



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 183-2009**

**REHABILITATION TO THE STANDBY GENERATOR BUILDING AT MANITOBA AND  
KING EDWARD**

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**Division 15**

Section No.

15010

15051

15180

15800

15900

**Mechanical Specifications**

Description

Mechanical General Provisions

Acceptable Materials and Equipment

Insulation

Air Distribution

Controls/Instrumentation

**Division 16**

Section No.

16010

16111

16122

16131

16132

16141

16151

16191

16192

16195

16450

16461

16622

16627

16800

**Electrical Specifications**

Description

Electrical General Requirements

Conduits, Conduit Fastenings and Conduit Fittings

Wires and Cables

Splitters, Junctions, Pull Boxes, Cabinets, and CSTE'S

Outlet Boxes, Conduit Boxes and Fittings

Wiring Devices

Wire and Box Connectors-0-1000 V

Fastenings and Supports

Mechanical Equipment Connections

Work in Existing Building

Grounding - Secondary

Dry Type Transformers Up to 600 V Primary

Natural Gas Power Generation

Automatic Load Transfer Equipment

Electric Heating

Alternate Emergency Genset Data Sheet

## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 REHABILITATION TO THE STANDBY GENERATOR BUILDING AT MANITOBA AND KING EDWARD

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, May 7, 2009.

B2.2 Bids determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.

B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

### **B3. SITE INVESTIGATION**

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site from 2 pm to 2:30 pm on April 30, 2009 to provide Bidders access to the Site.

B3.2 The Bidder is advised that the site investigation is for the bidder to assess the scope of Works, existing conditions of the Work, to learn of the security risks and safety precautions required that will aid the bidder in submitting a bid price.

B3.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

### **B4. ENQUIRIES**

B4.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

B4.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.

B4.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B4.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B4 unless that response or interpretation is provided by the Contract Administrator in writing.

### **B5. ADDENDA**

B5.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.

B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

- B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopplasp>
- B5.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.
- B6. SUBSTITUTES**
- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
  - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
  - (c) identify any anticipated cost or time savings that may be associated with the substitute;
  - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
  - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B14.

- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.7, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

**B7. BID COMPONENTS**

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
  - (b) Form B: Prices;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B7.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B7.5 If the Bid Submission is submitted by mail, courier or personal delivery, it shall be enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address, and shall be submitted to:
- The City of Winnipeg  
Corporate Finance Department  
Materials Management Division  
185 King Street, Main Floor  
Winnipeg, MB R3B 1J1
- B7.5.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B7.6 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.7 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B14.1(a).
- B7.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to (204) 949-1178.
- B7.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B7.8.2 Bids submitted by internet electronic mail (e-mail) will not be accepted.

**B8. BID**

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;
  - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;

- (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
- (d) if the Bidder is carrying on business under a name other than his own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.

B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B8.4 Paragraph 10 of Form A: Bid shall be signed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers;
- (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B8.4.2 All signatures shall be original.

B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

## **B9. PRICES**

B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.1.1 Notwithstanding C12.2.3(c), prices on Form B: Prices shall not include the Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable.

B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B9.4 Prices from Non-Resident Bidders are subject to a Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

## **B10. QUALIFICATION**

B10.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
- (b) be financially capable of carrying out the terms of the Contract; and
- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

- B10.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/debar.stm>
- B10.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) have successfully carried out work similar in nature, scope and value to the Work; and
  - (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
  - (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);
- B10.4 Further to B10.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:
- (a) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association or by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or
  - (b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>)
- B10.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.
- B10.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.
- B11. OPENING OF BIDS AND RELEASE OF INFORMATION**
- B11.1 Bids will not be opened publicly.
- B11.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>
- B11.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>
- B11.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.



## **B12. IRREVOCABLE BID**

- B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.
- B12.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work for the time period specified in Paragraph 9 of Form A: Bid.

## **B13. WITHDRAWAL OF BIDS**

- B13.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B13.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
- B13.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B13.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:
- (a) retain the Bid until after the Submission Deadline has elapsed;
  - (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid; and
  - (c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.
- B13.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B12.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law.

## **B14. EVALUATION OF BIDS**

- B14.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity or acceptable deviation there from (pass/fail);
  - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B10 (pass/fail);
  - (c) Total Bid Price;
  - (d) economic analysis of any approved alternative pursuant to B6.
- B14.2 Further to B14.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.
- B14.3 Further to B14.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he is responsible and qualified.
- B14.4 Further to B14.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B14.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each

item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

B14.4.2 Further to B14.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

## **B15. AWARD OF CONTRACT**

B15.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B15.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

B15.2.1 Without limiting the generality of B15.2, the City will have no obligation to award a Contract where:

- (a) the prices exceed the available City funds for the Work;
- (b) the prices are materially in excess of the prices received for similar work in the past;
- (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
- (d) only one Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

B15.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B14.

B15.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid upon written request to the Contract Administrator.

B15.4 Notwithstanding C4, the City will issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.

B15.5 The Contract, as defined in C1.1, in its entirety shall be deemed to be incorporated in and to form a part of the Purchase Order notwithstanding that it is not necessarily attached to or accompany said Purchase Order.

## **PART C - GENERAL CONDITIONS**

### **C0. GENERAL CONDITIONS**

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at [http://www.winnipeg.ca/matmgt/gen\\_cond.stm](http://www.winnipeg.ca/matmgt/gen_cond.stm)
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

#### **D1. GENERAL CONDITIONS**

D1.1 In addition to the *General Conditions for Construction*, these Supplemental Conditions are applicable to the Work of the Contract.

#### **D2. SCOPE OF WORK**

D2.1 The Work to be done under the Contract shall consist of rehabilitation and or replacement of the damaged components, temporary shoring the roof during the rehabilitation, and installation of new equipment and accessories.

D2.2 The major components of the Work are as follows:

- (a) erection of temporary enclosure and shoring
- (b) remove existing electrical panels and set-up temporary circuit
- (c) remove existing damaged mechanical equipment
- (d) demolish and dispose damaged block walls
- (e) remove asbestos
- (f) demolish internal plywood walls as required and dispose of it
- (g) construct new block and plywood walls
- (h) supply and install new mechanical equipment
- (i) supply and install new electrical equipment
- (j) site restoration and clean up

#### **D3. CONTRACT ADMINISTRATOR**

D3.1 The Contract Administrator is MMM Group Limited, represented by:

Grantley King, P.Eng  
Project Engineer  
Suite 111-93 Lombard Avenue  
Winnipeg, MB R3B 3B1  
Telephone No. (204) 943-3178  
Facsimile No. (204) 943-4948

D3.2 At the pre-construction meeting, Contract Administrator will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

#### **D4. CONTRACTOR'S SUPERVISOR**

D4.1 At the pre-construction meeting, the Contractor shall identify his designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

#### **D5. NOTICES**

D5.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

- D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3, D5.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1.
- D5.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:  
The City of Winnipeg  
Chief Financial Officer  
Administration Building, 3rd Floor  
510 Main Street  
Winnipeg MB R3B 1B9  
Facsimile No.: (204) 949-1174
- D5.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:  
The City of Winnipeg  
Internal Services Department  
Legal Services Division  
Attn: City Solicitor  
185 King Street, 3rd Floor  
Winnipeg MB R3B 1J1  
Facsimile No.: (204) 947-9155

## **SUBMISSIONS**

### **D6. AUTHORITY TO CARRY ON BUSINESS**

- D6.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

### **D7. SAFE WORK PLAN**

- D7.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D7.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/safety/default.stm>

### **D8. INSURANCE**

- D8.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

- (b) automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;
- (c) all risks course of construction insurance in the amount of one hundred percent (100%) of the total Contract Price, written in the name of the Contractor and The City of Winnipeg, at all times during the performance of the Work and until the date of Total Performance.

D8.2 Deductibles shall be borne by the Contractor.

D8.3 The Contractor shall provide the Contract Administrator with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than seven (7) Calendar Days from notification of the award of Contract by Purchase Order.

D8.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

## **D9. PERFORMANCE SECURITY**

D9.1 If the Contract Price exceeds twenty-five thousand dollars (\$25,000.00), the Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
- (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or
- (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.

D9.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D9.2 The Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of Purchase Order and prior to the commencement of any Work on the Site.

## **D10. DETAILED PRICES**

D10.1 The Contractor shall provide the Contract Administrator with a detailed price breakdown (Form I: Detailed Prices) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D10.2 The Contractor shall state a price for each item or sub-item of the Work identified on Form I: Detailed Prices. The detailed prices must be consistent with the price(s) provided in the Contractor's Bid.

## **D11. SUBCONTRACTOR LIST**

D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than seven (7) Calendar Days from notification of the award of Contract.

## **SCHEDULE OF WORK**

### **D12. COMMENCEMENT**

- D12.1 The Contractor shall not commence any Work until he is in receipt of a Purchase Order from the Award Authority authorizing the commencement of the Work.
- D12.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
    - (i) evidence that the Contractor is in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
    - (ii) evidence of the workers compensation coverage specified in C6.15;
    - (iii) the Safe Work Plan specified in D7;
    - (iv) evidence of the insurance specified in D8;
    - (v) the performance security specified in D9;
    - (vi) the Detailed Prices list specified in D10; and
    - (vii) the Subcontractor list specified in D11.
  - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D12.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the Letter of Intent.
- D12.4 The City intends to award this Contract by May 21, 2009.
- D12.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

### **D13. SUBSTANTIAL PERFORMANCE**

- D13.1 The Contractor shall achieve Substantial Performance by August 31, 2009.
- D13.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.
- D13.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

### **D14. TOTAL PERFORMANCE**

- D14.1 The Contractor shall achieve Total Performance by September 30, 2009.
- D14.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D14.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

#### **D15. LIQUIDATED DAMAGES**

D15.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City Eight Hundred dollars (\$800.00) per Calendar Day for each and every Calendar Day following the day fixed herein for Substantial Performance during which such failure continues.

D15.2 The amount specified for liquidated damages in D15.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.

D15.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

#### **CONTROL OF WORK**

##### **D16. JOB MEETINGS**

D16.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D16.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

##### **D17. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

D17.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

#### **MEASUREMENT AND PAYMENT**

##### **D18. PAYMENT**

D18.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

#### **WARRANTY**

##### **D19. WARRANTY**

D19.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D19.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.



- D19.2 Notwithstanding C13.2, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.
- D19.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

Form H1: Performance Bond  
(See D9)

KNOW ALL MEN BY THESE PRESENTS THAT

\_\_\_\_\_ ,  
(hereinafter called the "Principal"), and

\_\_\_\_\_ ,  
(hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), in the sum of

\_\_\_\_\_ dollars (\$ \_\_\_\_\_)

of lawful money of Canada to be paid to the Obligee, or its successors or assigns, for the payment of which sum the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee for

BID OPPORTUNITY NO. 183-2009

REHABILITATION TO THE STANDBY GENERATOR BUILDING AT MANITOBA AND KING EDWARD

which is by reference made part hereof and is hereinafter referred to as the "Contract".

NOW THEREFORE the condition of the above obligation is such that if the Principal shall:

- (a) carry out and perform the Contract and every part thereof in the manner and within the times set forth in the Contract and in accordance with the terms and conditions specified in the Contract;
- (b) perform the Work in a good, proper, workmanlike manner;
- (c) make all the payments whether to the Obligee or to others as therein provided;
- (d) in every other respect comply with the conditions and perform the covenants contained in the Contract; and
- (e) indemnify and save harmless the Obligee against and from all loss, costs, damages, claims, and demands of every description as set forth in the Contract, and from all penalties, assessments, claims, actions for loss, damages or compensation whether arising under "The Workers Compensation Act", or any other Act or otherwise arising out of or in any way connected with the performance or non-performance of the Contract or any part thereof during the term of the Contract and the warranty period provided for therein;

THEN THIS OBLIGATION SHALL BE VOID, but otherwise shall remain in full force and effect. The Surety shall not, however, be liable for a greater sum than the sum specified above.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable as Principal, and that nothing of any kind or matter whatsoever that will not discharge the Principal shall operate as a discharge or release of liability of the Surety, any law or usage relating to the liability of Sureties to the contrary notwithstanding.

IN WITNESS WHEREOF the Principal and Surety have signed and sealed this bond the

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ .

**SIGNED AND SEALED**  
in the presence of:

\_\_\_\_\_  
(Witness as to Principal if no seal)

\_\_\_\_\_  
(Name of Principal)

Per: \_\_\_\_\_ (Seal)

Per: \_\_\_\_\_

\_\_\_\_\_  
(Name of Surety)

By: \_\_\_\_\_ (Seal)  
(Attorney-in-Fact)

Form H2: Irrevocable Standby Letter of Credit  
**(PERFORMANCE SECURITY)**  
(See D9)

\_\_\_\_\_  
(Date)

The City of Winnipeg  
Internal Services Department  
Legal Services Division  
185 King Street, 3rd Floor  
Winnipeg MB R3B 1J1

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 183-2009

REHABILITATION TO THE STANDBY GENERATOR BUILDING AT MANITOBA AND KING EDWARD

Pursuant to the request of and for the account of our customer,

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

WE HEREBY ESTABLISH in your favour our irrevocable Standby Letter of Credit for a sum not exceeding in the aggregate

\_\_\_\_\_ Canadian dollars.

This Standby Letter of Credit may be drawn on by you at any time and from time to time upon written demand for payment made upon us by you. It is understood that we are obligated under this Standby Letter of Credit for the payment of monies only and we hereby agree that we shall honour your demand for payment without inquiring whether you have a right as between yourself and our customer to make such demand and without recognizing any claim of our customer or objection by the customer to payment by us.

The amount of this Standby Letter of Credit may be reduced from time to time only by amounts drawn upon it by you or by formal notice in writing given to us by you if you desire such reduction or are willing that it be made.

Partial drawings are permitted.

We engage with you that all demands for payment made within the terms and currency of this Standby Letter of Credit will be duly honoured if presented to us at:

\_\_\_\_\_  
(Address)

and we confirm and hereby undertake to ensure that all demands for payment will be duly honoured by us.

All demands for payment shall specifically state that they are drawn under this Standby Letter of Credit.

Subject to the condition hereinafter set forth, this Standby Letter of Credit will expire on

\_\_\_\_\_  
(Date)

It is a condition of this Standby Letter of Credit that it shall be deemed to be automatically extended from year to year without amendment from the present or any future expiry date, unless at least 30 days prior to the present or any future expiry date, we notify you in writing that we elect not to consider this Standby Letter of Credit to be renewable for any additional period.

This Standby Letter of Credit may not be revoked or amended without your prior written approval.

This credit is subject to the Uniform Customs and Practice for Documentary Credit (1993 Revision), International Chamber of Commerce Publication Number 500.

\_\_\_\_\_  
(Name of bank or financial institution)

Per: \_\_\_\_\_  
(Authorized Signing Officer)

Per: \_\_\_\_\_  
(Authorized Signing Officer)

Form I: Detailed Prices  
 (See D10)

**REHABILITATION TO THE STANDBY GENERATOR BUILDING AT MANITOBA AND  
 KING EDWARD**

ITEM NO.	DESCRIPTION	AMOUNT
1.	Mobilization and demobilization	
2.	Erection of temporary enclosure and shoring	
3.	Remove existing electrical panels and set-up temporary circuit	
4.	Remove existing damaged mechanical equipment	
5.	Demolish and dispose damaged block walls	
6.	Remove and dispose asbestos	
7.	Demolish internal plywood walls as required and dispose of it	
8.	Construct new block walls	
9.	Construct new plywood walls	
10.	Supply and install new mechanical equipment	
11.	Supply and install new electrical equipment	
12.	Painting	
13.	Site restoration and clean up	
14.	Temporary by-pass pumping	
<b>Total of Items 1 through 14 above = Bid Price for Items 1 through 6 on Form B: Prices.</b>		



## PART E - SPECIFICATIONS

### GENERAL

#### E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm>
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 The following are applicable to the Work:

<u>Specification No.</u>	<u>Specification Title</u>
--------------------------	----------------------------

#### Division 15

NMS - Section 15010	Mechanical General Provisions
NMS - Section 15051	Acceptable Materials and Equipment
NMS - Section 15180	Insulation
NMS - Section 15800	Air Distribution
NMS - Section 15900	Controls/Instrumentation

#### Division 16

NMS - Section 16010	Electrical General Requirements
NMS - Section 16111	Conduits, Conduit Fastenings and Conduit Fittings
NMS - Section 16122	Wires and Cables
NMS - Section 16131	Splitters, Junctions, Pull Boxes, Cabinets, and CSTE'S
NMS - Section 16132	Outlet Boxes, Conduit Boxes and Fittings
NMS - Section 16141	Wiring Devices
NMS - Section 16151	Wire and Box Connectors-0-1000 V
NMS - Section 16191	Fastenings and Supports
NMS - Section 16192	Mechanical Equipment Connections
NMS - Section 16195	Work in Existing Building
NMS - Section 16450	Grounding - Secondary
NMS - Section 16461	Dry Type Transformers Up to 600 V Primary
NMS - Section 16622	Natural Gas Power Generation
NMS - Section 16627	Automatic Load Transfer Equipment
NMS - Section 16800	Electric Heating
	Alternate Emergency Genset Data Sheet

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
	Cover Sheet
6090	Structural Demolition and New Construction
6091	Mechanical Demolition and New Construction
6092	Electrical Demolition and New Construction



## **E2. TEMPORARY USE OF CITY EQUIPMENT**

- E2.1 City systems and equipment shall not be used during construction without the Contract Administrator's written permission. The Contract Administrator reserves the right to withdraw said permission if, in his opinion, proper care and maintenance are not provided.

## **E3. MOBILIZATION AND DEMOBILIZATION**

- E3.1 Mobilization and Demobilization will include but not be limited to start-up costs, equipment set-up and removal, field office and storage facilities set-up and removal site cleanup.
- E3.2 Mobilization and Demobilization will be measured on a unit basis and paid for at the Contract Unit Price for "Mobilization and Demobilization" in accordance with this specification, accepted and measured by the Contract Administrator.
- E3.3 50% of the Mobilization and Demobilization unit price will be paid on the first progress payment.
- E3.4 The remaining 50% of the Mobilization and Demobilization unit price will be paid subsequent to the completion of the work and restoration and clean-up of the site.

## **E4. DANGEROUS WORK CONDITIONS**

- E4.1 Further to clause C 6.26 of the General Conditions, the Contractor shall be aware that underground chambers, manholes, sewers and pumping stations are considered a confined space and shall follow the "Guidelines for confined Entry Work" as published by the Manitoba Workplace Safety and Health Division.
- E4.2 The Contractor shall be aware of the potential hazards that can be encountered in manholes, sewers and pumping stations such as explosive gases, toxic gases and oxygen deficiency.
- E4.3 The air in a confined space must be tested before entry and continuously during the time that personnel are inside the space. Equipment for continuous monitoring of gases must be explosion-proof and equipped with a visible and audible alarm. The principal tests are for oxygen deficiency, explosion range and toxic gases. Testing equipment must be calibrated in accordance with manufacturer's specifications.
- E4.4 The Contractor shall ventilate all confined spaces including underground chambers, tunnels, pipes and shafts as required and approved by the Manitoba Workplace Safety and Health Act (the "Act"). If no ventilation is supplied, a worker must wear a respirator or supplied air to enter the confined space.
- E4.5 Workers must wear a respirator or supplied air at all times when entering a chamber, manhole or sewer where live sewage is present.
- E4.6 The Contractor shall provide a photoionization detector (PID) on Site at all times to monitor potential hydrocarbon vapours in the confined spaces. The gas detector and safety equipment conforming to the Act shall be made available to the Contract Administrator for his use during inspections.
- E4.7 The Contract Administrator may issue a stop work order to the Contractor if the above guidelines are not being followed. The Contractor shall not resume his operations until the Contract Administrator is satisfied the Contractor is following the appropriate procedures. The Contractor shall have no claim for extra time or costs due to the stop work order for not following these safety guidelines.
- E4.8 The Contractor's attention is drawn to the Province of Manitoba Workplace Safety and Health Act ("the Act"), and the Regulations and Guidelines thereunder pertaining to confined entry work, and in particular the requirements for conducting hazard/risk assessments and providing personal protective equipment (PPE).

- E4.9 The Contractor shall provide supplied air breathing apparatus conforming to the requirements of the Act, Regulation and Guidelines for the use of the Contract Administrator where confined entry is required to allow for inspection of the Work.
- E4.10 The Contract Administrator may issue a Stop Work Order to the Contractor if he determines the above guidelines are not being followed. The Contractor shall not resume his operations until the Contract Administrator is satisfied the Contractor is following the appropriate procedures. The Contractor shall have no claim for extra time or costs due to Stop Work Order for not following these safety guidelines.

## **E5. SHOP DRAWINGS**

### **E5.1 Description**

- (a) This Specification shall revise, amend, and supplement the requirements of CW 1100.
- (i) The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data including site erection drawings which are to be provided by the Contractor to illustrate details of a portion of the Work.
  - (ii) The Contractor shall submit specified shop drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be shown on all submissions for Engineering review.
- (b) Shop Drawings
- (i) Original drawings are to be prepared by the Contractor, Subcontractor, supplier, distributor, or manufacturer, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate sections.
  - (ii) Shop drawings for the following components shall be sealed, signed and dated by a Professional Engineer licensed to practice in the Province of Manitoba.
    - (a) Electrical details.
    - (b) Mechanical details.
- (c) Contractor's Responsibilities
- (i) Review shop drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.
  - (ii) Verify:
    - (a) Field measurements.
    - (b) Field construction criteria.
    - (c) Catalogue numbers and similar data.
  - (iii) Coordinate each submission with requirements of work and Contract Documents. Individual shop drawings will not be reviewed until all related drawings are available.
  - (iv) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.
  - (v) Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission, unless Contract Administrator gives written acceptance of specified deviations.
  - (vi) Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
  - (vii) The Contractor shall make all corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings for review. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on previous submission.
  - (viii) After the Contract Administrator has reviewed and return of copies, distribute copies to sub-trades as appropriate.

- (ix) Maintain one (1) complete set of reviewed shop drawings, filed by Specification Section Number, at the site of the work for use and reference of the Contract Administrator and Subcontractors.
- (d) Submission Requirements
  - (i) Schedule submissions at least 14 Calendar days before dates reviewed submissions will be needed, and allow for a 14 Calendar day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
  - (ii) Submit three (3) paper prints of shop drawings. The Contractor is advised that the Contract Administrator will retain one and return two (2) copies of all submittals to the Contractor.
  - (iii) Accompany submissions with transmittal letter, containing:
    - (a) Date.
    - (b) Project title and Bid Opportunity number.
    - (c) Contractor's name and address.
    - (d) Number of each shop drawing, product data, and sample submitted.
    - (e) Specification section, title, number and clause.
    - (f) Drawing number and detail/section number.
    - (g) Other pertinent data.
  - (iv) Submissions shall include:
    - (a) Date and revision dates.
    - (b) Project title and bid opportunity number.
    - (c) Name of:
      - (i) Contractor
      - (ii) Subcontractor
      - (iii) Supplier
      - (iv) Manufacturer
      - (v) Separate detailer when pertinent
    - (d) Identification of product of material.
    - (e) Relation to adjacent structure or materials.
    - (f) Field dimensions, clearly identified as such.
    - (g) Specification section name, number and clause number or drawing number and detail/section number.
    - (h) Applicable standards, such as CSA or CGSB numbers.
    - (i) Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements, and compliance with contract documents.
- (e) Other Considerations
  - (i) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent shop drawings and resubmit.
  - (ii) Material and equipment delivered to the site of the works will not be paid for at least until pertinent shop drawings have been submitted and reviewed.
  - (iii) Incomplete shop drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.
  - (iv) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions, and review of shop drawings.

- (v) If the Contract Administrator requests details or items on shop drawings, which the Contractor believes, require extra payment or contract time, the Contractor shall make any claims forthwith and receive acceptance, as extra work, or rejection, before fabrication proceeds.

#### E5.2 Measurement and Payment

- (a) Preparation, submission, and revisions of shop drawings shall be incidental to the Work and no separate payment will be made

### **E6. SURFACE RESTORATION**

- E6.1 Prior to construction, inspect the grassed, pavement and gravel surfaces within and adjacent to the Site with the Contract Administrator to record the current condition. After construction and Site cleanup is complete, re-inspect the condition with the Contract Administrator.
- E6.2 Restoration of grassed areas damaged as result of construction activities will be restored in accordance with CW 3510. Restoration of grassed areas will not be measured for payment and shall be included as part of the Work being done.
- E6.3 Pavement damaged as a result of construction activities will be restored in accordance with CW 3230 and CW 3410. Restoration of the pavement will not be measured for payment and shall be included as part of the Work being done.
- E6.4 Gravel surfacing damaged as a result of construction activities will be restored in accordance with CW 3150. Restoration of the gravel surfacing will not be measured for payment and shall be included as part of the Work being done.

### **E7. PROTECTION OF EXISTING TREES**

- E7.1 The City of Winnipeg, Public Works, Forestry Branch will remove all trees and bush from the site within the limits indicated on the Drawings and prior to the commencement of the Work.
- E7.2 The Contractor shall not remove or damage trees or bush beyond the limits indicated on the Drawings. The Contractor shall take the following precautionary steps to avoid damage from his construction activities to existing trees within the limits of the construction area.
  - (a) Do not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
  - (b) Strap mature tree trunks with 25 x 150 x 2400 wood planks. Smaller trees shall be similarly protected using appropriate sized wood planks.
  - (c) Work on site shall be carried out in a manner to minimize damage to existing tree branches. Where damage to tree branches does occur, the Contractor shall neatly prune the damaged branch.
  - (d) American elm trees shall not be pruned between April 1st and August 1st and Siberian elm trees between April 1st and July 1st of any year under provisions of The Dutch Elm Disease Act.
  - (e) All damages to existing trees due to the Contractor's construction activities shall be repaired to the requirements and satisfaction of the City of Winnipeg, Parks and Recreation Department, Forestry Branch.
  - (f) Protection of existing trees and related Work specified herein shall be considered incidental to the Contract Lump Sum Price for "Mobilization and Demobilization", and no separate measurement or payment will be made.

## **E8. LIFT STATION OPERATION DURING CONSTRUCTION**

- E8.1 The Contractor is advised that the Lift Station will remain in operation while the Work is being completed and the Contractor shall plan his activities around the continued operation of the station.
- E8.2 Temporary shut down of the Station, as indicated in E9, will only be allowed after the Contractor's schedule of activities to complete the Work and a Temporary By-pass Pumping plan have been submitted to and approved by the Contract Administrator. The Contractor shall plan his construction activities to allow for the minimum amount of disruption to the normal operating status of the Station.
- E8.3 The Contractor will not be allowed to take the Station off-line, without having an approved emergency back-up power supply and temporary by-pass pumping arrangements, approved by the Contract Administrator, available for use on-site. Temporary By-pass pumping will be directly from the wet well into the downstream sewer MH which is approximately 7.5 m away.
- E8.4 The Contractor will be responsible for set-up, monitoring and maintaining any temporary by-pass pumping and emergency back-up power supply operations during construction. The Contractor shall be responsible for providing the City with a 24-hr emergency contact name and number in the event of any required emergency operations.
- E8.5 Temporary by-pass pumping systems must be adequately sized to handle expected peak dry weather flows (PDWF) of 20 l/s (317 US gpm) to the station.
- E8.6 Critical basement elevation is 229.080 m. The City will mark the critical basement elevation for the Contractor prior to construction and the Contractor must ensure that wastewater sewage levels are below this elevation at all times.
- E8.7 In the event of any unexpected power outages to the station or increased flows to the station, the Contractor will be required to maintain and monitor wastewater levels below the critical basement elevation with the temporary by-pass pumping system.
- E8.8 The Contractor shall cooperate with and provide full access at all times for City personnel to carry out maintenance and operational duties in the stand-by generator building.
- E8.9 Only authorized City personnel will operate the lift station during normal operating conditions.
- E8.10 Temporary by-pass pumping and emergency back-up power supply will be paid for under the Contract Unit Price for "Temporary By-Pass Pumping Operations" as indicated in Form B: Prices, which shall be payment in full for supplying and installing all materials, equipment and for performing all operations herein described and all other items incidental to the Work.

## **E9. TEMPORARY SHUTDOWN OF THE LIFT STATION**

- E9.1 Temporary shutdown of the lift station will be allowed for the following work activities.
- (a) Disconnections and removal of existing wiring and electrical and mechanical equipment such as: stand-by generator, electrical panels, transformer, unit heater, controls, etc.
  - (b) Relocations of existing electrical equipment to new temporary supports. Temporary supports shall be provided and existing equipment shall be temporary relocated until new walls are built.
  - (c) Relocations of relocated electrical equipment back to the new walls.
  - (d) Wiring connections for new electrical and mechanical equipment such as: stand-by generator, electrical panels, transformer, unit heater, controls, etc.
  - (e) System testing.

- E9.2 Temporary by-pass pumping operations, as described in E8, must be installed and operational at all times during construction and ready to be put into service if the liquid level in the sewer system reaches the critical basement elevations identified in E8 or as determined by the Contract Administrator.
- E9.3 Only authorized City personnel are authorized to operate the electrical and mechanical systems in the stand-by generator building and lift station.
- E9.4 Provide the Contract Administrator with at least 48 hours notice prior to a proposed temporary shutdown to allow time to make arrangements with City operating personnel for the shutdown.
- E9.5 Coordinate several items of work to be done during the same shutdown to minimize the number of shutdowns.
- E9.6 Plan the work to be done during allowable shutdowns in such a manner that power can be restored to the lift station within 30 minutes of being notified by the Contract Administrator that the lift station needs to be operated to reduce flow levels in the system.
- E9.7 Allowable shutdown time under peak dry weather flow (PDWF) conditions will be approximately 6 hours. Allowable shutdown time may be less due to unforeseen flow conditions due to groundwater conditions, watermain breaks, snow melt and other unforeseen sources.
- E9.8 More than the approximate 6 hours of allowable shutdown time may be available during the night when flows are generally reduced.
- E9.9 Water and Waste Department, Collection System personnel will provide a paint mark indicating the critical basement elevation in the lift station at a convenient upstream location for reference.
- E9.10 Water and Waste Department, Collection System personnel will monitor the upstream system at all times during a shutdown to ensure the stored level of wastewater will not exceed the critical basement elevation.
- E9.11 Water and Waste Department, Collection System personnel will be available to provide assistance to the Contractor for temporary shutdown of the lift station to facilitate completion of the Work.
- E9.12 There will be no charge to temporarily shutdown the lift station for each Work activity listed.
- E9.13 If an unreasonable number of station shutdowns are required to complete the same Work activity due to the Contractor's method of operation, a fee of \$300.00 per hour for Collection System personnel may be charged to the Contractor and deducted from future Progress Payments.
- E9.14 The Contract Administrator reserves the right to cancel a planned station shutdown if in his opinion, flow conditions or the weather forecast would not allow for a shutdown of sufficient duration to complete the Work activity. The Contractor shall reschedule the Work activity to a more suitable time.
- E9.15 Consecutive back-to-back station shutdowns will not be allowed until the sewer system has returned to normal.

## **E10. METAL FABRICATIONS**

- E10.1 Description
  - (a) This Specification shall cover the supply fabrication and placement of all metal fabrications.
- E10.2 Materials
  - E10.2.1 General

- (a) The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.
- (b) All materials supplied under this Specification shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contractor Administrator.
- (c) All materials shall be handled in a careful and workmanship like manner, to the satisfaction of the Contract Administrator.
- (d) Supply, safely store and handle materials set forth in this Specification. Handle materials in a careful and workmanship like manner, to the satisfaction of the Contract Administrator.

#### E10.3 References

- (a) Steel Sections and Plates: to CAN/CSA G40.20/G40.21, Grade 300 W, except W, HP and HSS sections, which shall be Grade 350 W.
- (b) Steel pipe: to ASTM A53/A53M, seamless, galvanized, as specified by item.
- (c) Welding materials: to CSA W59.
- (d) Stud Anchors: to ASTM A108, Grade 1020.
- (e) Aluminum: to CAN/CSA S157 and the Aluminum Association 'Specifications for Aluminum Structures'. Aluminum for plates shall be Type 6061-T651. Welding shall be in accordance with the requirements of CSA W59.2-M.

#### E10.4 Fasteners:

- (a) Anchor bolts and fasteners: Type 316 stainless steel, of ample section to safely withstand the forces created by operation of the equipment or the load to which they will be subjected.
- (b) Quantity and size of the fasteners shall be as recommended by the manufacturer or as shown on the Drawings.
- (c) Provide exposed fastenings of same material, and finish as the metal to which applied unless indicated otherwise.
- (d) Supply all items complete with all anchors and fastenings.

#### E10.5 Construction Methods

##### E10.5.1 Submittals

- (a) Submit the qualifications of the Contractor, qualifications of operators, shop drawings, mill certificates and welding procedures to the Contractor Administrator for acceptance in accordance with E5 Shop Drawings.
- (b) Submit clearly indicating materials, core thickness, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and accessories. Indicate field measurements on Shop Drawings.

##### E10.5.2 Fabrication

- (a) Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- (b) Use self-tapping shake-proof flat headed screws on items requiring assembly by screws.
- (c) Where possible, fit work and shop assemble, ready for erection.
- (d) Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

- (e) Seal exterior steel fabrications to provide corrosion protection in accordance with CAN3-S16.1.
- (f) Remove and grind smooth burrs, filings, sharp protrusions, and projections from metal fabrications to prevent possible injury. Correct any dangerous or potentially harmful installations as directed by Contract Administrator.
- (g) All aluminum surfaces in contact with concrete shall be isolated using alkali-resistant bituminous paint meeting the requirements of CGSB 31-GP-3M.
- (h) Aluminum plate shall have an approved raised oval or multi-grip pattern with edges straight and true, and shall be cut as far as practical to maintain continuity of the pattern at abutting edges.
- (i) Pieces shall be of the sizes indicated on the Drawings and shall not be built up from scrap pieces.
- (j) Angle frames shall be of the same material as the cover plate, and cover plates shall be hinged and be supplied with lifting handles, as shown on the Drawings. Exterior covers shall be supplied with a hasp for a padlock.

#### E10.5.3 Finishes

- (a) All designated steel items supplied under this specification shall be hot-dip galvanizing after fabrication, in accordance with CAN/CSA-G164, to a retention of 600 gm/m<sup>2</sup>.

#### E10.5.4 Angle Lintels

- (a) Steel angles: sizes indicated for openings. Provide minimum 150 mm bearing at ends. Hot dip galvanized.

#### E10.5.5 Pipe Bollards

- (a) Steel pipe: double strong, diameter indicated, hot-dip galvanized.
- (b) Concrete: Type 50 sulphate resistant, 20 MPa.
- (c) Fabricate and install pipe bollards to be removable as indicated on the Drawings. Set pipe sleeve level and plumb into reinforced concrete footing. Fabricate bollard of steel pipe to fit over top of pipe sleeve and secure to pipe sleeve with 12 mm diameter hot dipped galvanized thru-bolt with nut and washers. Cap top of pipe with 6 mm thick welded steel plate.

#### E10.5.6 Erection

- (a) Do welding work in accordance with CSA W59.
- (b) Erect metalwork in accordance with reviewed shop drawings, square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- (c) Provide suitable means of anchorage acceptable to Contract Administrator such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- (d) Provide components for building in accordance with shop drawings and schedule.
- (e) Make field connections with bolts to CAN/CSA-S16.1, or weld.
- (f) Touch-up rivets, bolts and burnt or scratched surfaces that are to receive paint finish, with zinc primer after completion of erection.
- (g) Touch-up damaged galvanized surfaces and field welds with self-fluxing, low temperature, zinc-based alloy rods in accordance with ASTM A780 Repair of Damaged Hot Dip Galvanizing Coatings. Accepted products are Galvalloy and Gal-Viz.
- (h) Aluminum angle frames shall be anchored into the concrete as shown on the Drawings. Care shall be taken in placing the frames to the exact level, dimension and location required.



- (i) Cover plates shall be hinged and shall be supplied with lifting handles, as shown on the Contract Drawings. Exterior covers shall be supplied with a hasp for a padlock.

#### E10.6 Measurement and Payment

- (a) Metal fabrication shall be paid for under the Contract Unit Price for "Rehabilitation of Walls", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

### **E11. MASONRY**

#### E11.1 Description

- (a) This Specification shall cover the supply and placement of all masonry work.

#### E11.2 Materials

- (a) Concrete masonry units: to CSA A165 Series (CSA A165.1). Classification H/15/A/M. Provide purpose made shapes for lintels and bond beams.
- (b) Mortar Materials: to CSA A179. Type N based on Proportion specifications. Use non-staining mortar for limestone work.
- (c) Masonry connectors: to CSA A370 and CSA S304, galvanized. Block Shear Connector assembly as manufactured by Fero Holdings Ltd. Consisting of connector plate, V-Tie and polyethylene insulation support.
- (d) Masonry reinforcement:
  - (i) Bar reinforcement: to CSA A371 and CSA G30.18, Grade 400.
  - (ii) Wire reinforcement: to CSA A371 and CSA G30.14, ladder type. Prefabricated corners and intersections.
- (e) Masonry flashing: self-adhesive modified bitumen sheet membrane: minimum 1.0 mm thick. Bakelite Blueskin SA, WR Grace Perm-A-Barrier, Soprema Colphene 1500.
- (f) Metal drip edge: brake formed of 24 gauge prefinished steel sheet of same colour as sheet metal roofing, Form drip edge to extend 100 mm under base course, with 6 - 9 mm formed drip at front edge.

#### E11.3 Construction Methods

- (a) Demolish east and south walls, including temporary support of roof.
- (b) Do masonry work in accordance with CSA-A371 except where specified otherwise.
- (c) Before commencing masonry work construct mock-up panel for Contract Administrator's review and approval. Construct mock-up panel approximately 1200 mm x 1200 mm size, on exterior wall of building in location designated by Contract Administrator. Materials and workmanship as specified for finished work. Mock-up panel, if accepted, may become part of the finished work. If not accepted, demolish and construct new panel if requested.
- (d) Lay concrete masonry units in running stretcher bond. Coursing height 200 mm of one block and one joint
- (e) Supply and install masonry connectors and reinforcement in accordance with CSA A370, CSA A371, CSA A23.1 and CSA S304.1, and as indicated. Coordinate the installation of the truss uplift anchors with truss subcontractor.
- (f) Build masonry plumb, level, and true to line, with vertical joints in alignment. Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

- (g) Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.
- (h) Cut out for electrical switches, outlet boxes, and other recessed or built-in objects. Make cuts straight, clean, and free from uneven edges.
- (i) Build in items required to be built into masonry. Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
- (j) Construct continuous control joints in exterior masonry veneer. Fill joints with joint filler, backer rods and sealant.
- (k) Tool joints with round jointer to provide concave joints where exposed or to receive paint or other thin finish coating. Strike flush joints in concealed spaces.
- (l) Keep masonry cavities free of mortar droppings.
- (m) Provide weep holes over masonry flashings, spaced at maximum 800 mm on centre.
- (n) Build in flashings in masonry in accordance with CAN3-A371. Carry under base course and up backup wall minimum 150 mm and seal stop edge.
- (o) Install metal drip edge over masonry flashings at base courses and angle lintels. Align drip edge straight and even. Overlap joints minimum 20 mm.

#### E11.3.2 Cleaning

- (a) Clean stone as work progresses. Allow mortar droppings on stone to partially dry then remove by means of brushing with a stiff fibre brush.
- (b) Post construction: clean areas of wall, designated by Contract Administrator, as directed below and leave for one week. If no harmful effects appear after mortar has set and cured clean masonry as follows:
  - (i) Protect sills, doors, trim and other work
  - (ii) Remove large particles with wood paddles without damaging surface. Saturate masonry with clean water and flush off loose mortar and dirt.
  - (iii) Scrub with solution of 25 mL trisodium phosphate and 25 mL household detergent dissolved in 1 L of clean water using stiff fibre brushes, then clean off immediately with clean water using hose. Alternatively, use proprietary compound recommended by brick masonry manufacturer in accordance with manufacturer's directions.
  - (iv) Repeat cleaning process as often as necessary to remove mortar and other stains.
  - (v) Use alternative cleaning solutions and methods for difficult to clean stone only after consultation with masonry unit manufacturer.

#### E11.4 Measurement and Payment

- (a) Masonry work shall be paid for under the Contract Unit Price for "Rehabilitation of Walls", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

### E12. CARPENTRY

#### E12.1 Description

- (a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of all carpentry work.

#### E12.2 References

- (a) Canadian General Standards Board (CGSB)
  - (i) CAN/CGSB-11.3, Hardboard.
- (b) Canadian Standards Association (CSA)
  - (i) CSA B111 - Wire Nails, Spikes and Staples.
  - (ii) CSA O80 - Wood Preservation.
  - (iii) CAN/CSA O141 - Softwood Lumber.
  - (iv) CSA O151 - Canadian Softwood Plywood.
- (c) National Lumber Grades Authority (NLGA)
  - (i) Standard Grading Rules for Canadian Lumber.

#### E12.3 Materials

- (a) Lumber: unless specified otherwise, softwood, S4S, moisture content 19% (S-dry) or less in accordance with CAN/CSA-O141, Spruce, Pine or Fir NLGA No. 2 or better grade. Glued end-jointed (finger-jointed) lumber is not acceptable.
- (b) Canadian softwood plywood (CSP): to CSA 0151, standard construction, square edge. Standard sheathing grade.
- (c) Hardboard paneling: to CAN/CGSB-11.3, smooth, tempered, 1219 mm x 2438 mm x 3 mm thick panels.
- (d) Nails, spikes and staples: to CSA B111 and NBC requirements. Galvanized.
- (e) Bolts: steel, of sizes required, complete with nuts and washers. Galvanized.
- (f) Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead plugs, recommended for purpose by manufacturer.
- (g) Surface-applied wood preservative: copper naphthenate or pentachlorophenol base water repellent preservative. Use clear for materials exposed in final assembly, coloured elsewhere.

#### E12.4 Pressure Preservative Treated Wood

- (a) Provide lumber materials pressure preservative treated for:
  - (i) Rough bucks at openings.
  - (ii) Wood strapping.
  - (iii) Lumber used on exterior of building, above or below grade.
- (b) Treat material to CAN/CSA-O80 using Type-C (copper chromate arsenate) preservative to obtain a minimum net retention level of 6.4 kg/m<sup>3</sup> of wood.
- (c) Materials shall be dried after treatment to a moisture content of 19% or less.
- (d) Each piece of treated material shall be identified with a tag or ink mark bearing the Canadian Wood Preservers' Bureau quality mark.
- (e) Apply surface applied wood preservative to heartwood exposed from ripping, end cutting or boring.

#### E12.5 Construction

##### E12.5.1 General

- (a) Comply with requirements of NBC, Part 9 supplemented by following paragraphs.

- (b) Install members true to line, levels and elevations. Space uniformly.
- (c) Construct continuous members from pieces of longest practical length.
- (d) Install spanning members with "crown-edge" up.
- (e) Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- (f) Countersink bolts where necessary to provide clearance for other work.
- (g) Use fastenings of following types, except where specific type is indicated or specified:
  - (i) To hollow masonry, plaster and panel surfaces use toggle bolt.
  - (ii) To solid masonry and concrete use expansion shield with lag screw, lead plug with wood screw.
  - (iii) To structural steel use bolts through drilled hole, or welded stud-bolts or power driven self-drilling screws, or welded stud-bolts or explosive actuated stud-bolts.
- (h) Install furring and blocking as required to space-out and support surface wall and ceiling finishes, facings, fascia, soffit, siding and other work as indicated. Align and plumb faces of furring and blocking to tolerance of 1:600.
- (i) Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work. Except where indicated otherwise, use material at least 38 mm thick.
- (j) Install fascia backing, nailers and other wood supports as required and secure using galvanized fasteners.
- (k) Install hardboard paneling with finishing nails.

#### E12.6 Quality Assurance

- (a) Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- (b) Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

#### E12.7 Measurement and Payment

- (a) Carpentry shall be paid for under the Contract Unit Price for "Rehabilitation of Walls", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

### **E13. SHEET VAPOUR BARRIER**

#### E13.1 Description

- (a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of sheet vapour barrier work.

#### E13.2 Materials

- (a) Sheet Vapour Barrier: polyethylene film to CAN/CGSB-51.33, Type 1, 0.15 mm thick.
- (b) Joint sealing tape: air pressure sensitive adhesive tape, type recommended by vapour barrier manufacturer, 50 mm wide for lap joints and perimeter seals, 25 mm wide elsewhere.
- (c) Sealants: acoustical sealant.
- (d) Moulded box vapour barrier: factory-moulded polyethylene box for use with recessed electric switch and outlet device boxes.

### E13.3 Construction Methods

#### E13.3.1 General

- (a) Install sheet vapour barrier on warm side of exterior wall, ceiling and floor assemblies as indicated, to form continuous barrier.
- (b) Use sheets of largest practical size to minimize joints.
- (c) Inspect sheets for continuity. Repair punctures and tears with sealing tape before work is concealed.

#### E13.3.2 Exterior Surface Openings

- (a) Cut sheet vapour barrier to form openings and ensure material is lapped and sealed to frame.

#### E13.3.3 Perimeter Seals

- (a) Seal perimeter of sheet vapour barrier as follows:
  - (i) Apply continuous bead of sealant to substrate at perimeter of sheets.
  - (ii) Lap sheet over sealant and press into sealant bead.
  - (iii) Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

#### E13.3.4 Lap Joint Seals

- (a) Seal lap joints of sheet vapour barrier as follows:
  - (i) Attach first sheet to substrate.
  - (ii) Apply continuous bead of sealant over solid backing at joint.
  - (iii) Lap adjoining sheet minimum 150 mm and press into sealant bead.
  - (iv) Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

#### E13.3.5 Electrical Boxes

- (a) Seal electrical switch and outlet device boxes that penetrate vapour barrier as follows:
  - (i) Install moulded box vapour barrier or wrap boxes with polyethylene film sheet providing minimum 300 mm perimeter lap flange.
  - (ii) Apply sealant to seal edges of flange to main vapour barrier and seal wiring penetrations through box cover.

### E13.4 Measurement and Payment

- (a) The supplying and installation of sheet vapour barrier shall be paid for under the Contract Unit Price for "Rehabilitation of Walls", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

## **E14. AIR BARRIER**

### E14.1 Description

- (a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of all air barrier work.

### E14.2 Materials

- (a) Air barrier membrane: SBS modified bitumen sheet membrane fibreglass reinforced, top and bottom surface thermofusible plastic film, minimum 2.5 mm thick. Acceptable material: Soprema Sopraseal 60 F/F, Bakor Blueskin TG, IKO Aquabarrier TG.
- (b) Primers, mastics and sealants: of type recommended by manufacturer, suitable for substrate and application.

- (c) Flashing and stripping membranes: as recommended by air barrier membrane manufacturer.

#### E14.3 Construction Methods

##### E14.3.1 Environmental Conditions

- (a) Apply primers and membranes in dry weather and only when air and surface temperature are within manufacturer's recommended limits.
- (b) For applications below recommended temperature consult manufacturer and do not proceed until approved by manufacturer or his representative.

##### E14.3.2 Preparation

- (a) Clean substrates of snow, ice, loose particles, oil, grease, dirt, curing compounds, or other foreign matter detrimental to installation and bonding of air barrier membrane. Repair defects in masonry surfaces. Remove sharp protrusions and rough edges.

##### E14.3.3 Installation

- (a) Prime substrates in accordance with manufacturer's instructions. Apply primers at recommended rate of application.
- (b) Install materials in accordance with manufacturer's instructions using only materials approved for use with their products. Apply with good construction practice to maintain continuity of air barrier membrane over building elements.
- (c) Overlap side and end laps minimum 50 mm. Stagger end laps minimum 300 mm in adjacent rows. Locate end joints minimum 300 mm from internal and external corners.
- (d) Install sheets horizontally between masonry ties penetrating membrane. Overlap horizontal joints minimum 50 mm. Slit membrane at each tie and seal making airtight.
- (e) Place membrane in position without stretching, taking care to avoid trapped air, creases or fishmouths. Ensure full contact and bond to substrates.
- (f) Flash and seal around all penetrations and protrusions such as pipes, conduits, steel angle supports, masonry ties, anchors. Cut and fit membrane neatly and snug fitting, leave no gaps. Make airtight.
- (g) Seal with mastic all difficult detail areas that do not allow easy installation of membrane. Make airtight.
- (h) At rough openings cut air barrier membrane to form opening. Return membrane into opening and seal to rough bucks. Reinforce corners with additional piece of membrane cut and formed to seal corners.
- (i) Overlap and seal air barrier membrane to vapour barriers and waterproofing membranes installed by other trades. Maintain continuity of building air/vapour barrier system over entire building.
- (j) Inspect membrane for defects and poor workmanship before covering and make corrections immediately.
- (k) Patch and repair misaligned or inadequately lapped seams, tears, punctures or fishmouths to the satisfaction of the Contract Administrator.
- (l) Patch cuts, tears, and punctures by bonding an additional layer of air barrier membrane over damaged area. Patch shall extend minimum 150 mm in all directions from fault. Seal and make airtight.

#### E14.4 Measurement and Payment

- (a) The supplying and installation of air barrier membrane shall be paid for under the Contract Unit Price for "Rehabilitation of Walls", which price shall be payment in full for supplying all

materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

## **E15. BATT AND BLANKET INSULATION**

### **E15.1 Description**

- (a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of all batt and blanket insulation work.

### **E15.2 Materials**

- (a) Batt and blanket mineral fibre insulation: to CAN/ULC-S702, Type 1 – no membrane. Thickness indicated on Drawings.

### **E15.3 Construction Methods**

- (a) Install insulation to maintain continuity of thermal protection to building elements and spaces.
- (b) Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
- (c) Fill all voids completely. Cut and trim insulation neatly to fill voids; leave no gaps. Do not compress insulation to fit into spaces.

### **E15.4 Measurement and Payment**

- (a) The supplying and placing of batt and blanket insulation shall be paid for under the Contract Unit Price for “Rehabilitation of Walls”, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

## **E16. JOINT SEALERS**

### **E16.1 Description**

- (a) This Specification shall cover the supply and placement of all joint sealer work.

### **E16.2 Materials**

#### **E16.2.1 Sealant Materials Designations**

- (a) Type 1 – Silicones One Part: to CAN/CGSB-19.13. Acceptable material: Dow Corning 795, GE Silpruf, Tremco Spectrum 2.
- (b) Type 2 – Silicones One Part: to CAN/CGSB-19.22-M89 (Mildew resistant). Acceptable material: Dow Corning 786.
- (c) Type 3 – Acrylic Latex One Part: to CGSB 19-GP-5M. Acceptable material: Tremco 100 Latex Caulk, GE Acrylasil Latex Caulk.
- (d) Type 4 – Butyl: to CGSB 19-GP-14M. Acceptable material: Tremco Butyl Sealant.

#### **E16.2.2 Accessories**

- (a) Preformed Compressible and Non-Compressible back-up materials.
  - (i) High-Density Foam. Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 kPa to 200 kPa, extruded polyolefin foam, 32 kg/m density, or neoprene foam backer, size as recommended by manufacturer.
  - (ii) Bond Breaker Tape. Polyethylene bond breaker tape that will not bond to sealant.

- (b) Joint cleaner: non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- (c) Primer: as recommended by manufacturer.

### E16.3 Construction Methods

#### E16.3.1 Sealant Selection

- (a) Perimeters of exterior openings where frames meet exterior facade of building: Sealant Type 1.
- (b) Miscellaneous flashing joints and metal cladding: Sealant Type 1.
- (c) Perimeter of washroom fixtures (e.g., sinks, urinals, water closets, vanities, etc.): Sealant Type 2.
- (d) Interior paintable joints: Sealant Type 3.
- (e) Bedding aluminum doorsills: Sealant Type 4.

#### E16.3.2 Delivery, Storage, and Handling

E16.3.3 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.

#### E16.3.4 Environmental and Safety Requirements

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

#### E16.3.5 Protection

- (a) Protect installed work of other trades from staining or contamination.

#### E16.3.6 Preparation of Joint Surfaces

- (a) Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- (b) Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter that may impair work.
- (c) 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.
- (d) Ensure joint surfaces are dry and frost free.
- (e) Prepare surfaces in accordance with manufacturer's directions.

#### E16.3.7 Priming

- (a) Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- (b) Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

#### E16.3.8 Backup Material

- (a) Apply bond breaker tape where required to manufacturer's instructions.



- (b) Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

#### E16.3.9 Mixing

- (a) Mix materials in strict accordance with sealant manufacturer's instructions.

#### E16.3.10 Application

##### (a) Sealant

- (i) Apply sealant in accordance with manufacturer's written instructions.
- (ii) (Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
- (iii) Apply sealant in continuous beads.
- (iv) Apply sealant using gun with proper size nozzle.
- (v) Use sufficient pressure to fill voids and joints solid.
- (vi) Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- (vii) Tool exposed surfaces before skinning begins to give slightly concave shape.
- (viii) Remove excess compound promptly as work progresses and upon completion.

##### (b) Curing

- (i) Cure sealants in accordance with sealant manufacturer's instructions.
- (ii) Do not cover up sealants until proper curing has taken place.

##### (c) Cleanup

- (i) Clean adjacent surfaces immediately and leave work neat and clean.
- (ii) Remove excess and droppings, using recommended cleaners as work progresses.
- (iii) Remove masking tape after initial set of sealant.

#### E16.4 Measurement and Payment

- (a) The supplying and placing of joint sealers shall be paid for under the Contract Unit Price for "Rehabilitation of Walls", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work.

### **E17. STEEL HOLLOW METAL DOORS AND FRAMES**

#### E17.1 Description

- (a) This Specification shall cover the supply, fabrication and placement of all steel hollow metal doors and frames.

#### E17.2 Materials

##### E17.2.1 Fabrication Standards

- (a) Fabricate doors and frames to Canadian Manufacturing Specification for Steel Doors and Frames, except where specified otherwise.

##### E17.2.2 Steel

- (a) Commercial grade steel to ASTM A568-81, Class 1, hot-dip galvanized to ASTM A527-80, coating designation to ASTM A525-81, ZF75 (A25).

##### E17.2.3 Component Part Thickness

- (a) Door frames: 1.6 mm (16 gauge)
- (b) Doors: 1.2 mm (18 gauge)

##### E17.2.4 Door Construction

- (a) Insulated core, welded seam: For exterior use. Reinforced construction. Provide urethane foam insulated cores to R.S.I. of 1.76 (R=10). Laminated by adhesive to face sheets. Reinforced for hardware

#### E17.2.5 Frame Construction

- (a) Mitred or mechanically jointed and continuously welded on the inside of the profile. Welded joints to be ground to a smooth uniform finish.
- (b) Butt joints of mullions and transoms: accurately cope, securely weld and grind smooth.
- (c) Blank, reinforce, drill and tap for mortised butts and strike. Protect cut-outs in masonry and concrete with mortar guard boxes. Reinforce for surface mounted hardware. Prepare each door for rubber bumpers, two for double door openings.
- (d) Top hinge reinforcement: weld in top hinge reinforcement with 20 mm leg to hinge reinforcement, 25 mm to frame.
- (e) Insulation: provide foam-in insulation in all exterior frame cavities.

#### (f) Door Hardware

- |                       |  |
|-----------------------|--|
| (i) Hinges            | CB1960 114 x 102 NRP 630 Stanley   |
| (ii) Passage Set      | D10S 626 Schlage   |
| (iii) Deadbolt        | B860 626 Schlage<br>(tamperproof "Medeco" cylinder – keyed to match City requirements) |
| (iv) Flushbolts       | FB6 626 Glynn Johnson  |
| (v) Weatherstrip      | 770C Reese   |
| (vi) Sweep Seals      | 773C Reese   |
| (vii) Astragal        | 275C Reese   |
| (viii) Threshold      | S205A Reese  |
| (ix) Door Stop/Holder | F26 626 Glynn Johnson  |

#### E17.2.6 Frame Anchors

- (a) Frames for installation shall be provided with minimum four steel anchors of suitable design.

#### E17.2.7 Keying

- (a) Keys to match The City's existing "Medeco" system. The City to provide lock number before keying.
- (b) Provide keys in triplicate for every lock.

#### E17.2.8 Shop Drawings

- (a) Submit shop drawings in accordance with E5 Shop Drawings.
- (b) Submit shop drawings clearly indicating each type of door and frame, material, steel core thickness, mortises, reinforcements, location of exposed fasteners, anchors, openings, arrangement of hardware, and finishes.

#### E17.3 Construction Methods

##### E17.3.1 General

- (a) Install doors and frames to CSDFMA Installation Guide.

##### E17.3.2 Door Installation

- (a) Install doors and hardware in accordance with templates and manufacturer's instructions.
- (b) Adjust operable parts for correct function.

##### E17.3.3 Frame Installation

- (a) Set frames plumb, square, level and at correct elevation. Secure anchorages and connections to adjacent construction.
- (b) Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in. Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

#### E17.3.4 Painting

- (a) Paint doors and frames in accordance with E18 Painting in colour approved by Contract Administrator.

#### E17.4 Measurement and Payment

- (a) The supplying and placing of steel hollow metal doors and frames shall be paid for under the Contract Unit Price for "Rehabilitation of Walls", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification

### **E18. PAINTING**

#### E18.1 Description

- (a) This Specification shall cover the supply and placement of all painting work.

#### E18.2 Materials

##### E18.2.1 Paint

- (a) Only paint materials listed in the MPI Approved Products List (APL) are acceptable for use on the project, except where other products are specified.
- (b) Paint materials for each coating formula to be products of a single manufacturer.
- (c) Colour schedule will be provided by Contract Administrator. Selection of colours will be from manufacturer's full range of colours.

##### E18.2.2 Paint Finishes

- (a) Except for Formula 1 (epoxy) use Master Painters Institute (MPI) finishing formulae as specified below.
- (b) Formula 1: for wood to receive paint finish:
  - (i) MPI EXT 6.4B - Alkyd GR (semi-gloss) finish premium grade.
- (c) Formula 2: for shop primed and unprimed ferrous metal surfaces:
  - (i) MPI EXT 5.1D - Alkyd G5 (semi-gloss) finish premium grade.
- (d) Formula 3: for galvanized and zinc-coated metal apply:
  - (i) MPI EXT 5.3B - Alkyd G5 (semi-gloss) finish premium grade.
- (e) Formula 4: for concrete, walls and ceilings apply:
  - (i) MPI EXT 3.1A - Latex G5 (semi-gloss) finish premium grade.
- (f) Formula 5: for concrete floors apply:
  - (i) MPI EXT 3.2D - Alkyd floor enamel #59 low gloss finish premium grade. Sprinkle with clean silica sand to provide slip-resistant surface acceptable to Contract Administrator.

#### E18.3 Construction Methods

##### E18.3.1 Standard of Acceptance

- (a) Walls: No defects visible from a distance of 1000 mm at 90 degrees to surface when viewed using final lighting source.
- (b) Ceilings: No defects visible from floor at 45 degrees to surface when viewed using final lighting source.
- (c) Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

#### E18.3.2 Delivery, Storage and Handling

- (a) Deliver and store materials in original containers, sealed with labels intact.
- (b) Indicate on containers or wrappings:
  - (i) Manufacturer's name and address.
  - (ii) Type of paint.
  - (iii) Compliance with applicable standard.
  - (iv) Colour number in accordance with colour schedule provided by Contract Administrator.
- (c) Observe manufacturer's recommendations for storage and handling.

#### E18.3.3 Environmental Requirements

- (a) Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- (b) Ventilation: ventilate area of work by use of approved portable supply and exhaust fans.
- (c) Provide temporary heating where permanent facilities are not available to maintain minimum recommended temperatures.
- (d) Apply paint finish only in areas where dust is no longer being generated by related construction operations such that airborne particles will not affect the quality of the finished surface.
- (e) Apply paint only when surface to be painted is dry, properly cured, and adequately prepared.

#### E18.3.4 Extra Materials

- (a) Submit one 4-litre can of each type and colour of primer and finish coating. Identify colour and paint type in relation to established colour schedule and finish formula.
- (b) Deliver to The City and store where directed.

#### E18.3.5 Protection

- (a) Cover or mask floors, walls, and equipment adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.
- (b) Protect items that are permanently attached such as Fire Labels on doors, frames, and name plates on equipment.
- (c) Protect factory finished products and equipment.

#### E18.3.6 Cleaning and Surface Preparation

- (a) Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
  - (i) Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
  - (ii) Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
  - (iii) Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
  - (iv) Allow surfaces to drain completely and allow to dry thoroughly.

- (b) Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.
- (c) Where possible, prime surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
  - (i) Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
  - (ii) Apply wood filler to nail holes and cracks.
- (d) Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted.
- (e) Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

#### E18.3.7 Application

- (a) Apply paint in accordance with manufacturer's application instructions unless specified otherwise.
- (b) Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- (c) Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- (d) Sand and dust between each coat to remove visible defects.
- (e) Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

#### E18.3.8 Mechanical/Electrical Equipment

- (a) Do not paint exposed conduit, ductwork and hangers, unless otherwise indicated.
- (b) Paint exposed piping. Colour and texture to match adjacent surfaces, except as noted otherwise.
- (c) Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- (d) Do not paint over nameplates, brass or bronze surfaces or machined surfaces.
- (e) Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

#### E18.3.9 Restoration

- (a) Clean and reinstall all hardware items that were removed before undertaken painting operations.
- (b) Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

#### E18.4 Measurement and Payment

- (a) Painting shall be paid for under the Contract Unit Price for "Rehabilitation of Walls", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

### **E19. GRAFFITI RESISTANT COATING**

#### E19.1 Description

- (a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of all graffiti resistant coating to all exterior masonry veneer.

## E19.2 Materials

- (a) Graffiti-resistant coating: one component, water based, non-sacrificial, clear sealer consisting of blend of polymers, organo silanes, and siloxanes. Acceptable material: Fabrikem Fabrishield Paint Repellent, PR-60 for stone, PR-61 for clay brick.

## E19.3 Construction Methods

### E19.3.1 Sample Application

- (a) Apply graffiti-resistant coating to mock-up panel specified in E11 Masonry.
- (b) Do not proceed with coating work until Contract Administrator has reviewed and accepted sample application.

### E19.3.2 Product Data

- (a) Submit manufacturer's product data, specifications and application instructions to Contract Administrator prior to application of coatings.

### E19.3.3 Environmental Conditions

- (a) Maintain ambient and structural base temperature at installation area within limits specified by coating manufacturer. Apply coating during dry weather. Do not apply coating to wet or damp surfaces.

### E19.3.4 Protection

- (a) Protect plants and vegetation that might be damaged by coating. Protect surfaces not intended to have application of coatings. Provide adequate ventilation or isolation measures to protect against toxic fumes.

### E19.3.5 Surface Preparation

- (a) Prepare and clean substrate surfaces in accordance with coating manufacturer's printed instructions.
- (b) Take moisture tests on substrates to receive coating to ensure moisture levels are within limits specified by coating manufacturer.

### E19.3.6 Application

- (a) Apply coating using low-pressure spraying apparatus, in accordance with manufacturer's instructions at manufacturer's recommended coverage rate:
  - (i) Stone: 175 – 225 ft<sup>2</sup>/gal.
  - (ii) Clay brick: 175 – 225 ft<sup>2</sup>/gal.
- (b) Increase coverage depending on surface porosity, absorption, and surface profile.
- (c) Apply in uniform, even coats to fully wet substrate.
- (d) Allow area to dry completely before applying additional coats.

## E19.4 Measurement and Payment

- (a) Graffiti resistant coating shall be paid for under the Contract Unit Price for "Rehabilitation of Walls", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

## **E20. ASBESTOS REMEDIATION**

### **E20.1 Description**

- (a) This Specification consists of preparing the site by reducing asbestos so that the risk to construction workers is acceptable for normal work procedures.
- (b) The concrete blocks that made up the damaged walls are insulated with vermiculite that may contain asbestos. Since analysis of vermiculite for the presence of asbestos has a high incidence of false negatives, the walls are assumed to contain asbestos. Therefore, the site will be treated as a contaminated site until the exposed or potentially exposed surfaces and damaged walls have been cleaned.
- (c) The following remediation specifications are written as performance criteria and are to be applied by qualified Contractors familiar with safe asbestos remediation.

### **E20.2 Abatement Contractor Responsibilities**

- (a) It should be noted that the following remediation specifications are performance standards and do not provide detailed specifications as to how the site must be remediated. The successful contractor must be familiar with asbestos remediation procedures.
- (b) The Contractor shall submit to the Contract Administrator his abatement methodology for review at least ten (10) working days prior to commencing the abatement work. This is to ensure the following:
  - (i) Access to essential equipment is possible during the abatement project.
  - (ii) The building will be adequately shored when the damaged walls are demolished.
- (c) The asbestos hoarding shall be designed by an Engineer registered to practice in the Province of Manitoba, and installed according to the Workplace Safety and Health Guidelines.
- (d) All existing debris and dirt inside the building and on equipment inside the building, prior to starting the remediation process, will be assumed to contain asbestos and will be removed prior to the start of site remediation.
  - (i) Workers will wear disposable clothing and appropriate respiratory protection to do the cleanup.
  - (ii) Cleaning will be done by damp mopping or HEPA vacuum.
- (e) All cleaned equipment inside the building will be wrapped in 6-mil polyethylene or other suitable material to protect it during the remediation process.
- (f) The damaged block walls will be demolished in a controlled fashion so as not to release or spread large amounts of contaminated materials.
- (g) When all asbestos containing materials have been removed, all surfaces including the hoarding will be damp mopped to remove all residual contaminants.
- (h) When declared cleaned to an acceptable level, the wrapped equipment will be unwrapped and given a final cleaning before allowing anyone to be in contact with them.

### **E20.3 Asbestos Abatement and Disposal**

- (a) This work will be carried out as a Type 3 project. In addition to the site specific responsibilities, the following general responsibilities must be met where a Type 3 removal process is used. See E20.4 Procedures for Type 3 Operations.
- (b) A reduced pressure will be maintained within the Asbestos Work Area (>0.02 in. w.g.) established by extracting air directly from the Asbestos Work Area and discharging it to exterior of the building. The air must be passed through a HEPA filter prior to extraction. The volume of air extracted must be sufficient to provide one (1) air change every 20 minutes during wet removal and once every 15 minutes during dry removal while ensuring that at all times, air flows into the Asbestos Work Area.

- (c) The Contractor will submit a copy of his work plan to the Contract Administrator prior to commencing work. The work plan will include, but is not limited to:
  - (i) General preventive methods.
  - (ii) Proposed abatement and disposal procedures for each area.
  - (iii) Proposed work schedule.
  - (iv) Names and addresses of the persons who will do the work.
  - (v) Copies of the worker's license or permit to work with asbestos.
  - (vi) Personal protection including copies of respirator fit test results for workers at the site.
  - (vii) Methods for cleaning of premises.
  - (viii) Disposal of waste materials.
  - (ix) Information, labelling, education and training.
  - (x) Handling of materials during abatement activities.
- (d) The abatement Contractor will maintain a daily sign-in/sign-out roster for all persons entering the site, and a list of supervisors for each day.
- (e) Requirements as set out in "Manitoba Guidelines for Working with Asbestos" will apply. Areas will be cleaned to 0.01f/cc before being declared acceptable for occupancy.
- (f) The Abatement Contractor will review the project with the Workplace Safety and Health Branch and develop appropriate abatement procedures. The Contractor will then submit an abatement plan to the Contract Administrator, which is in full compliance with the requirements of the appropriate authorities. The appropriate authorities are deemed to include, but not necessarily be limited to, the following:
  - (i) Workplace Safety and Health Branch of the Manitoba Department of Labour with respect to on-site exposure to hazardous materials.
  - (ii) Manitoba Conservation with respect to potential impact on the surrounding community of off-site migration and dispersion of hazardous materials as well as disposal of hazardous and potentially hazardous materials.
  - (iii) City of Winnipeg relative to disposal of asbestos contaminated material at the City of Winnipeg Brady Street Landfill.

#### E20.4 Procedures for Type 3 Operations

- (a) Before any Type 3 operation is performed, the Contractor must notify the Contract Administrator and Workplace Safety and Health Branch in writing at least 5 working days before the start of work, and must include:
  - (i) the name, address, and telephone number of the person giving notice.
  - (ii) the name, address, and telephone number of the owner of the building, or agent of the owner, where the work will be performed.
  - (iii) the address or municipal location of the building where the work will be performed.
  - (iv) the name, address, and telephone number of the company performing the work.
  - (v) a description of the work to be performed.
  - (vi) the start date and expected completion date of the work.
  - (vii) the name, address, and telephone number of the supervisor in charge of the work.
- (b) Eating, drinking, chewing, or smoking is prohibited in the work area.
- (c) Before starting work, suitable barriers and clearly visible signs warning of the asbestos work and hazards must be set up at a distance from the work site.



- (d) Before any work is performed, all asbestos dust and contaminated debris must be removed by means of a vacuum cleaner equipped with a HEPA filter; or by wet mopping, wet sweeping or wet wiping.
- (e) Compressed air must not be used to clean up or remove dust and debris from contaminated surfaces.
- (f) Movable equipment within the work area must be cleaned with a vacuum cleaner equipped with a HEPA filter, or wet wiping, and then removed from the work site.
- (g) Fixed equipment within the work area must be cleaned with a vacuum cleaner equipped with a HEPA filter; or wet wiping, and then covered with impermeable sheeting and sealed with tape.
- (h) Where a Type 3 operation is conducted indoors where walls do not already enclose the operation, the spread of asbestos from the work area must be prevented by the construction of a negative pressure enclosure.
- (i) The negative pressure enclosure must be constructed of two layers of a minimum of 6-mil polyethylene or other suitable material, with reinforced polyethylene on the floors.
- (j) The negative pressure enclosure must have at least four air changes per hour and a minimum pressure differential of -0.02 inches of water gauge relative to the air outside of the enclosure must be maintained.
- (k) The negative pressure enclosure must be kept under negative pressure for the duration of the operation.
- (l) All air exhausted from the negative pressure enclosure must pass through a HEPA filter and then be vented to the outside of the building.
- (m) All mechanical ventilation in the contaminated area, except that required to provide the negative air pressure, must be disabled and a barrier of at least two layers of 6-mil polyethylene placed over all openings in the contaminated area.
- (n) All openings from the contaminated area, including windows and doors, must be adequately sealed with adhesive tape or isolated by two layers of 6-mil polyethylene sheeting.
- (o) Care must be taken to ensure that asbestos dust cannot escape at points where pipes and conduits pass out of the working area.
- (p) All entry points to the work site must carry prominently displayed warning notices that identify an asbestos activity, and forbid entry to anyone not wearing appropriate respiratory protection and protective clothing.
- (q) A worker decontamination unit must be connected to the work site, or as close as is reasonably practicable to the work site.
- (r) The worker decontamination unit must consist of a series of interconnecting rooms including:
  - (i) a clean room suitable for changing into or from street clothes and for storing clean clothing and equipment.
  - (ii) a shower room.
  - (iii) an equipment room suitable for changing into protective clothing and for storage of contaminated protective clothing and equipment.
- (s) The worker decontamination unit must be constructed such that overlapping curtains of polyethylene sheeting or other suitable material are fitted to each side of the entrance or exit to each room.
- (t) The worker decontamination unit must be arranged in sequence and constructed so that every person entering or leaving the work area must pass through each room of the decontamination unit.

- (u) The shower room in the worker decontamination unit:
  - (i) must be provided with an adequate supply of hot and cold water or water of a constant temperature that is not less than 40° Celsius or more than 50° Celsius.
  - (ii) must have individual controls inside the room to regulate water flow or temperature if there is hot and cold water.
  - (iii) must be provided with clean towels.
- (v) The negative pressure enclosure must be tested on a daily basis to ensure that no asbestos will escape by the use of:
  - (i) a smoke generator operating inside the enclosure and no visible smoke outside the enclosure.
  - (ii) a recording manometer to ensure that a minimum pressure differential of - 0.02 inches of water gauge relative to the air outside of the enclosure is being maintained at all times, or
  - (iii) daily perimeter air monitoring to ensure that background concentrations of airborne asbestos fibres are not exceeded.
- (w) A competent person must inspect the work area for defects in the enclosure, barriers, and worker decontamination unit:
  - (i) at the beginning of each shift.
  - (ii) at the end of a shift where there is no shift beginning immediately following the shift that is ending.
  - (iii) at least once each day on days when there are no shifts.
- (x) Any defect found on inspection must be remedied immediately, and no work, other than necessary repair work, shall be performed in the contaminated area until the repair work is completed.
- (y) Only persons wearing appropriate protective clothing and respiratory protection are allowed to enter the contaminated work area.
- (z) Unless personal monitoring is performed inside the contaminated work area to determine the actual exposure to airborne asbestos fibres and an appropriate respirator is then selected from Table 2, all persons inside the contaminated area must wear at a minimum:
  - (i) a full face powered air purifying respirator with HEPA cartridges while working on wetted asbestos-containing materials; or
  - (ii) a full face supplied air respirator or self-contained breathing apparatus, complete with a reserve escape bottle, operating in the continuous flow mode while working on dry asbestos-containing materials.
- (aa) When entering the work area workers must:
  - (i) enter the clean room of the worker decontamination unit, remove all street clothing, store it in the lockers provided and put on clean, appropriate respiratory protection and protective clothing.
  - (ii) pass through the shower room to the equipment room.
  - (iii) leave the equipment room to enter the work area.
- (bb) At the end of work workers must:
  - (i) remove gross visible contamination from their protective clothing and respiratory protection in the work area.
  - (ii) enter the equipment room of the worker decontamination unit and remove all loose asbestos fibre from their respiratory protection equipment with the use of a vacuum cleaner equipped with a HEP A filter and
    - ◆ where the protective clothing will be reused, remove all loose asbestos fibre from their work clothing with the use of a vacuum cleaner equipped with a HEP A filter, then remove all clothing, and store it in a suitable manner; or

- ◆ where the protective clothing is not intended to be reused, double- bag it in 6-mil polyethylene bags and dispose of it as asbestos waste.
  - (iii) pass into the shower room and without removing the respiratory protection, shower thoroughly.
  - (iv) remove and thoroughly clean the respiratory protection equipment, store it appropriately.
  - (v) pass into the clean area, dry, dress and leave through the clean area door.
- (cc) Where it is not practical to locate the worker decontamination unit adjacent to the work area and passage through a non-contaminated zone is necessary, a two-room worker decontamination unit must be located at both the work site and at the remote worker decontamination unit, and the following procedure used to enter and exit the area:
- (i) when starting work workers must:
    - ◆ enter the clean room of the remote worker decontamination unit, remove all street clothing, store it in the lockers provided and put on appropriate clean protective clothing.
    - ◆ pass through the shower room, and proceed to the decontamination unit attached to the work site.
    - ◆ enter the clean room of the worker decontamination unit attached to the work site, and put on appropriate respiratory protection, and (iv) pass through the equipment room, and enter the work area.
  - (ii) at the end of work workers must:
    - ◆ remove visible gross contamination in the work area.
    - ◆ enter the equipment room of the worker decontamination unit attached to the work area, remove all loose asbestos fibre from respiratory protection with the use of a vacuum cleaner equipped with a HEPA filter.
    - ◆ where the protective clothing will be reused, remove all loose asbestos fibre with the use of a vacuum cleaner equipped with a HEP A filter, and then remove the protective clothing, and store it in a suitable manner, or
    - ◆ where the protective clothing is not intended to be reused, double-bag it in 6-mil polyethylene bags and dispose of it as asbestos waste.
    - ◆ proceed into the clean room and put on appropriate clean protective clothing and remove the respiratory protection and store it appropriately.
    - ◆ proceed immediately to the remote worker decontamination unit
    - ◆ enter the shower area of to the remote worker decontamination unit and remove their protective clothing and shower thoroughly.
    - ◆ pass into the clean area, dry, dress in street clothes and leave through the clean area.
- (dd) Electrical circuits inside the contaminated area must be deactivated unless equipped with ground- fault circuit interrupters.
- (ee) Wet handling techniques must be used to control dust on the surfaces of any asbestos-containing materials, unless wetting creates a hazard or causes damage.
- (ff) Dry stripping is associated with very high levels of airborne asbestos fibres and therefore should be used only:
- (i) where wet methods may be injurious to workers.
  - (ii) where live electrical apparatus might be made dangerous by contact with water;  
or
  - (iii) where hot metal is to be stripped and the use of water may be damaging.
- (gg) Where the surfaces mentioned above can not be wetted, a vacuum cleaner equipped with a HEPA filter, or by other means that does not create airborne asbestos fibres, must be used to control the spread of dust.

- (hh) All waste containing asbestos must be cleaned up frequently and immediately upon completion of the work by wet sweeping or wet mopping and double-bagged in 6- mil polyethylene bags, and disposed of as asbestos waste.
- (ii) Waste containing asbestos must be kept wet.
- (jj) Where the surfaces mentioned above can not be wetted, a vacuum cleaner equipped with a HEPA filter, or other means that does not create airborne asbestos fibres, must be used to control the spread of dust.
- (kk) All bags of waste asbestos and contaminated protective clothing must be removed from the work area through a waste decontamination unit connected to the negative pressure enclosure.
- (ll) The waste decontamination unit must consist of a series of interconnecting rooms including:
  - (i) a container clean room.
  - (ii) a holding room.
  - (iii) a transfer room.
- (mm) The waste decontamination unit must be constructed such that overlapping curtains of polyethylene sheeting, or other suitable material, are fitted to each side of the entrance or exit to each room.
- (nn) Bags of asbestos waste and contaminated protective clothing must be removed from the work area by the following procedure:
  - (i) remove visible contamination from the bags in the work area.
  - (ii) transfer the bag into the container cleaning room.
  - (iii) clean the bags with a damp cloth or sponge, place the bag into a second 6- mil polyethylene bag, seal the outer bag, and transfer the double-bagged waste to the holding room;
  - (iv) workers performing the activities described in (ii) and (iii) must wear the same protective clothing and respiratory protection as those workers in the contaminated work area.
  - (v) workers performing the activities described in (ii) and (iii) must exit by the worker decontamination unit.
  - (vi) the double-bagged waste is then moved from the holding room to the container clean room, without entering the holding room, and then outside the waste decontamination unit by a worker who enters from the waste container clean room.
  - (vii) workers performing the activity described in (vi) do not require respiratory protection or protective clothing.
- (oo) Contaminated equipment, tools, and other items used in the work area must be cleaned with a damp cloth and by vacuuming with a vacuum equipped with a HEPA filter and removed from the work area through the waste decontamination unit by the same method as described for asbestos waste.
- (pp) Before the negative pressure enclosure, worker decontamination unit, and waste decontamination unit may be removed or altered:
  - (i) the contaminated areas must be decontaminated by a combination of wet cleaning and vacuuming with vacuum cleaner equipped with a HEPA.
  - (ii) there must be no visible trace of asbestos dust.
  - (iii) a final air monitoring clearance test of the area inside the negative pressure enclosure must be performed, and the concentration of airborne asbestos fibres inside the enclosure must not exceed 0.01 fibres per cubic centimetre.
- (qq) All polyethylene sheets used to form the negative pressure enclosure, the worker decontamination unit(s), the waste decontamination unit and covering all openings inside

the contaminated area must be folded to contain any remaining debris and double-bagged in 6-mil polyethylene bags, securely tied and disposed of as asbestos waste.

- (rr) When an activity described is being carried out out-of-doors, the procedures described in this section, with the exception of the building and operating of a negative pressure enclosure, worker decontamination unit, and waste decontamination unit, must be followed.

#### E20.5 Measurement and Payment

- (a) Asbestos remediation shall be paid for under the Contract Unit Price for "Removal of Asbestos", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.