6 mm diameter screws. Length to provide minimum 32 mm and maximum 40 mm embedment into substrate as required. Drill holes 13 mm deeper than depth of fastener penetration. Type to be approved subject to results of pull tests.

.4 Nails, spikes and staples: To CSA B111.

2.4 ACCESSORIES

.1 Semi-rigid insulation: semi-rigid mineral wool, rockwool, or slagwool boards, to CAN/ULC 702.2.

2.5 FINISHES

.1 Galvanizing: To ASTM A653/A653M, use galvanized fasteners for all work.

Part 3 Execution

3.1 GENERAL INSTALLATION

.1 Extend air/vapour barrier seals up vertical surfaces and curbs and onto the deck as shown on the Drawings, to provide continuity.

.2 Slope the top of all wood blocking at the roof perimeter in towards the roof at a minimum of 5%, unless otherwise shown on the Drawings.

.3 Comply with requirements of NBC, supplemented by the following paragraphs.

.4 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding and other work as required.

.5 Align and plumb faces of furring and blocking to tolerance of 1:600.

.6 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

.7 Install wood nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.

3.2 SECUREMENT OF WOOD BLOCKING

.1 Comply with more stringent requirements as required by drawings or Ontario Building Code requirements. Increase number and spacing of all fasteners by 50% for 2400 mm from all outside roof corners.

.2 Install fasteners to the design intent to hold all wood blocking permanently in place to prevent warping, deflection and to resist all wind and weather conditions.

.3 Secure wood to concrete in a staggered pattern with each row spaced at minimum 600 mm c/c with specified fasteners.

.4 Secure wood to metal in a staggered pattern with each row spaced at 450 mm c/c with specified fasteners at minimum 450 mm c/c.

.5 Install fasteners in two rows in the direction of the grain, offset one to another in a staggered fashion by approximately 50%. All fasteners shall be placed minimum 10 mm from any edge of framing.

3.3 SHEATHING INSTALLATION

.1 Plywood:

.1 Not less than 2 mm gaps shall be provided between sheets, to allow for material expansion.

.2 Unless otherwise indicated, fasten plywood with a minimum of thirty-six fasteners per 1200 mm x 2400 mm sheet.

3.4 ERECTION

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Countersink bolts where necessary to provide clearance for other work.

.3 Bevel leading edge of wood panel products on vertical applications to facilitate membrane installation and as detailed on drawings.

END OF SECTION

Part 1 General

1.1 GENERAL

.1 Contractor to provide an original, complete insurance policy identifying specific coverage for torch applied systems.

1.2 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 62 00 – Sheet Metal Flashing and Trim.

.3 Section 07 72 69 – Roof Anchors and Safety Restraints.

.4 Section 07 92 00 – Joint Sealants.

.5 Section 22 05 11 – Plumbing and Drainage.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM A653/A653M-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM C1177/C1177M-13, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

.2 Canadian Standards Association (CSA International)

.1 CSA A231.1-14/A231.2-14, Precast Concrete Paving Slabs / Precast Concrete Pavers.

.2 CSA B272-93 (R2000), Prefabricated Self-Sealing Roof Vent Flashings.

.3 CSA O151-09, Canadian Softwood Plywood.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.

.2 CGSB 37-GP-56M-80b(A1985), Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.

.3 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

.4 Factory Mutual (FM Global)

.1 Hot Work Permit Form F2630.

.2 FM 4450, Approval Standard for Class 1 Insulated Steel Roof Decks.

.5 Underwriters Laboratories' of Canada (ULC)

.1 CAN/ULC-S107-10, Standard Methods of Fire Tests of Roof Coverings.

.2 CAN/ULC-S126-06, Standard Method for Test for Fire Spread Under Roof Deck Assemblies.

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

.4 CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning roofing Work, with roofing contractor's representative and Consultant to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

1.5 COORDINATION

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

1.6 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with the following.

.2 System summary:

.1 Provide a one page synopsis of each roof type that lists the assembly components in order from top to bottom.

.3 Product Data:

.1 Provide two copies or an electronic copy of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations for all products to be incorporated in the new system.

.2 Provide two copies or an electronic copy of WHMIS for:

.1 Primers.

.2 Sealers.

.3 Liquid membrane.

.4 Adhesives.

.4 Provide shop drawings:

.1 Provide layout for sloped insulation.

.2 Provide shop drawing or submittal indicating mechanical attachment and adhesive pattern specified by manufacturer for the required wind uplift pressures indicated on the Drawings.

.5 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.7 QUALITY ASSURANCE

.1 Installer qualifications: Company or person specializing in application of modified bituminous roofing systems with 5 years documented experience, approved by manufacturer.

.2 Only certified applicators are permitted to use torch welding equipment.

.3 Hold a pre-installation meeting prior to the start of roofing works, with the roofing contractor's representative and the Consultant, to review installation conditions particular to this project.

.4 Roof membrane manufacturer shall delegate a representative to visit the work site at the start of roofing installation. Contractor shall engage membrane manufacturer's technical representative as required to provide technical guidance for and inspection of membrane application. The Contractor shall at all times enable and facilitate access to the worksite by this representative.

1.8 FIELD QUALITY CONTROL

.1 Adhesion Testing:

.1 If requested by the Consultant, at each roof drainage area, following installation of membrane base sheet, carry out adhesion tests to confirm adhesion of membrane to substrate and substrate layers to each other, down to first mechanically attached layer.

.2 Locations and timing of tests will be directed by Consultant. Provide labour and materials as required to assist Consultant in conducting tests.

.3 If inadequate adhesion is found, conduct further testing to determine the extent of the inadequate adhesion. Replace all defective areas to the satisfaction of the Consultant. Replace substrate materials as necessary with new materials, and patch cut tests with membrane patches extending at least 150 mm beyond the cut.

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

.2 Sample Testing:

.1 If requested by the Consultant, at each roof drainage area, following installation of membrane base sheet, carry out sample tests to confirm materials and installation of roof assembly components. Sample size to be 300 mm x 300 mm.

.2 Locations and timing of tests will be directed by Consultant.

.3 If inadequate construction is found, conduct further testing to determine the extent of the inadequate adhesion. Replace all defective areas to the satisfaction of the Consultant. Replace substrate materials as necessary with new materials, and patch cut tests with membrane patches extending at least 150 mm beyond the cut.

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

1.9 FIRE PROTECTION

.1 Fire Extinguishers:

.1 Pressure rechargeable type with hose and shut-off nozzle,

.2 ULC labeled for ABC class protection.

.3 ULC labeled for A class protection, for wood, paper and fibreboard.

.4 Size 14 kg.

.5 Have one fully charged ABC extinguisher and one fully charged Type A extinguisher on roof per torch applicator, within 3 m of the propane source.

.2 Maintain fire watch for 2 hours after each day's torching operations cease.

1.10 GENERAL REQUIREMENTS

.1 Comply with the General Requirements, General Instructions and Supplementary Conditions.

.2 Execute work in accordance with this Section and other related Sections, Drawings and Details.

.3 Attach roofing to structure to meet requirements of insurance underwriter and authorities having jurisdiction.

.4 Regard manufacturer’s printed recommendations as minimum requirement for materials, methods and workmanship not otherwise specified.

.5 Contact the Consultant if the specifications conflict with the manufacturer’s recommendations. Otherwise it will be assumed that the Contractor and manufacturer are in agreement with procedures outlined.

.6 Advise the Consultant of adjustments to specified roofing procedures caused by weather and site conditions. Make adjustment to specified procedures only after review with the Consultant.

.7 Maintain equipment in good working order to ensure control of roofing operations and protection of work. Types of roofing equipment and laying techniques to be employed are to meet the approval of the Consultant.

.8 Do not penetrate roof deck with any fastening devices that would do damage or impair the function of the assembly.

.9 All temporary drains shall be connected with a mechanical connection (MJ coupling) or a U-flow connection, until new drains are installed.

1.11 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of, sealing compounds, primers and caulking materials.

.3 Manufacturer's recommendations for handling and storing products are to be considered a minimum requirement.

.4 Materials shall be delivered to the site, undamaged and in their original packages, with manufacturer's labels visible, attesting to their conformity to specific standards.

.5 Ensure that shelf life of materials has not expired.

.6 Provide bill of lading for bulk loads of bitumen clearly showing Equiviscous Temperatures (EVT), Flash Point (FP) and Final Blowing Temperature (FBT).

.7 Remove damaged material from site and replace all rejected materials with new product.

.8 Elevate on raised platform and store as to prevent deformation of materials.

.9 Provide and maintain dry, off-ground weatherproof storage.

.10 Store rolls of membrane in upright position. Store membrane rolls with selvage edge up.

.11 Remove only in quantities required for same day use.

.12 Place plywood runways over completed Work and over areas not in Contract, as required, to enable movement of material and other traffic.

.13 Store sealants at +5°C minimum.

.14 Store insulation protected from daylight and weather and deleterious materials.

.15 Handle roofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.

.16 Avoid stockpiling of materials or use of equipment on decks in a way which could cause overloading.

1.12 ENVIRONMENTAL REQUIREMENTS

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

.2 Ensure protection of the building from weather at all times. If inclement weather is forecast or appears imminent, postpone work that would risk the building from moisture damage.

.3 If it becomes apparent that work would threaten the building watertightness, the Owner has the right to stop work. Any additional expenses due to work stoppage or postponement of work will be at the Contractor's expense.

.4 Ambient Conditions

.1 Do not install roofing when ambient temperature remains below -18°C for torch application.

.2 Minimum ambient temperature for solvent-based adhesive is -5°C.

.5 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.13 COMPATIBILITY

.1 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a complete assembly. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.

.2 Defective work resulting from work with incompatible materials will be considered the responsibility of the Contractor.

.3 Repair all work that could result in damage or interfere with performance.

1.14 EXISTING SUBSTRATES

.1 Following removal of existing material to the substrate, inspect the deck for soundness and notify the Consultant of any deck found unsound and not suitable for roofing. Do not commence work until conditions are documented and the Consultant rules on the acceptability of surfaces and/or corrective measures required. The cost of any delays due to postponement of work that results from investigating the site problem or obtaining a ruling will be at the Owner's expense.

.2 The commencement of work is proof that the Contractor has accepted surfaces as satisfactory and accepts responsibility for appearance and performance of completed work.

.3 Defective work resulting from application of material on unsatisfactory surfaces will be considered the responsibility of the Contractor.

.4 The Contractor will be responsible for all repairs, costs and pay all cost and fees required to rectify damage or defective work. Use materials and finish to match the original preconstruction conditions.

1.15 DAILY OPERATIONS

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

1.16 EXAMINATION

.1 Before proceeding with roofing application, ensure that:

.1 All surfaces are clean and free of debris, snow, frost and moisture.

.2 The deck is clean and sufficiently dry to ensure specified adhesion will be obtained.

.3 Adjacent construction and installation of related work (i.e. curbs, drains, penetrations, wood nailers, etc.) incorporated with the roof are complete.

.4 Roof deck is sound, existing fasteners are tight and irregularities are corrected to provide a suitable surface for new roofing.

.2 Ensure substrate is smooth. Remove sharp edges or protrusions that could impair the function of the roof assembly.

.3 Inform Owner/Consultant in writing of any defects.

1.17 DRAINS AND DRAINAGE PLANE

.1 Inspect surfaces and ensure that roof deck is level or sloped to drains in conforming to design intent.

.2 Inspect surfaces and ensure that roof drains are set at a level to drain and are connected or capped.

.3 Take spot levels to verify that pools of water in excess of 13 mm depth will not form.

.4 Tabulate levels and submit to Consultant.

.5 Ensure plumbing is accessible and work can be completed as specified.

.6 Inspect roof drains to ensure they are open and working properly.

.7 Where specified or shown for areas with only one drain, provide overflow scuppers or drains to detail and specified requirements.

1.18 EXAMINE UNDERSIDE OF DECK

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

1.19 HIDDEN SERVICES

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

1.20 EQUIPMENT

.1 Inspect equipment affected by the work, including but not limited to curbs, existing drains and plumbing, skylight, mechanical and electrical to ensure they are in good repair and working order. Record any damage and advise the Consultant.

.2 During re-roofing, ensure that all electrical lighting/cameras and conduits are properly supported.

.3 Notify Owner and/or Consultant of any equipment which is not operational or damaged prior to the commencement of work.

1.21 ADVISE CONSULTANT

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

1.22 PROTECTION OF ROOFTOP EQUIPMENT

.1 Remove any equipment and flashing intended for re-use and save from harm. Store in approved location and reset at project conclusion unless specified or shown to be removed.

.2 Protect all openings, vents and stacks from weather and contamination from debris.

.3 Provide temporary plumbers plugs to protect drains during roofing operations. Ensure that temporary protection is removed at completion of work period and/or at the end of each days work.

1.23 SERVICES

.1 Services are to be left operational unless otherwise authorized by the Owner.

.2 Unless otherwise specified, the Contractor will be responsible for disconnection, relocation, re-installation and extending all services required to facilitate work under this Contract. Co-ordinate work with the Owner and provide minimum of 48 hours notification if services are to be interrupted.

.3 Contractor to verify location of services prior to commencement of work. Notify Owner/Consultant of any unusual conditions.

.4 The Contractor and their employees must hold valid certificates for the work undertaken.

.5 Complete work of this Section as required by local authorities having jurisdiction. Have work inspected and pay all fees relative to such inspection to ensure work meets with published standards and codes.

.6 Submit Certificate or Letter of Approval by authority responsible for the work to the Owner and Consultant with final documentation.

.7 All electrical equipment affected by the replacement of the roof sections under this Section, must be inspected by an ESA representative to verify the integrity of the existing wiring and/or the new installation.

.8 The roofing Contractor must obtain a "Certificate of Inspection" from the ESA (Electrical Safety Authority 1-887-ESA-7233) and fill in the attached ESA log sheet and provide the certificate to Fishburn Sheridan & Associates Ltd. Failure to do so will result in an amount deducted from the Contractor's final invoice equal to the cost of doing this work.

1.24 ROOF ANCHORS AND SAFETY RESTRAINTS

.1 See Section 07 72 69 – Roof Anchors and Safety Restraints.

1.25 WARRANTY

.1 Contractor's Warranty for Labour and Material:

.1 For Work of this Section 07 52 00 - Modified Bituminous Membrane Roofing, 12 months warranty period is extended to 24 months.

.2 Make all necessary repairs and replacements within 48 hours of receipt of written notification.

.3 Nothing contained in this Article shall be construed as in any way restricting or limiting the liability in common law and statutory liability of the Contractor.

.4 Provide these written warranties, confirming above, issued on the corporate letterhead, signed and sealed by an authorized signing officer. The warranties will specifically reference the name of the Building, location and Owner.

.2 Manufacturer's Warranty:

.1 Provide a 10-year membrane warranty.

Part 2 Products

2.1 GENERAL

.1 All standards, regulations and specifications listed herein are considered to be the latest available edition.

.2 For sealants, mastic, adhesives or caulk, refer to Section 07 92 00 – Joint Sealants.

2.2 ROOF DECK SHEATHING MATERIALS

.1 Glass mat gypsum sheathing: Glass mat faced treated core gypsum roof board, for installation over steel deck to ASTM C1177/C1177M. Boards to be 1.2 m x 2.4 m, thickness as indicated, with pre-primed surface where indicated.

.1 Standard of acceptance or approved equivalent:

.1 DensDeck Roof Board by GP Gypsum.

.2 Securock by USG.

.2 Canadian softwood plywood (CSP): To CSA 0151.

.1 Urea-formaldehyde free.

2.3 PRIMERS

.1 Asphalt Primer: To manufacturer's recommendations.

.2 Self-adhesive membrane primer. As recommended by membrane manufacturer. Use low VOC, polymer emulsion-based primer, unless directed otherwise by Consultant on site.

2.4 AIR/VAPOUR BARRIER MEMBRANE

.1 For concrete decks and torchable gypsum board surfaces:

.1 Torch grade modified bituminous air/vapour barrier, with polyester or glass fleece reinforcement, minimum thickness 3 mm, top side sanded, having nominal weight of 180 g/m^2.

.1 Type 2.

.2 Class C - plain surfaced.

.3 Grade 1 - standard service.

.4 Top and bottom surfaces: sanded/polyethylene.

2.5 SELF-ADHERED MEMBRANE

.1 To CSA A123.22, self-adhering membrane consisting of SBS rubberized asphalt compound laminated to a polyethelene film. Minimum thickness 1 mm.

.1 Standard of acceptance or approved equivalent:

.1 Blueskin SA by Henry Bakor.

.2 GoldShield by IKO.

.3 Soprastick 1100 by Soprema.

2.6 MEMBRANE AND MEMBRANE FLASHINGS

.1 Acceptable membrane manufacturers:

.1 Soprema Group.

.2 IKO Industries Ltd.

.3 Henry Bakor.

.2 Base sheet membrane and base sheet membrane flashing (non-combustible substrates): To CGSB 37-GP-56M.

.1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer polyester reinforcement, having nominal weight of 180 g/m^2.

.2 Type 2.

.3 Class C - plain surfaced.

.4 Grade 1 - standard service.

.5 Top and bottom surfaces:

.1 polyethylene/polyethylene.

.3 Self-Adhesive base sheet membrane flashing (combustible substrates): To CGSB 37-GP-56M.

.1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, polyester and glass reinforcement.

.2 Type 2, adhered.

.3 Class C - plain surfaced.

.4 Grade 2 – heavy duty service.

.5 Top and bottom surfaces:

.1 Polyethylene/release paper.

.4 Cap sheet membrane and membrane flashing: To CGSB 37-GP-56M

.1 Styrene-Butadiene-Styrene(SBS) elastomeric polymer, prefabricated sheet, 250 g/m^2.

.2 Type 1.

.3 Class A-granule surfaced.

.1 Colour for granular surface: Gray.

.4 Grade 1-standard service.

.5 Bottom surface polyethylene.

.5 Fireguard Tape

.1 Modified bituminous membrane supplied in strips, 150 mm wide, 1.6 mm thick, glass fleece reinforced with self-adhesive underside.

.2 Standard of acceptance or approved equivalent:

.1 Sopraguard by Soprema.

2.7 ADHESIVES

.1 Adhesive for securing protection board and insulation: To be fully compatible with all materials in the roofing assembly. Applicability of use to adhere the different materials in the roofing assembly to be included in the manufacturer's literature.

.1 Standard of acceptance or approved equivalent:

.1 Thermostik 880-33 by Henry Bakor

.2 Duotack by Soprema

.3 Millenium by IKO

.4 Fas-n-free or Elite by Tremco

.5 Insta-Stick by Instafoam Inc.

.6 Roof Assembly Adhesive by Chemlink

2.8 POLYISOCYANURATE INSULATION (INORGANIC)

.1 Rigid foam board Type II, Class 2, Grade 2, manufactured with HC blowing agent meeting requirements of CAN/ULC S-126 and CAN/ULC S107. Conforming to CAN/ULC S704 and CAN/ULC S770 for LTTR values. Approved and listed by Factory Mutual Global for 1-60 and 1-90 wind classification and FM 4450 requirements for Class 1 fire. Thickness as specified or shown with maximum

board size 1200 mm x 1200 mm. Fibre-reinforced **inorganic facers** on both major surfaces of the core foam.

2.9 PROTECTION BOARD

.1 Protection Board: 6 mm thick asphalt based protection board with non-woven glass facers, as recommended by the membrane manufacturer.

2.10 SEMI-RIGID MINERAL WOOL INSULATION

.1 Semi-rigid mineral wool, rockwool, or slagwool boards, to CAN/ULC 702.2.

2.11 SEALERS

.1 Plastic cement: Asphalt, to CAN/CGSB-37.5.

.2 Sealants: See Section 07 92 00 - Joint Sealants.

2.12 PROTECTION MATERIALS

.1 One additional ply of cap sheet membrane.

.2 Rubber protection pad: Heavy duty grade, 550 mm x 550 mm or for size as indicated, 13 mm thick, masticated recycled rubber with reinforcement and UV resistant, dimpled surface.

2.13 CONCRETE PAVERS

.1 Concrete pavers: To CSA A231.1, 600 x 600 x 50 mm thick of sizes indicated natural, air entrained precast concrete paving slabs having non-slip finish with 51 mm plain margin around perimeter.

2.14 FASTENERS

.1 Vertical membrane flashing fasteners: Spiral nails, screws or masonry anchors with 25 mm solid caps. Minimum length 38 mm. Corrosion resistant.

.2 Fasteners for gypsum board to steel deck: No. 12 flat head, self-tapping, Type A or AB, cadmium plated screws. Use fastener plates (see below).

.3 Fastener plates: FM Global approved 75 mm hexagonal metal plates, 75 mm hexagonal plastic lock plates.

.1 Standard of acceptance or approved equivalent:

.1 Dekfast.

.4 Fasteners for sheet metal and wood to wood: Corrosion resistant #10 wood screws or nails to suit application.

2.15 PLUMBING VENTS

.1 2-piece spun aluminum with integral flange, diameter to suit existing pipe size.

.1 Standard of acceptance or approved equivalent:

.1 Flash-tite by Lexcor

.2 EVF-1 by Thaler

2.16 ROOF DRAINS

.1 See Section 22 05 11 – Plumbing and Drainage.

2.17 B-VENT BASE FLASHING AND STORM COLLAR

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

2.18 CONDUIT SUPPORTS

.1 Fabricated from 100% recycled rubber with reflective tape on both sides, UV resistant, with a 1.9 mm thick galvanized steel channel attachment 25 mm high to secure conduit.

.1 Standard of acceptance or approved equivalent:

.1 Dura-Block Rooftop Support, DB series by Eaton.

2.19 ROOF ACCESSORIES

.1 Bituminous metal paint: To isolate metal from concrete and masonry surfaces, to CAN/CGSB-1.108-M89 Type II.

.1 Standard of acceptance or approved equivalent:

.1 810-07 by Henry Inc.

Part 3 Execution

3.1 QUALITY OF WORK

.1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual.

.2 Do priming in accordance with manufacturer’s written recommendations.

.3 Fit the interface of all walls and roof assemblies with durable rigid material sheet metal or plywood providing connection point for continuity of air barrier.

.4 Make assembly, component and material connections in consideration of appropriate design loads, with reversible mechanical attachments.

.5 In the event that any product contains a manufacturing defect or anomaly, the Contractor shall notify the Consultant and manufacturer immediately and request direction.

3.2 REMOVAL OF EXISTING ROOFING

.1 Remove all roofing, flashing and insulation materials down to deck. Leave existing blocking and parapet construction in place where indicated. Where a built-up air/vapour barrier is present, remove this from the deck unless agreement is otherwise obtained from the Consultant to leave in place.

3.3 EXAMINATION OF ROOF DECKS

.1 Verification of Conditions:

.1 Inspect with Consultant deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.

.2 Evaluation and Assessment:

.1 Prior to beginning of work ensure:

.1 Decks are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.

.2 Curbs have been built.

.3 Roof drains have been installed at proper elevations relative to finished roof surface.

.4 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.

.3 Do not install roofing materials during rain or snowfall or when such weather is imminent.

3.4 ELECTRICAL DISCONNECTION / MODIFICATION / RECONNECTION

.1 Perform disconnection, extension, modification, and reconnection of electrical items in accordance with drawings provided. Obtain approval from Consultant prior to making adjustments not scheduled.

.2 All disconnected items must be properly tagged out of service.

3.5 PROTECTION OF IN-PLACE CONDITIONS

.1 Cover walls, walks and adjacent work where materials hoisted or used.

.2 Use warning signs and barriers. Maintain in good order until completion of Work.

.3 Protect roof from traffic and damage. Comply with precautions deemed necessary by Consultant.

.4 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.

.5 Metal connectors and decking will be treated with rust proofing or galvanization.

.6 Fit the interface of the walls and roof assemblies with durable rigid material sheet metal or plywood providing connection point for continuity of air barrier.

3.6 PRIMING

.1 Unless otherwise indicated or directed by Consultant, prime all surfaces which will be in direct contact with bituminous materials at the rate of 0.15 L/m^2 to manufacturer's recommendations. For self-adhering membrane, install primer at a rate recommended by manufacturer. Ensure that surfaces are tack-free before proceeding.

.2 Limit quantity of primer at deck openings and points of termination and provide supplemental protection to prevent bleedthrough to the building interior.

.3 Roll primer into surface.

.4 Re-prime all surfaces, including pre-primed surfaces, that become contaminated with dust or become marred due to their exposure to roof traffic or weather.

3.7 INSTALLATION OF GYPSUM BOARD SHEATHING

.1 Install boards as detailed and specified with primed or top side up.

.2 Over steel deck, place with long axis of each sheet transverse to steel deck ribs with end joints staggered and fully supported on ribs.

.3 Cut sheets as required to suit site conditions.

.4 Butt joints tightly. Use maximum size pieces where possible to reduce joints.

3.8 MECHANICAL FASTENERS FOR SHEATHING

.1 Attach boards as per the OBC Wind Uplift Attachment detail illustrated on the drawings.

.2 In compliance with specified requirements, use mechanical fasteners to secure boards in place.

.3 Inspect the underside of the deck to ensure fasteners will not be visible, damage the structure or interior surfaces, affect electrical and mechanical services. Fasteners to penetrate top flute of the deck maximum 20 mm.

.4 Advise Consultant of any unusual circumstances affecting the work. Be responsible and correct all damage caused by work to match existing materials and finish.

.5 Secure to top flute of steel deck with screws spaced in pattern specified. Use screw-type anti-backout corrosion resistant fasteners with 75 mm metal plates as generally approved or required by the fastener manufacturer.

.6 Prime metal plates that will be covered with bitumen roofing. Ensure primer is tack-free before proceeding.

3.9 TORCH-APPLIED AIR/VAPOUR BARRIER ON SHEATHING

.1 Ensure all surfaces to be covered with self-adhering membrane are complete and free of moisture and contaminants and surfaces are above 5°C (40°F). At temperatures below 5°C (40°F) heat materials to be covered with hot air gun. Store all materials in heated storage when temperatures fall below 5°C (40°F) and remove only as much material that can be used before cooling.

.2 Prime all vertical surfaces to be covered with torch-applied membrane, and horizontal surfaces as required. Use roller application – no spray application permitted. Let primer tack dry and complete thumb test to test set-up.

.3 Use fireguard tape or protection board to protect all open joints in substrate and all combustible surfaces.

.4 Working up slope from drain, install air/vapour barrier membrane using torch methods, true to line to completely cover the area intended to be protected to points shown on the drawing.

.5 Membrane is to be installed without air blisters and wrinkles. Rework, repair or replace all poorly installed membrane. Do not stretch material that would result in pullback and deformity of the membrane at intersections.

.6 Lap all side laps 75 mm and end laps 150 mm. Torch all seams to achieve bleedout. At nailable surfaces, secure all membrane on vertical surface at points of termination at 150 mm c/c, using large head roofing nails.

.7 Turn up membrane 150 mm at edge where horizontal surface meets vertical planes. Lap onto existing surfaces as required to provide continuity of air/vapour barrier at terminations. Use fireguard tape or protection board to protect all open joints in deck and all combustible surfaces

.8 Seal all points of termination at horizontal planes and vertical surfaces with modified sealant. Tool sealant to consistent smooth and even surface.

.9 Seal all perimeters and penetrations, and ensure drains are operational and prevent backflow, if air/vapour barrier is to be left exposed as an overnight temporary waterproofing.

3.10 INSULATION – ALL LAYERS – ADHESIVE ADHERED

.1 Attach insulation as per the OBC Wind Uplift Attachment detail illustrated on the drawings.

.2 Install base insulation layer over air/vapour barrier to specified design intent and thickness. Secure insulation laid with adhesive, in pattern as per adhesive manufacturer's directions and as indicated. Apply boards before adhesive cures, skims over or loses adhesive qualities.

.3 For subsequent layers of insulation, secure insulation laid with adhesive, in pattern as per adhesive manufacturer's recommendations and as indicated.

.4 Stagger all joints of insulation a minimum 300 mm.

.5 Stagger both end and side joints between insulation layers.

.6 Butt sheets of insulation with moderate contact. Do not force insulation into place. Cut neatly at projections and points of termination. Replace all broken, damaged or misfit boards as work progresses.

.7 Where necessary, back-cut insulation to allow it to conform and stay bonded to irregular surfaces without bridging. Subsequent to placement, walk insulation into place to ensure positive bonding is achieved.

3.11 PROTECTION BOARD

.1 Attach boards as per the OBC Wind Uplift Attachment detail illustrated on the drawings.

.2 Adhere protection board to insulation with with adhesive at the rate and pattern specified, as for insulation.

.3 Place boards in parallel rows with end joints staggered. Tape joints in protection board with fireguard membrane where combustible surfaces are directly below.

.4 Where protection board is specified on nailable vertical surfaces, secure protection board using large-head roofing nails at 200 mm centres each direction and tape all joints with fireguard tape.

3.12 MODIFIED BITUMINOUS MEMBRANE - GENERAL APPLICATION

.1 Inspect and seal all substrates to eliminate fire hazard. Use fireguard tape as required or recommended by manufacturer.

.2 Mechanical spreaders are not permitted to install modified membranes.

.3 Use only bitumen, sealants, adhesive or mastics as specified by membrane manufacturer. Provide written approval from manufacturer when proposing any alternatives or substitutions.

.4 Lay out all sheets as to allow them to relax a minimum of 30 minutes. When temperatures are below 4.4°C keep and lay out rolls in heated storage. Install rolls before temperature fallback of the sheet occurs.

.5 Roof membrane to be installed in one sheet if possible.

.6 Lay all membrane starting at low point to ensure that seams do not face water flow. Roll all membrane into place, true to line, free of buckles, air pockets, fishmouths and tears.

.7 Overlap all end laps minimum 150 mm and side laps 75 mm.

.8 Offset all side laps between plies by 50%.

.9 Offset all end laps between plies minimum 1200 mm.

.10 At valley locations, run membrane continuously with the slope of the main roof. Lay out all sheets to ensure minimum side laps are maintained through valley area and short section of roof beyond. At these locations the side laps for the main roof will increase. Install membrane to details and Consultant's direction onsite.

.11 Ensure that a watertight seal is achieved at all overlaps and points of termination.

.12 Carry base sheet flashing over face of building as shown on the drawings.

.13 Carry membrane up all vertical surfaces to point shown. Cut off corners at 45° at end laps to be covered by the next roll prior to installation of following sheet.

.14 Verify procedure with Consultant on site. Seal fasteners through membrane immediately with Type 'A' sealant.

.15 Do not walk on membrane during applications and until sufficient cooling has taken place as to allow for traffic without doing damage or marking surface.

3.13 MEMBRANE APPLICATION

.1 In accordance with Summary of Work, drawings and details, install new membrane and flashings system.

.2 Install all membrane in strict accordance with manufacturer's latest printed instructions and application methods.

3.14 BASE SHEET (TORCH APPLICATION)

.1 Install 1-ply base sheet membrane running with the roof slope, starting at the low point. Layout roll in place to verify alignment and proper overlap and re-roll prior to torching.

.2 Fully torch in place base sheet membrane using proper application techniques as specified by membrane manufacturer.

.3 Install membrane true to line and free of wrinkles, air pockets, voids, excessive bitumen flow or other irregularities. Ensure the membrane is not overheated at any location. Should any of these conditions occur, immediately stop membrane application and correct the deficiency before proceeding. Notify Consultant and obtain his approval for proposed repair methods. Questionable areas will require to be cut out and replaced.

.4 Ensure that a watertight seal of all membrane joints and points of termination is achieved with a torch and trowel.

.5 Terminate base sheet up all verticals 50 mm, secure on vertical with 38 mm nails with 25 mm metal heads at 225 mm c/c.

.6 Review base membrane for low areas (ponding) and correct with additional base sheet membrane.

3.15 BASE SHEET FLASHINGS (SELF-ADHERED APPLICATION)

.1 All flashings to be cut across the roll in 1 m sections. Cut off corners at end laps to be covered by next flashing piece.

.2 Provide chalk lines and install all membrane true to line. Install gusset reinforcement pieces at all corner locations.

.3 Ensure wall or eave surfaces are clean and dry, free of contaminants or other irregularities. Re-prime as necessary.

.4 Commence flashings from the drain or low points and overlap all side laps minimum 75 mm. Base sheet flashings to extend 100 mm onto roof surface and terminate as shown in drawings.

.5 Place sheet into primer or adhesive and press into place using hand roller to ensure uniform adhesion. Use hot air welder on all seams and joints to ensure a waterproof seal on all points of termination. Apply flashings free of air pockets, voids, wrinkles or fishmouths.

3.16 CAP SHEET (TORCH APPLICATION)

.1 Prior to installation, unroll the cap sheet and check for granular embedment width and alignment.

.2 Layout membrane to ensure side lap of cap sheet does not occur within 150 mm of roof drain.

.3 Install specified cap sheet membrane running with the roof slope, starting at the low point. Layout roll in place to verify alignment and proper overlap and re-roll prior to torching. Offset cap sheet side laps 50% to base sheet side laps, ensure lap does not lie within 150 mm of a roof drain.

.4 Install 1-ply cap sheet membrane full torched in place using proper application techniques as specified by the membrane manufacturer.

.5 Install membrane by softening both contact surfaces simultaneously with recommended torching equipment. During application, unroll membranes slowly into fluid bitumen ensuring consistent 3 mm to 6 mm flow protrudes each side of the roll.

.6 Install membrane true to line and free of wrinkles, air pockets, voids, excessive bitumen flow or other irregularities. Ensure the membrane is not overheated at any location. Should any of these conditions occur, immediately stop membrane application and correct the deficiency before proceeding. Notify Consultant and obtain his approval for proposed repair methods. Questionable areas will require to be cut out and replaced

.7 Using a torch and trowel, embed granules at end laps and where required on surface of cap sheet to ensure proper bonding of membrane overlaps.

3.17 CAP SHEET FLASHINGS (TORCH APPLICATION)

.1 All flashings to be cut across the roll in 1 m sections. Cut off corners at end laps to be covered by next flashing piece.

.2 Provide chalk lines and install all membrane true to line. Install base sheet gusset reinforcement at all corner locations.

.3 Commence flashings from the drain or low points and overlap all side laps minimum 75 mm. Cap sheet flashings to extend 150 mm onto roof surface and terminate as shown in drawings. At wall locations, unless otherwise specified, cap sheet flashings to extend up 50 mm higher than base sheet flashings.

.4 Where required by Summary of Work and details, install 50 mm wide continuous strip of Type 'A' sealant to the tops of parapets or eaves to prevent bitumen spillage on the building exterior.

.5 Install membrane by softening both contact surfaces simultaneously with recommended torching equipment. During application, unroll membrane slowly into fluid bitumen ensuring consistent 6 mm flow protrudes each side of the roll.

.6 Unroll and work sheet into place using torch, trowel and wet sponge to ensure proper placement and adhesion.

.7 Install membrane true to line and free of wrinkles, air pockets, voids, excessive bitumen flow or other irregularities. Ensure the membrane is not overheated at any location. Should any of these conditions occur, immediately stop membrane application and correct the deficiency before proceeding. Notify Consultant and obtain his approval for proposed repair methods. *Questionable* areas will require to be cut out and replaced.

.8 Touch up bare spots, corners, scuffs and bleedout runs on cap sheet with granules matching membrane colour, immediately following installation. Use hot air welder, torch or Type 'A' sealant to adhere granules to sheet.

3.18 ROOF DRAINS

.1 See Section 22 05 11 – Plumbing and Drainage for plumbing work.

.2 Install self-adhered membrane air seal around drain and extend onto air/vapour barrier minimum 150 mm.

.3 Unless otherwise specified or shown, provide prefabricated sump of sloped polyisocyanurate insulation 1200 mm each side of the centre of the drain. Reduce polyisocyanurate insulation thickness to minimum 19 mm at drain to provide positive roof drainage (make allowance for thickness of all flanges and clamps) and ensure water flow will not be impeded.

.4 Complete roof membrane, installing additional 1 m x 1 m base sheet flashing centred over drain opening.

.5 Fully coat drain flange to receive roofing with modified sealant and continue modified bitumen over flange. Neatly trim and work membrane to interior face and seal with Type 'A' sealant.

.6 Set clamping ring in solid bed of Type 'A' sealant. Secure clamp ring and integral screen as dictated by drain design immediately after membrane is installed. Tighten bolts to ensure a permanent watertight compression seal.

.7 Install and bolt strainers with heavy iron mechanical bracket to ensure the drain screen remains permanently in place to the Consultant's approval.

.8 Install test plug, water test roof and repair leaks. Remove test plug once complete.

3.19 ROOF ANCHORS AND SAFETY RESTRAINTS

.1 See Section 07 72 69 – Roof Anchors and Safety Restraints.

3.20 PLUMBING VENTS, B-VENTS, STACKS AND SLEEVES

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

.2 Protect exposed surface during roofing operation and clean surfaces free of bitumen before leaving site.

.3 Make all penetrations air and watertight at air/vapour barrier by installing self-adhesive membrane flashings 150 mm onto air/vapour barrier and carry up and around projection. Clamp in place and caulk.

.4 Trim base sheet at roof projections.

.5 Adjust existing pipes to new flashing heights by either cutting down or extending pipes with matching materials attached with mechanical couplers. Ensure pipes are 38 mm higher than flashing to allow for sealing to prevent condensation.

.6 Clear all projections free of contaminants and seal junction of base sheet and roof projections with trowel applications of sealant as shown on drawings.

.7 Install all metal flanges to be built into the membrane before the installation of cap sheet. Insulate sleeves in accordance with drawings as specified. Where required, install telescoping caps to detail.

.8 Prime topside and underside of all flanges to be incorporated with roofing prior to application. Use primer supplied by the membrane manufacturer. All primer to be dry before installation of membrane roofing or flashing.

.9 Before installing flashings, install 1-ply base sheet extending to opening. Set flanges in bed of Type 'A' sealant prior to membrane installation, as per manufacturer's recommendations.

.10 Install 1-ply of base sheet flashings thermofused to the flange to within 25 mm from upturn and continuing a minimum of 225 mm beyond flange. Continue cap sheet to metal upturn. Seal around upturn junction with sealant and touch up with matching granules, as per manufacturer's recommendations.

.11 Install rain collars over sleeves and stacks as indicated to match adjoining materials and seal with sealant as indicated on drawings.

3.21 CONCRETE PAVERS

.1 Install concrete pavers where shown to requirements of Summary of Work, drawings and details.

.2 Set pavers on rubber protection pad, in turn on sacrificial ply of cap sheet membrane.

3.22 CONDUIT SUPPORTS

.1 Provide alterations in pipe to raise existing pipe minimum 200 mm above finished roof level as shown on drawing detail.

.2 Elevate pipe on supports to maximum 200 mm above finished roof surface. Provide an additional membrane ply and rubber pad under pipe supports as specified elsewhere in the Section.

.3 Tighten roller assembly into bracket at desired height and secure in place with lock nuts. Ensure roller assembly is allowed 3 mm minimum spacing and will accommodate movement of pipes due to expansion and contraction.

.4 Install supports at spacing required to prevent deflection of damage of conduit and safeguard the roof from damage.

.5 Complete work of this Section as required by local authorities having jurisdiction. Have work inspected and pay all fees related to such inspection to ensure work meets with published standards and codes. Submit with final documentation certificate or letter of approval to Owner's Project Coordinator or Consultant.

3.23 CLEAN UP

.1 At all times, keep the premises free from accumulation of waste materials or rubbish. Stock piling of debris on the roof will not be permitted.

.2 Repair defects in surface and bitumen runs with granules to match existing to leave the roof in an even consistent finish.

.3 Leave roof clear of debris and bitumen left by spills and machine tracking.

.4 Leave grounds and building free of debris and bitumen spread by pedestrian traffic where applicable.

.5 Clean surfaces and penetrations of all contaminants and touch up to the satisfaction of the Owner. Include rooftop equipment, curbs, soil stacks, sleeves, gas lines, vents, drains and ladders.

.6 Check drains to ensure they are functional and where required remove all debris by vacuum.

.7 At the completion of the work remove all rubbish, tools, equipment and surplus materials.

.8 Be responsible to repair and pay all costs and fees required to rectify damage caused by work of the Contract with materials and finish to match original.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 52 00 - Modified Bituminous Membrane Roofing.

.3 Section 07 92 00 – Joint Sealants.

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM A240/A240M-07e1, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

.2 ASTM A653/A653M-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.3 ASTM B32-04, Standard Specification for Solder Metal.

.4 ASTM B370-03, Standard Specification for Copper Sheet and Strip for Building Construction.

.5 ASTM D523-08, Standard Test Method for Specular Gloss.

.6 ASTM D822-01(2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.2 Association canadienne de normalisation (CSA) / CSA International

.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.3 Canadian Roofing Contractors Association (CRCA)

.1 Roofing Specifications Manual 1997.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.6 SMACNA – Architectural Sheet Manual – Édition 1993.

1.3 COORDINATION

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

1.4 EXAMINATION

.1 Do not commence work until surface to be covered has been inspected.

.2 Inspect work and advise the Consultant of conditions that would adversely affect the work of this trade.

.3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepts responsibility for appearances and performance of completed work.

.4 Repair damaged and inferior work caused by work of this Contract with materials and finish to match original to the Consultant's approval.

1.5 SUBMITTALS

.1 Submit to the Consultant a list of materials intended for use before they are ordered.

.2 Product Data:

.1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit copies of WHMIS MSDS - Material Safety Data Sheets.

.3 Samples:

.1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours.

.4 Quality assurance submittals:

.1 Submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.

.3 Manufacturer's recommendations for handling and storing products are to be considered a minimum requirement.

.4 Materials shall be delivered to the site, undamaged and in their original packages, with manufacturer's labels visible, attesting to their conformity to specific standards.

Part 2 Products

2.1 GENERAL

.1 All standards, regulations and specifications listed herein are considered to be the latest available edition.

.2 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.

2.2 SHEET METAL MATERIALS

.1 Copper sheet: to ASTM B370 temper designation H00 with mass of 4.88 kg/m^2 (16 oz/ft^2) minimum mass.

2.3 ACCESSORIES

.1 Metal cleat: same material as metal flashings, 50 mm wide @ 600 mm c/c.

.2 Continuous copper starter strip: Copper, same temper and thickness as flashing, secured at 400 mm c/c.

.3 Use galvanized, copper, aluminum or stainless steel nails or screws as most compatible with materials and preservatives being utilized.

.4 Nails: Annular threaded nails of length to penetrate into bases minimum 25 mm. No. 8 screws to penetrate wood 19 mm at 600 mm c/c.

.5 Masonry fasteners: Stainless steel, spike sized to penetrate concrete 38 mm minimum as specified or shown.

.6 Screws for starter strips and fascia: Brass screws, #8 @ 400 mm c/c.

.7 Wedges: Rolled plumber sheet lead.

.8 Sealant: Refer to Drawings and Section 07 92 00 – Joint Sealants.

.9 Solder: ASTM B 32; Provide 50-50 tin/lead or lead free alternative of similar or greater strength solder. Killed acid flux.

.10 Flux: Muriatic acid neutralized with zinc or approved brand of soldering flux.

.11 Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

.12 Bituminous Coating: SSPC-Paint 12, Cold-Applied Asphalt Mastic (Extra Thick Film), nominally free of sulfur, compounded for 15-mil dry film thickness per coat.

.13 Metal Accessories: Provide cleats, straps, hangers, anchoring devices, and similar accessory units as required for installation of work, noncorrosive, size and gage required for performance.

.14 Rivets:

.1 Pop Rivets: 1/8-inch (3-mm) to 3/16-inch (4.5-mm) diameter, with solid brass mandrels.

.2 Provide solid copper rivet (tinner's rivets) where structural integrity of seam is required.

2.4 FABRICATION

.1 Fabricate metal flashings and other sheet metal work in accordance with applicable details, as indicated. Where not indicated, follow applicable CRCA 'FL' series details and as recommendations of 'Copper and Common Sense'.

.2 Metal shall be formed on a bending brake, shaping trimmed and hard seaming shall be done on bench, as far as practicable, with proper sheet metal working tools. Angles of bends and folds for interlocking metal shall be made with full regard to expansion and contraction to avoid buckling and to avoid damaging metal surfaces.

.3 Fabricate all possible work in shop in maximum 2400 mm lengths by brake forming, bench cutting, drilling and shaping.

.4 Hem exposed edges on underside 13 mm. Mitre and seal corners with sealant.

.5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.6 Dry joints are to be tight but not dented so as to permit slight adjustments of sheets and yet remain watertight.

.7 Lock seams at all corners.

.8 Apply isolation coating to metal surfaces to be in contact with concrete, mortar and dissimilar metals.

.9 General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with the "Copper in Architecture" handbook published by the Copper Development Association (CDA). Anchor units of work securely in place by methods indicated, providing for thermal expansion of units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

.10 Install expansion joints at frequency recommended by the CDA "Copper in Architecture" handbook. Do not fasten moving seams such that movement is restricted.

.11 Coordinate with installation of roofing system and roof accessories.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install sheet metal flashings at copings, walls, expansion joints, roof openings and other components required to protect the membrane flashings as shown on the drawings or otherwise required. Where not indicated, follow applicable CRCA 'FL' series details or 'Copper and Common Sense' details.

.2 Use concealed fastenings except where approved before installation.

.3 Install continuous concealed starter strips at all exterior faces. Install cleats between lock joints and as indicated to permanently hold flashing in place. Install hook strip fasteners with 2 fasteners per cleat.

.4 Join sheet metal by "S" lock seams, to permit thermal movement. Seal all fasteners and completely fill all joints with Type 'B' sealant as flashing is being installed. Clean off all excessive visible material subsequent to installation.

.5 When flashing is being installed in more than one piece, offset joints in adjacent flashings by approximately 50%.

.6 Form inside and outside corners by means of locked seams. Do not use pop rivets unless accepted by Consultant.

.7 Slope all metal to interior of roof area to maintain slope, unless otherwise indicated. Do not form open joints or pockets that fail to drain water.

3.3 CLEANING

.1 Remove protective film (if any) from exposed surfaces of copper promptly upon installation. Strip with care to avoid damage to finishes.

.2 Clean exposed copper surfaces, removing substances that might cause abnormal discoloration of metal.

.3 Upon completion of each area of soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing clear water rinse. Use special care to neutralize and clean crevices.

.4 Clean exposed metal surfaces of substances that would interfere with uniform oxidation and weathering.

.5 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.6 Leave work areas clean, free from grease, finger marks and stains.

3.4 PROTECTION

.1 Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 52 00 – Modified Bituminous Membrane Roofing.

1.2 SECTION INCLUDES

.1 Anchors, horizontal lifeline system design and layout:

.1 Locations and quantities of the anchors, the horizontal lifeline system and the like, indicated in the contract documents are schematic only and do not purport to identify or solve the specified performance criteria that the work of this section is required to meet or surpass.

.2 Final design, including locations and quantities of anchors, and the like, are part of the work and responsibility of this section.

.3 Careful coordination is required with the work of related sections to ensure that allowances are made therein for the final design of the work of this section.

1.3 REFERENCES

.1 ASTM International

.1 ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.2 ASTM A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.3 ASTM A500/A500M, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

.2 CSA International

.1 CSA B272-93, Prefabricated Self-Sealing Roof Vent Flashings

.2 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.3 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

.4 CSA W47.1, Certification of Companies for Fusion Welding of Steel.

.5 CSA W55.3, Certification of Companies for Resistance Welding of Steel and Aluminum.

.3 National Standards of Canada

.1 CAN/CSA-Z259.13 (Flexible Horizontal Lifeline Systems).

.2 CAN/CSA- Z271-10 (Safety Code for Suspended Elevating Platforms).

.4 Health and Safety

.1 Occupational Health and Safety Act, R.S.O. 1990, Ontario Regulation 213/91.

1.4 SYSTEM DESCRIPTION

.1 Safety anchor system engineered and design to allow for the safe execution of maintenance work along the entire perimeter of the roof area.

.2 Work to be interfaced with roofing systems to maintain continuous water protection of the roofing system. Design anchors to be watertight in fully immersed state, without requirements for periodic water tightness inspections by NCC Representative during life of roofing system.

.3 System shall be load tested after installation.

.4 Guidelines: Standards and Regulations for Horizontal Lifeline Systems for Travel Restraint purposes. Horizontal Lifeline Systems to conform to CAN/CSA-Z259 Series and resist a minimum perpendicular horizontal load of 8kN.

.5 Anchors Assembly: to resist lateral forces of 22.2 kN at any point and in all directions, without damage or permanent set.

1.5 QUALITY ASSURANCE

.1 Manufacturer/designer qualifications: Must specialize in designing and manufacturing products specified in this section. Required 5 years documented experience for anchor design.

.2 Fabricator qualifications: Must specialize in designing and manufacturing products specified in this section. Required 5 years documented experience for anchor manufacturing.

.3 Installer qualifications: Must specialize in designing and manufacturing products specified in this section. Required 5 years documented experience for anchor design and installation.

.4 Products shall be sourced from one manufacturer unless otherwise specified.

1.6 SUBMITTALS

.1 Product data sheets:

.1 Submit manufacturer's instructions, printed product literature and data sheets for roof anchors, anchorage connectors and cable. Include product characteristics, performance criteria, physical size, finish and limitations.

.2 Shop drawings:

.1 Submit engineered shop drawings stamped and signed by professional engineer licensed to practice in the Province of Ontario, Canada.

.2 Engineered shop drawing to show complete layout and configuration of system, locations, spacing, anchor heights and other components and accessories.

.3 Clearly indicate design, fabrication details, plans, design, elevations, hardware details, installation details, and loads transmitted to structure.

.4 Shop drawing shall include design to meet the requirements of authorities having jurisdiction. This section shall be responsible for locations, quantity and type of anchors required to suit requirements. Drawing indicate diagrammatic and general information only.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Deliver anchor system and accessories to the place of work in original undamaged condition. Store to ensure no damage occurs to components by either physical or moisture damage prior to or during installation.

1.8 WARRANTY

.1 Warrant work of this section for a period of 2 years.

Part 2 Products

2.1 TRAVEL RESTRAINT ANCHOR SYSTEM

.1 Roof anchor and travel restraint materials:

.1 Eye ring: Type 300W, Forged steel and hot dip galvanized to CAN/CSA G164. Eye ring to be not less than 19mm diameter material with a minimum 38mm eye opening.

.2 Bolts/ washers/ nuts: Type 304 stainless steel.

.3 Steel Tubing/ baseplate: to conform to CSA G40.20M/G40.21, Type 300W, HSS welded to base plate and hot dip galvanized to CAN/CSA G164.

.4 Welding Materials: CSA W47.1 for materials being welded.

.5 Aircraft Cable (between travel restraint anchors): minimum 10 mm diameter, spiral wound 7x19 multi-strand stainless steel aircraft cable.

.6 Anchorage Connectors/Shock Absorbers: Type 304 stainless steel.

.2 Anchors shall be designed and engineered to support 360° maximum working load.

.3 Steel piers to be hot dipped galvanized and filled with urethane foam insulation.

2.2 FABRICATION

.1 Fit and shop assemble items in largest practical sections, for delivery to site.

.2 Fabricate items with joints tightly fitted and secured.

.3 Continuously seal joined members by intermittent welds.

.4 Grind exposed joints flush and smooth with adjacent finish surface.

.1 Make exposed joints butt tight, flush, and hairline.

.2 Ease exposed edges to small uniform radius.

.5 Exposed Mechanical Fastenings: screws or bolts; consistent with design of component.

.6 Furnish and install components required for anchorage of fabrications.

.7 Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

Part 3 Execution

3.1 EXAMINATION

.1 Refer to section 07 52 00 for requirements.

3.2 INSTALLATION

.1 Install roof anchor systems on the building under the supervision of a qualified professional engineer licensed in the Province of Ontario, Canada.

.2 Fabricate and erect work true to dimensions, square, plumb, level and free from distortion or defects detrimental to appearance and performance.

.3 Include reinforcing, anchorage and mounting devices required for the installation.

.4 Surplus welding material shall be ground off and exposed internal and external corners shall have sharp lines. Remove grind marks on exposed surfaces.

.5 Install anchor system in accordance with manufacturer's printed instructions, reviewed shop drawings, and as specified herein.

.6 Following acceptance of the anchor installation and roof flashings by the Cosnultant, deform thread ends of the anchor studs where threaded studs have been used.

.7 Clean and touch-up steel surfaces with zinc rich primer where burned by field welding or where damaged.

3.3 INSPECTION AND TESTING

.1 Verify that all manufactured units have been installed in accordance with specifications and details, and will function as intended. Adjust any items where necessary to ensure proper operation. All anchor work to be inspected by Consultant prior to installation of roof assembly.

.2 Contractor to coordinate inspection and testing with Consultant and provide NCC Representative with 48-hour notice.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by roof anchors and travel restraint component installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 52 00 - Modified Bituminous Membrane Roofing.

.3 Section 07 62 00 – Sheet Metal Flashing and Trim.

.4 Section 22 05 11 – Plumbing and Drainage.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-19.13-M87, Sealing Compound, One Component, Elastomeric, Chemical Curing.

.2 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

1.3 COORDINATION

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

1.4 EXAMINATION

.1 Do not commence work until surface to be covered has been inspected.

.2 Inspect work and advise the Consultant of conditions that would adversely affect the work of this trade.

.3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepts responsibility for appearances and performance of completed work.

1.5 DELIVERY, STORAGE AND HANDLING

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

1.6 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity and substrate moisture content for application and curing of sealants including special conditions governing use.

.3 In confined spaces provide portable supply of outside air and exhaust fans to ensure fumes will not impact workmen or building occupants.

.4 Compatibility is essential in use of any materials that will be compatible when incorporated in finished assembly.

Part 2 Products

2.1 MATERIALS

.1 Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers.

.2 Modified bitumen sealant (Sealant Type 'A'):

.1 For penetration and terminations of bituminous and modified bituminous membrane: To CAN/CGSB-37.5. As recommended by membrane manufacturer.

.2 Standard of acceptance or approved equivalent:

.1 Sopramastic 200 by Soprema.

.2 MBR Flashing Cement by Johns Manville.

.3 Polybitume 570-05 by Henry Bakor.

.3 Urethanes one part (Sealant Type 'B'):

.1 Non-sag: To CAN/CGSB-19.13, Type 2, MCG-2-25, colour to match surfaces.

.2 Standard of acceptance or approved equivalent:

.1 Dymonic by Tremco.

.2 Sonolastic NP1 Ultra by Sonneborn.

.4 High temperature sealant (Sealant Type 'C'):

.1 One component, low modulus, gun grade, non-sag, moisture-cure polyurethane sealant with UV resistance, designed to cure into a fire rated, elastic weatherproof seal. Sealant shall comply with AS1530 Part 4-1997 (Fire Resistance Test of Elements of Building Construction) and AS4072 Part 1-1992 (Service penetrations and control joints). Tested by BRANZ.

.2 Standard of acceptance or approved equivalent:

.1 Dow Corning 736 Silicone.

2.2 JOINT CLEANER

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

2.3 PRIMER

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

Part 3 Execution

3.1 PROTECTION

.1 Protect installed work of other trades from staining or contamination.

3.2 PREPARATION OF JOINT SURFACES

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful substances including dust, rust, oil, grease and other matter, which may impair work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

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

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 APPLICATION

.1 Sealant - General:

.1 Apply sealant when air and substrate temperatures are not forecast to be less than minimum recommended by manufacturer. Do not work during inclement weather. Perform all work in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets and embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.9 The use of liquid tooling aids, such as soapy water or alcohols, are prohibited as they may impact effective sealant cure, adhesion and potentially cause aesthetic issues.

.2 Sealant Type 'A':

.1 Install sealant Type 'A' to the top of membrane flashings where required or as shown on drawings. Modified sealant to be installed around finished flashings at all protrusions including soil stacks, sleeves, pitch boxes and fasteners securing membrane to walls.

.2 Apply sealant Type 'A' with hand trowel to achieve a 25 mm width and minimum 3 mm thickness.

.3 Apply sealant Type 'A' immediately after flashings have been installed and are still warm. No membrane flashings shall be left uncovered at the end of any work period. *(Non-compliance with this mandate may result in rejection, removal and replacement of the membrane flashings to the affected area).*

.4 Trowel sealant Type 'A' in two directions to ensure proper adhesion to substrate and that all surface irregularities are filled. Tool surface of modified sealant to smooth finish.

.5 Install sealant Type 'A' at the underside of drains, metal sleeves and other location where specified on drawings.

.3 Curing:

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.4 Install sealant Type 'B' at sheet metal terminations.

.5 Install sealant Type 'C' at all B-vent collars and at all high temperature locations.

3.5 CLEANING

.1 Clean adjacent surfaces immediately and leave work neat and clean.

.2 Remove excess droppings using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

.4 Clean all contaminated surfaces to Owner's acceptance.

.5 Remove all rubbish and surplus materials from the job site on a daily basis.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 52 00 - Modified Bituminous Membrane Roofing.

.3 Section 07 92 00 – Joint Sealants.

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM C547-12. Standard Specification for Mineral Fiber Pipe Insulation.

.2 American Water Works Association (AWWA).

.1 ANSI/AWWA C110/A21.10-08, American National Standard for Ductile-Iron and Gray-Iron Fittings for Water.

.2 ANSI/AWWA C111/A21.11-12, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

.3 Cast Iron Soil Pipe Institute (CISPI)

.1 CISPI 310-12, Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

.4 Canadian Standards Association (CSA International)

.1 CAN/CSA-B70-12, Cast Iron Soil Pipe, Fittings, and Means of Joining.

.2 CSA B79-08 (R2013), Commercial and residential drains and cleanouts.

.3 CAN/CSA B1800-11, Thermoplastic Nonpressure Piping Compendium.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTAL / APPROVAL

.1 Do not commence work until satisfactory installation of related work has been completed and approved.

.2 Inspect work and advise Consultant of conditions that would adversely affect the work of this trade.

.3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepted responsibility for appearance and performance of completed work.

.4 Defective work resulting from work on unsatisfactory surfaces will be considered the responsibility of those performing the work of this Section.

.5 Repair damage and inferior work caused by the work of this Contract with materials and finish to match the original to Consultant's approval.

.6 Submit to the Consultant a list of materials intended for use before they are ordered.

.7 Provide samples of material without additional cost, to the Consultant for review as requested.

1.4 QUALITY ASSURANCE

.1 All drain installations shall be completed by plumbing subtrades licensed to undertake plumbing work in Ontario.

.2 Equipment and materials must be new and free of imperfections.

Part 2 Products

2.1 MATERIALS

.1 All standards, regulations and specifications listed herein are considered to be the latest available edition.

.2 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.

.3 Cast iron roof drains, at existing or new drain locations: Cast iron body, under deck clamp and sump receiver to suit roof construction, flashing clamp ring with bearing pan, and cast iron dome.

.1 Standard of acceptance or approved equivalent:

.1 Watts Drain RD-100.

.2 Drain connector:

.1 Mechanical connection using double clamp to drain body and rainwater leader.

.2 Standard of acceptance or approved equivalent:

.1 Fernco Couplings.

.4 Provide control flow weir at all drains unless otherwise indicated. Weir to be supplied by drain manufacturer.

.5 Pipe hangers: Adjustable type wrought iron design to allow pipe movement and insulation to pass unbroken through hanger.

.6 Mechanical joints: Neoprene or butyl rubber gasket with stainless steel clamp type joint to CISPI 310-12.

.7 Insulation for pipes: 25 mm thick performed type mineral fibre insulation to ASTM C547.

.1 Standard of acceptance or approved equivalent:

.1 Roxul Techton 1200 or SSL II Fiberglas by Owens Corning.

.8 Insulation for underside of drain: 2-component, 1 kg density polyurethane foam as detailed.

.9 Insulation covering:

.1 Cover pipe insulation with canvas membrane wrap and paint.

.2 Where exposed, use preformed PVC.

.10 Firestop sealant: Approved by manufacturer for use in fire-rated firestop assembly.

.1 Standard of acceptance or approved equivalent:

.1 A/D Firebarrier Silicone.

.2 3M Fire Barrier.

.11 Firestop insulation: Mineral wool approved by manufacturer for use in fire-rated firestop assembly.

.1 Standard of acceptance or approved equivalent:

.1 Roxul 'Safe'.

.2 AD Firebarrier.

Part 3 Execution

3.1 PREPARATION

.1 Inspect surfaces and ensure that:

.1 Roof deck is level or sloped to provide proper and complete drainage from the roofing system in conformity to design intent.

.2 Roof drains are set at a level to allow for positive drainage and are connected or capped.

.3 Plumbing is accessible and work can be completed as specified. Notify Consultant of any adverse conditions.

.4 Existing roof drains are open and functioning properly.

.2 Contractor shall advise Consultant in the event that the existing system or materials do not meet current code requirements.

.3 Unless indicated otherwise, the plumbing sub-trade shall be responsible for the removal and reinstatement of furniture, plants and interior equipment, excluding computers, monitors, copiers and the like.

.4 Contractor to provide interior protection to all areas where plumbing work is being completed. Provide sufficient dust and debris and include for any supplemental clean up to return interiors to pre-construction conditions.

.5 Remove and discard all existing drains and plumbing not designated for re-use. Notify Owner of any hazardous materials encountered.

3.2 INSTALLATION AT EXISTING DRAIN LOCATIONS

.1 Increase openings in structures to facilitate plumbing as required.

.2 Join pipe by means of rubber gaskets or mechanical couplings.

.3 Fill voids around drain opening on concrete or lightweight concrete decks with quick dry concrete grout flush with top and bottom of deck.

.4 Where area is inaccessible to install couplings, advise and request Consultant to obtain a ruling on acceptability. Where directed by Consultant, install anti-backflow seals to match pipe size and secure in place.

.5 Extend insulation from pipes to drain hub. Cover with pipe wrapping and finish to general standards. If blanket insulation is used, ensure that all insulation fits tight to drain hub. Seal overlaps, edges and joints with reinforced vapour proof tape suitable to permanently hold insulation in place. Alternatively, in conformance with drawings, protect hubs with spray foam insulation, minimum thickness 38 mm unless otherwise specified or shown. Provide metal protection pan over deck as detailed.

.6 Install PVC covering over insulated piping where plumbing is exposed on the interior of the building.

.7 Ensure each roof is provided with operational drainage at the end of each work day.

3.3 PLUMBING VENT MODIFICATIONS

.1 Cut down or extend existing soil stacks to a minimum height of 300 mm above finished roof surface. Extensions to match existing material and connections to be made with mechanical joint couplings.

3.4 PIPING TEST

.1 Perform water tests before restoring interior ceilings and finishes.

.2 Install plumbing line plugs below the level of connection and water test new plumbing installation. Correct all leaks.

.3 Make leaks watertight while systems are still under test. If this is impossible, remove and refit defective parts. Caulking of threaded joints will not be permitted.

.4 After leaks have been repaired, repeat tests as often as necessary to obtain approval and to ensure watertightness of each system.

.5 Correct level of drains or pipes, if roof or pipes hold water.

3.5 FINISH

.1 Restore and clean all existing surfaces affected by the work to match existing materials and finish.

END OF SECTION

INVITATION TO TENDER & ACCEPTANCE FORM	APPENDIX 1

1) The Bidder will subcontract the parts of the work listed below to the subcontractor named for each part. The Bidder agrees not to make changes in the list of subcontractors without the written consent of the NCC Representative.

2) The Bidder certifies that tenders for the part(s) of the Work listed below were received from the following sub-contractors:

NON-MANDATORY REQUIREMENT:

(a) Any other work not listed above

Type of work: _____ Sub-contractor: _____

Type of work: _____ Sub-contractor: _____

Type of work: _____ Sub-contractor: _____

Type of work: _____ Sub-contractor: _____

Type of work: _____ Sub-contractor: _____

Type of work: _____ Sub-contractor: _____

NON-MANDATORY REQUIREMENT: The subcontractors performing the work listed below must be identified.

NCC CCN Canada

PROTECTED "B" when completed
PROTÉGÉ « B » lorsque rempli

☐ New supplier / Nouveau fournisseur ☐ Update / Mise à jour

Supplier No. / N° du fournisseur

SUPPLIER–DIRECT DEPOSIT PAYMENT AND TAX INFORMATION FORM
FOURNISSEUR–FORMULAIRE DE PAIEMENT PAR DÉPÔT DIRECT ET RENSEIGNEMENTS AUX FINS DE L'IMPÔT

For NCC use only / À l'usage de la CCN seulement

PART 'A' – IDENTIFICATION / PARTIE 'A' - IDENTIFICATION

Legal name of entity or individual / Nom légal de l'entité ou du particulier	Operating name of entity or individual (if different from Legal Name) / Nom commercial de l'entité ou du particulier (s'il diffère du nom légal)

Former Public Servant in receipt of a PSSA Pension / Ancien fonctionnaire qui reçoit une pension en vertu de la LPFP	☐ **Yes / Oui**	☐ **No / Non**
An entity, incorporated or sole proprietorship, which was created by a Former Public Servant in receipt of a PSSA pension or a partnership made of former public servants in receipt of PSSA pension or where the affected individual has a controlling or major interest in the entity. / Une entité, constituée en société ou à propriétaire unique, créée par un ancien fonctionnaire touchant une pension en vertu de la LPFP, ou un partenariat formé d'anciens fonctionnaires touchant une pension en vertu de la LPFP, où les entités dans lesquelles ils détiennent le contrôle ou un intérêt majoritaire.	☐ **Yes / Oui**	☐ **No / Non**

Address / Adresse	Telephone No. / N° de téléphone :	Fax No. / N° de télécopieur :
_____ _____ _____ Postal code / Code postal	( )	( )

PART 'B' – STATUS OF SUPPLIER / PARTIE 'B' – STATUT DU FOURNISSEUR
IMPORTANT : CHOOSE ONLY ONE OF THE FOLLOWING/CHOISIR SEULEMENT UNE DES OPTIONS SUIVANTES:

(1) Sole proprietor / Propriétaire unique ☐ If sole proprietor, provide: / Si propriétaire unique, indiquez : Last Name / Nom de famille First name / Prénom Initial / Initiale

(2) Partnership / Société de personnes ☐ (3) Corporation /Société ☐

Business No. (BN) / N° de l'entreprise (NE) –	**OR / OU**	SIN / NAS –

GST/HST / TPS et TVH	QST / TVQ (Québec)
Number / Numéro : _____ Not registered / non inscrit ☐	Number / Numéro : _____ Not registered / non inscrit ☐

Type of contract / Genre de contrat

Contract for services only / Contrat de services seulement ☐ Contract for mixed goods & services / Contrat de biens et services ☐ Contract for goods only /Contrat de biens seulement ☐

Type of goods and/or services offered / Genre de biens et / ou services rendus :

PART 'C' – FINANCIAL INSTITUTION / PARTIE 'C' – RENSEIGNEMENTS SUR L'INSTITUTION FINANCIÈRE

Please send a void cheque with this form / Veuillez, s.v.p., envoyer un spécimen de chèque avec ce formulaire

Branch Number / N° de la succursale _____ Institution No. / N° de l'institution : _____ Account No. / N° de compte : _____

Institution name / Nom de l'institution : Address / Adresse : _____

Postal Code / Code postal :

PART 'D' – DIRECT DEPOSIT PAYMENT NOTIFICATION / PARTIE 'D' – AVIS DE PAIEMENT PAR DÉPÔT DIRECT

E-mail address / Adresse courriel :

PART 'E' – EMAIL ADDRESS TO SEND CONTRACTS / PARTIE 'E' – ADRESSE COURRIEL POUR ENVOYER LES CONTRATS

E-mail address / Adresse courriel :

PART 'F' – CERTIFICATION / PARTIE 'F' – CERTIFICATION

I certify that I have examined the information provided above and it is correct and complete, and fully discloses the identification of this supplier.

Where the supplier identified on this form completes part C, he hereby requests and authorizes the National Capital Commission to directly deposit into the bank account identified in part C, all amounts payable to the supplier.

Je déclare avoir examiné les renseignements susmentionnés et j'atteste qu'ils sont exacts et constituent une description complète, claire et véridique de l'identité de ce fournisseur.

Lorsque le fournisseur indiqué sur ce formulaire remplit la partie C, par la présente, il demande et autorise la Commission de la capitale nationale à déposer directement dans le compte bancaire indiqué à la partie C, tous les montants qui lui sont dus.

Name of authorized person / Nom de la personne autorisée _____ Title / Titre _____ Signature _____ Date _____

Telephone number of contact person / Numéro de téléphone de la personne ressource : ( )

IMPORTANT

Please fill in and return to the National Capital Commission with one of <u>your business cheque unsigned and marked « VOID</u> » (for verification purposes).

Mail or fax to: Procurement Assistant, Procurement Services
National Capital Commission
202-40 Elgin Street
Ottawa, ON K1P 1C7 Fax: (613) 239-5007

Veuillez remplir ce formulaire et le retourner à la Commission de la capitale nationale avec <u>un spécimen de chèque de votre entreprise non signé et portant la mention « ANNULÉ »</u> (à des fins de vérification).

Poster ou télécopier à : Assistant à l'approvisionnement
Services de l'approvisionnement
Commission de la capitale nationale
40, rue Elgin, pièce 202
Ottawa (Ontario) K1P 1C7 Télécopieur : (613) 239-5007

SUPPLIER – DIRECT DEPOSIT PAYMENT AND TAX INFORMATION FORM

FOURNISSEUR – FORMULAIRE DE PAIEMENT PAR DÉPÔT DIRECT ET RENSEIGNEMENTS AUX FINS DE L'IMPÔT

Supplier Tax Information

Pursuant to paragraph 221(1) (d) of the *Income Tax Act*, NCC must declare form T-1204, contractual payments of government for services, all payments made to suppliers during the calendar year in accordance to related service contracts (including contracts for mixed goods and services).

The paragraph 237(1) of the *Income Tax Act* and the article 235 of the Income Tax Regulations require the supplier to provide all necessary information below to the organization who prepares the fiscal information forms.

Questions: Sylvie Monette, Accounts Payable Supervisor
(613) 239-5678 ext. 5156 or sylvie.monette@ncc-ccn.ca

Direct deposit payment information

All amounts payable by NCC to the supplier will be deposited directly into the account you identified in part C. A NCC payment advice notice will also be sent to you by e-mail detailing the particularities of the payment to the address identified in part D.

Until we process your completed form, we will still pay you by check.

You must notify the NCC of any changes to your financial institution, branch or account number. You will then have to complete a new form.

The account you identified has to hold Canadian funds at a financial institution in Canada.

The advantages of direct deposit payment

Direct deposit payment is a convenient, dependable, safe and timesaving way to receive your invoice payment. Direct deposit payment is completely confidential.

There are fewer risks of direct deposit payment being lost, stolen, or damaged as may happen with cheques.

Funds made by direct deposit payment will be available in your bank account on the same day that we would have mailed your cheque.

Renseignements sur les fournisseurs aux fins de l'impôt

En vertu de l'alinéa 221(1) (d) de la *Loi de l'impôt sur le revenu*, la CCN est tenu de déclarer, à l'aide du formulaire T-1204, Paiements contractuels de services du gouvernement, tous paiements versés aux fournisseurs pendant une année civile en vertu de marchés de services pertinents (y compris les marchés composés à la fois de biens et de services).

Le paragraphe 237 (1) de la *Loi de l'impôt sur le revenu* et l'article 235 du Règlement de l'impôt sur le revenu obligent les fournisseurs à fournir toutes les informations demandées ci-dessous à l'organisme qui prépare les formulaires de renseignements fiscaux.

Questions : Sylvie Monette, Superviseure aux comptes payable
(613) 239-5678 poste 5156 ou sylvie.monette@ncc-ccn.ca

Renseignements sur le paiement par dépôt direct

Tous les montants versés par la CCN au fournisseur seront déposés directement dans le compte identifié à la partie C. Un avis de paiement de la CCN détaillant les particularités du paiement par dépôt direct vous sera envoyé par courriel à l'adresse courriel identifiée à la partie D.

Nous continuerons à vous payer par chèque jusqu'à ce que nous ayons traité votre formulaire.

Vous devez aviser la CCN de tout changement d'institution financière, de succursale ou de numéro de compte. Vous devrez donc remplir un nouveau formulaire.

Le compte que vous désignez doit être un compte en monnaie canadienne, détenu dans une institution financière au Canada.

Avantages du paiement par dépôt direct

Le paiement par dépôt direct est une méthode pratique, fiable et sécuritaire, qui permet de gagner du temps dans la réception de vos paiements de factures. Le paiement par dépôt direct est entièrement confidentiel.

Avec les paiements par dépôt direct, il y a moins de risques de perte, de vol ou de dommage, comme cela peut se produire dans le cas des chèques.

Les paiements effectués par paiement par dépôt direct sont versés dans votre compte le jour même où nous aurions posté votre chèque.

Revised February 2016 / Révisé février 2016