



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 661-2010**

**ASBESTOS ABATEMENT – BASEMENT LEVEL OF THE 510 MAIN STREET  
ADMINISTRATION BUILDING**

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## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 ASBESTOS ABATEMENT – BASEMENT LEVEL OF THE 510 MAIN STREET ADMINISTRATION BUILDING

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, September 3, 2010.

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 Bidder should attend a Site meeting at 10:00 a.m. on August 31, 2010 OR 1:00 p.m. on August 31, 2010. Attendance is strongly recommended.

B3.2 The Bidder shall not be entitled to rely on any information or interpretation received at the Site Meeting 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 D4.1.

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 the lump sum price in Canadian funds for the Work on Form B: Prices.

## **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 lump sum price shown on Form B: Prices.

#### **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 a type III and glove bag abatement of asbestos containing materials within the basement areas of the 510 Main Street Administration Building basement areas.

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

- (a) A type III and glove bag asbestos abatement of all asbestos materials in the ceilings, pipe wrap/elbows, duct insulation and vinyl asbestos floor tiles as per specifications.

#### D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "**Amended Water**" means water with wetting agent added for the purpose of reducing surface tension to allow thorough wetting of ACM;
- (b) "**Asbestos-Containing Material (ACM)**" means material identified under site Conditions including any debris, overspray, fallen material and settled dust;
- (c) "**Asbestos Work Area**" means any area where Work takes place which will, or may, disturb ACM;
- (d) "**Authorized Visitors**" means The City, Contract Administrator, or designated representative, and persons representing regulatory agencies;
- (e) "**Contaminated Waste**" means material identified under Site Conditions, including fallen material, settled dust, other debris and materials or equipment deemed to be contaminated by the Contract Administrator;
- (f) "**Curtained Doorway**" means doorway consisting of two (2) overlapping flaps of rip-proof polyethylene arranged to permit ingress and egress from one room to another while permitting minimal air movement between rooms;
- (g) "**DOP Test**" means a testing method used to determine the integrity of the Negative Pressure unit or vacuum using dioctyl phthalate (DOP) HEPA filter leak test;
- (h) "**Fitting**" means individual segments or pieces of a mechanical service line which may include but is not limited to the hangers, tees, elbows, joints, valves, unions, etc.;
- (i) "**Friable Material**" means material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered;
- (j) "**HEPA Filter**" means High Efficiency Particulate Aerosol filter that is a least 99.97 percent efficient in collecting a 0.3 micrometre aerosol;
- (k) "**Milestone Inspection**" means Inspection of the Asbestos Work Area at a defined point in the abatement operation;
- (l) "**Negative Pressure**" means a reduced pressure within the Asbestos Work Area (>0.04 in.) established by extracting air directly from Asbestos Work Area and discharging it to exterior of building. 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 movement flows into the Asbestos Work Area as determined by visual or smoke testing to the satisfaction of the Contract Administrator.

- (m) **“Non-Friable Material”**: means material that when dry can not be crumbled, pulverized or powdered by hand pressure. Including but not limited to the following ACM; vinyl tiles, asbestos cement tiles, gaskets, seals, select packings, friction products, drywall joint compound and asbestos cement products. Exclude from the above categorization any material that is or may become crumbled, pulverized or powdered by handling as described herein.
- (n) **“Occupied Area”**: means any area of the building or adjoining space outside the Asbestos Work Area.
- (o) **“Pipewrap”**: means any thermal or vapour covering present on straight runs and/or fittings of mechanical services. Include with the above, metal or other rigid jacketing associated straps, ties, fastenings, etc.
- (p) **“Polyethylene”**: means any polyethylene sheeting or rip proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection to underlying surfaces and to prevent the escape of airborne fibres.

#### **D4. CONTRACT ADMINISTRATOR**

D4.1 The Contract Administrator is:

Mr. Stan Russell  
Supervisor of Project Services  
Planning, Property and Development Department  
4<sup>th</sup> Floor, 185 King St.

Telephone No. (204) 794-4418

Facsimile No. (204) 986-7311

D4.2 At the pre-construction meeting, the Contract Administrator will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

#### **D5. CONTRACTOR'S SUPERVISOR**

D5.1 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.

#### **D6. NOTICES**

D6.1 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.

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D4.1.

D6.3 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 facsimile number:

The City of Winnipeg  
Chief Financial Officer

Facsimile No.: (204) 949-1174

- D6.4 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  
Legal Services Department  
Attn: City Solicitor  
185 King Street, 3rd Floor  
Winnipeg MB R3B 1J1  
Facsimile No.: (204) 947-9155

## **SUBMISSIONS**

### **D7. AUTHORITY TO CARRY ON BUSINESS**

- D7.1 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.

### **D8. SAFE WORK PLAN**

- D8.1 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.
- D8.2 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>

### **D9. INSURANCE**

- D9.1 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) asbestos abatement coverage written on a per occurrence or per claimant basis, to be clearly stated, in the amount of at least two million dollars (\$2,000,000) at all times during the performance of the Work and throughout the warranty period.
  - (d) 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.
- D9.2 Deductibles shall be borne by the Contractor.
- D9.3 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.

D9.4 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.

#### **D10. PERFORMANCE SECURITY**

D10.1 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.

D10.1.1 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.

D10.2 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.

#### **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.

#### **D12. SECURITY CLEARANCE**

D12.1 Each individual proposed to perform Work under the Contract shall be required to obtain a Criminal Record Search Certificate from the police service having jurisdiction at his place of residence.

D12.2 The Criminal Record Search shall include a Vulnerable Sector Search. This can be obtained by completing and providing the following in person to the Winnipeg Police Service Bureau of Police Records, 4<sup>th</sup> Floor, 151 Princess Street:

- (a) Form P-612 Check the following boxes: Vulnerable Sector; and Other by inputting the Bid Opportunity Number in the space provided. This form can be found on the website at: [www.winnipeg.ca/police/BPR/forms/Criminal\\_Record\\_Check\\_P612.doc](http://www.winnipeg.ca/police/BPR/forms/Criminal_Record_Check_P612.doc)
  - (i) Individuals will need to state in Section 2 of the form, that they may be working in City of Winnipeg pools, libraries and community centres;
  - (ii) Individuals will need to sign and date Section 3 of the form.
- (b) Two (2) pieces of identification as stated in Bureau of Police Records on the website at: [www.winnipeg.ca/police/BPR/id.stm](http://www.winnipeg.ca/police/BPR/id.stm)
- (c) Fee for each individual applying for a Criminal Record Search. Fee schedule can be found on the website at:

[www.winnipeg.ca/police/BPR/fees.stm](http://www.winnipeg.ca/police/BPR/fees.stm)

- D12.2.1 The original Criminal Record Search Certificate (Form P-253) will be provided by the Winnipeg Police Service to the individual applicant. The original has a validation sticker from the Winnipeg Police Service in the top right hand corner. The applicant shall:
- (a) Provide the original Criminal Record Search Certificate (Form P-253) to the Contract Administrator.
- D12.3 Prior to the commencement of any Work, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Criminal Record Search Certificate obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform Work.
- D12.4 Any individual for whom a Criminal Record Search Certificate is not provided, or for whom a Criminal Record Search Certificate indicates any convictions or pending charges related to property offences or crimes against another person, will not be permitted to perform any Work.
- D12.5 Any Criminal Record Search Certificate obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.
- D12.6 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated criminal records search. Any individual who fails to provide a satisfactory Criminal Record Search Certificate as a result of a repeated criminal records search will not be permitted to continue to perform any Work.

## **SCHEDULE OF WORK**

### **D13. COMMENCEMENT**

- D13.1 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.
- D13.2 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 D8;
    - (iv) evidence of the insurance specified in D9;
    - (v) the performance security specified in D10;
    - (vi) the Subcontractor list specified in D11; and
    - (vii) the security clearances specified in D12.
  - (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.
- D13.3 The Contractor shall not commence the Work on the Site before September 27, 2010.
- D13.4 The City intends to award this Contract by September 27, 2010.
- D13.4.1 If the actual date of award is later than the intended date, the dates specified for Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.



#### **D14. SUBSTANTIAL PERFORMANCE**

- D14.1 The Contractor shall achieve Substantial Performance by October 29, 2010.
- D14.2 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.
- D14.3 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.

#### **D15. TOTAL PERFORMANCE**

- D15.1 The Contractor shall achieve Total Performance by November 12, 2010.
- D15.2 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.
- D15.3 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.

#### **D16. LIQUIDATED DAMAGES**

- D16.1 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 one hundred dollars (\$100) per Working Day for each and every Working Day following the day fixed herein for Substantial Performance during which such failure continues.
- D16.2 The amount specified for liquidated damages in D16.1 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.
- D16.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

#### **CONTROL OF WORK**

##### **D17. JOB MEETINGS**

- D17.1 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.
- D17.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

**D18. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

D18.1 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**

**D19. PAYMENT**

D19.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

**FORM H1: PERFORMANCE BOND**  
(See D10)

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. 661-2010

ASBESTOS ABATEMENT – BASEMENT LEVEL OF THE 510 MAIN STREET ADMINISTRATION BUILDING

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 D10)

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

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 661-2010

ASBESTOS ABATEMENT – BASEMENT LEVEL OF THE 510 MAIN STREET ADMINISTRATION BUILDING

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)



## 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>Drawing No.</u>	<u>Drawing Name/Title</u>
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A-1	Basement Plan; Asbestos Location Administration Building
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#### E2. GENERAL AND RELATED WORK

- E2.1 Read this Section in conjunction with all drawings and all other Sections so as to comply with the requirements of the General Conditions of the Contract.
- E2.2 Site Conditions identifies the location and asbestos content of all known asbestos-containing materials (ACM) to be disturbed by Work of this Contract. The information provided is for general reference only. Each Contractor must confirm existing conditions on Site prior to Bid close.
- E2.3 This Section shall govern over all Work of the Contract which will, or may, disturb ACMs or surfaces or materials which may have been or become contaminated by ACM either during or prior to Work of this Contract.
- E2.4 It is the intent that Work performed as per this Section will result in the removal of all ACM and the decontamination of all surfaces or materials which may have been or become contaminated by ACM either during or prior to Work of this Contract.

#### E3. OUTLINE OF WORK

- E3.1 Supply all labour, material, plant and equipment necessary to safely execute and complete all Work of this contract.
- E3.2 Visit the Site prior to Bid close to confirm the location and extent of any asbestos-containing or asbestos-contaminated materials.
- E3.3 Protect surfaces, building fabrics and items remaining within the Asbestos Work Area.
- E3.4 Protect and maintain electrical, mechanical and other services passing through the Asbestos Work Area required to maintain such services in Occupied Areas. Isolate and protect remaining services. Failure to maintain designated services may result in serious disruption of the City's operations.



- E3.5 Isolate the Asbestos Work Area from adjoining spaces through the installation of specified hoardings, seals and enclosures at the perimeter of each phase or Work area.
- E3.6 Construct Worker and waste decontamination facilities at the perimeter of each phase or Work area.
- E3.7 Remove and dispose of textured ceilings throughout Phase I and Phase II Areas within the Basement of the building.
- E3.8 Cross hatched area of Drawing A-1 indicates removal of vinyl asbestos floor tile.
- E3.9 Remove and dispose of as asbestos-containing waste, building components, materials and items contaminated by asbestos that cannot be effectively cleaned.
- E3.10 Encapsulate remaining ACMs at locations where removal is deemed impractical by the Contract Administrator. Encapsulation will not be permitted where removal of building materials or structures scheduled for demolition will facilitate access to the asbestos materials in question.
- E3.11 Remove and dispose of pipewrap insulation on straight runs and fittings of mechanical services present within a Type 3 enclosure. Include fallen or dislodged debris and material present throughout the work area.
- E3.12 Remove and dispose of pipewrap insulation on straight runs and fittings of mechanical services present outside of a Type 3 enclosure. Include fallen or dislodged debris and material present throughout the work area.
- E3.13 Remove and dispose of the following as asbestos-containing waste:
- (a) Plaster or drywall ceilings, including associated items, grids, supports, hangers, furring and tracking.
  - (b) Electrical equipment and services, light fixtures, BX cable, conduit, wiring, receptacles, speakers and associated items, equipment, tracking, supports and hangers scheduled for demolition within the ceiling space at locations specified and/or identified on drawings.
  - (c) Flexible and rigid ductwork, air diffusers, air boots, associated insulation and other such items, equipment, tracking, supports and hangers from the diffuser back to the mixing box or main branch of the duct.
  - (d) Non-asbestos debris and rubble present throughout all areas of work that can not be successfully segregated from asbestos-containing or asbestos-contaminated materials.
- E3.14 Remove mixing boxes, clean and turn over to the City.
- E3.15 Final clean work area to remove visible signs of asbestos, other debris or settled dust.
- E3.16 Apply lock-down agent to exposed surfaces throughout the work area, and to surfaces from which any asbestos had been removed.

#### **E4. SITE CONDITIONS**

- E4.1 Texture coat on ceilings within the work area is known to contain Chrysotile asbestos.
- E4.2 Pipewrap insulation present on straight runs and fittings of mechanical services visually determined to be non-fibreglass located throughout the work area are to be treated, handled and disposed of as ACM unless labelled as Non-Asbestos Containing.
- E4.3 Immediately stop work in the area and notify the Contract Administrator should unexpected materials, or materials suspected of containing asbestos be encountered. Do not resume work in the area until it has been determined if the material encountered contains asbestos and authorization to resume work is given.

## **E5. SCHEDULE**

E5.1 Perform Work during following period:

- (a) Work shall commence as per D13.
- (b) Substantial Performance of the Work shall be achieved as per Clause D.14.1.
- (c) Normal Work hours.

E5.2 Work Hours:

- (a) Normal Work Hours: 08:00 through 17:00 (Mon. - Fri.).
- (b) Quiet Hours: As directed by the Contract Administrator.
- (c) **NOTE:** Duration for which HVAC systems may remain shut down to accommodate quiet hours. Work will vary in accordance with outside weather conditions and internal demand. Duration of quiet hours Work will have to be scheduled accordingly and in consultation with the Contract Administrator.

E5.3 Provide necessary manpower, supervision, equipment and materials to maintain and complete the project on schedule.

E5.4 Provide 48 hours written notice to the Contract Administrator of any request to work outside normal working hours. Obtain written approval before proceeding.

## **E6. REGULATIONS**

E6.1 Comply with Federal, Provincial, and local requirements, provided that in any case of conflict among those requirements or with these specifications, the more stringent requirements shall apply. Work shall be performed under regulations in effect at the time Work is performed.

## **E7. QUALITY ASSURANCE**

E7.1 Removal and handling of asbestos-containing or asbestos-contaminated materials is to be performed by persons trained in the methods, procedures and industry practices for Asbestos Abatement.

E7.2 Ensure Work proceeds to schedule, meeting all requirements of this specification.

E7.3 Complete Work so that at no time airborne dust, visible debris, or water runoff contaminate areas outside the Asbestos Work Area.

E7.4 Any contamination of surrounding area (indicated by visual inspection or air monitoring) shall necessitate the clean-up of affected area, and in the same manner applicable to an Asbestos Work Area at no cost to the City.

E7.5 All Work of this section involving electrical, mechanical, carpentry, glazing, etc., shall be performed by licensed persons experienced and qualified for the Work required.

## **E8. INSPECTION**

E8.1 From commencement of Work until completion of clean-up operations, the Contract Administrator is empowered by the City to inspect for compliance with the requirements of governing authorities, adherence to specified procedures and materials, and to inspect for final cleanliness and completion.

E8.2 The Contract Administrator is empowered by the City to order a shut down of Work when leakage of asbestos from the controlled Work area has occurred or is likely to occur.

E8.3 Any deviation from the requirements of the specifications or governing authorities that is not approved in writing may result in a stoppage of Work, at no cost to the City.

- E8.4 Additional labour or materials expended by the Contractor to rectify unsatisfactory conditions and to provide performance to the level specified shall be at no additional cost to the City.
- E8.5 Inspection and air monitoring performed as a result of Contractor's failure to perform satisfactorily regarding quality, safety, or schedule, shall be back-charged to the Contractor.
- E8.6 Facilitate inspection and provide access as necessary. Make good Work disturbed by inspection and testing at no cost to the City.
- E8.7 The following Milestone Inspections are to take place at defined points throughout the abatement operation specific to each phase or Work area:
- (a) Milestone Inspection A - Clean Site Preparation  
Inspection of Site preparations and set-up prior to contaminated Work.
  - (b) Milestone Inspection B - Contaminated Perimeter Preparation  
Inspection of contaminated preparations at perimeter of Asbestos Work Area.
  - (c) Milestone Inspection C - Before Bulk Removal  
Inspection of the Asbestos Work Area following contaminated Site preparations but prior to start of major asbestos removal.
  - (d) Milestone Inspection D - Visual Clearance  
Inspection of the Asbestos Work Area after removal of asbestos, but prior to application of lock-down agent.
  - (e) Milestone Inspection E - Air Monitoring Clearance  
Inspection & air monitoring after application of lock-down agent, but prior to removal of polyethylene from within the Asbestos Work Area.
  - (f) Milestone Inspection F - Dismantling Inspection  
Inspection after removal of polyethylene but prior to dismantling perimeter isolation and decontamination facility.
- E8.8 Provide 24 hours written notice to the Contract Administrator of any request for scheduling of milestone inspections or transportation of waste through Occupied Areas.
- E8.9 Do not proceed with next phase of Work until written approval of each milestone is received from the Contract Administrator.
- E9. AIR MONITORING**
- E9.1 Air monitoring will be performed using Phase Contrast Microscopy (PCM) following the National Institute for Occupational Safety and Health Method 7400.
- E9.2 Co-operate in the collection of air samples, including providing workers to wear sample pumps for up to full-shift periods. Contractor will be responsible for the cost of testing equipment repairs or resampling resulting from the actions of the Contractor's forces.
- E9.3 Results of PCM samples of 0.05 fibres per millilitre of air (fibre/mL) or greater, outside an Asbestos Work Area, will indicate asbestos contamination of these areas. Respond as follows:
- (a) Suspend Work within the adjoining Asbestos Work Area until written authorization to resume Work has been received from the Contract Administrator.
  - (b) Isolate and clean area in the same manner applicable to the Asbestos Work Area.
  - (c) Maintain Work area isolation, and repeat clean-up operations until visually inspected and air monitoring results are at a level equal to that specified.
  - (d) At the discretion of the Contract Administrator provide additional negative air units at locations specified in response to elevated fibre levels being detected in the clean change room or Occupied Areas.
- E9.4 Results of PCM samples in excess of 0.01 fibres per millilitre of air (fibre/mL), collected within the Asbestos Work Area enclosure after the Site has passed a visual inspection, and an

acceptable coat of lock-down agent has been applied, will indicate asbestos contamination of these areas. Respond as follows:

- (a) Maintain Work area isolation and re-clean entire Work area. Then apply another acceptable coat of lock-down agent to exposed surfaces throughout the Work area.
- (b) Repeat above measures until visually inspected and air monitoring results are at a level equal to that specified.

E9.5 Where results of PCM sampling exceed 20.0 fib/mL within a Type 3 Asbestos Work Area respond as follows:

- (a) Immediately stop Work within the Asbestos Work Area.
- (b) Instruct workers to exit the Asbestos Work Area via the worker decontamination facility while observing specified personnel exiting procedures.
- (c) Contractor's forces shall not re-enter the Asbestos Work Area for a period of 8 hours or until authorized by the Contract Administrator .
- (d) Upon re-entry to the Asbestos Work Area, mist the air, any fallen debris or exposed surfaces with amended water using an airless sprayer.

E9.6 Additional labour or materials expended by the Contractor to rectify unsatisfactory conditions and to provide performance to the level specified shall be at no additional cost to the City.

E9.7 Cost of additional inspection and sampling performed as a result of elevated fibre levels in areas outside the Asbestos Work Area or from within the Work area following completion of Work, will be back-charged to the Contractor.

## **E10. SUPERVISION**

E10.1 Provide on Site for each shift, supervisory personnel who has authority regarding all aspects related to manpower, equipment and production.

E10.2 Acceptance of supervisory personnel is subject to the City of Winnipeg.

E10.3 At all times during Work at risk of disturbing asbestos, the supervisory personnel must be on Site. Failure to comply with this requirement will result in a stoppage of all Work, at no cost to the City.

E10.4 Replace supervisory personnel, with approved replacements, within three (3) working days of a written request from the the City. The City reserves the right to request replacement of supervisory personnel without explanation.

E10.5 Do not replace supervisory personnel without written approval from the City.

## **E11. NOTIFICATION**

E11.1 Not later than ten (10) days before commencing Work on this project, notify in writing the local office of Manitoba Labour and Immigration, Workplace Safety and Health Division. Provide telephone notification again immediately prior to start of Work.

E11.2 Notify sanitary landfill site as per local requirements.

E11.3 Inform all trades on Site of the presence and location of ACMs identified in the contract documents.

## **E12. SUBMITTALS**

E12.1 Submit prior to starting Work:

- (a) Names and credentials of the supervisory personnel.

- (b) Proof that supervisory personnel have performed supervisory function on at least five (5) other asbestos projects of similar size and complexity.
- (c) Proposed schedule (prepared in chart format) detailing the following:
  - (i) Duration of Site preparation, contaminated preparation, removal, clean-up and Site dismantlement for each phase area.
  - (ii) Proposed average daily work force and shifting.
- (d) Shop drawings for each Asbestos Work Area detailing the following:
  - (i) Location of waste and worker decontamination facilities.
  - (ii) Any proposed deviation from specifications, procedures, or drawings.
  - (iii) Installation of negative air discharge panels.
- (e) Documentation including test results, fire and flammability data, samples, and Material Safety Data Sheets for chemicals or materials used in the course of the Asbestos Abatement project including or not limited to:
  - (i) Encapsulants.
  - (ii) Wetting agents.
  - (iii) Lock-down agent.
  - (iv) Rip-proof polyethylene.
  - (v) Polyurethane foam.
  - (vi) Chemicals or materials used in the course of asbestos abatement.
- (f) Negative air unit performance data and results of DOP tests as required.
- (g) Proof that all employees have been fit-tested for the respirator appropriate for the Work being performed.
- (h) Proof that all employees have had instruction on hazards of asbestos exposure, use of respirator and all aspects of Work procedures and protective measures.
- (i) Proof that all employees are listed on an Asbestos Work report and have been given required medical examinations.
- (j) Pre-removal survey of damage in all areas where asbestos abatement Work will take place or waste will be transported.
- (k) Copy of notification to governing authorities of commencement of Work.

E12.2 Submit completed Waste Manifest forms at completion of Work.

### **E13. WORKER PROTECTION**

#### **E13.1 General**

- (a) Instruct workers before allowing entry to the Asbestos Work Area. Instruction shall include training in use of respirators, dress, showering, entry and exiting from an Asbestos Work Area, and all other aspects of Work procedures and protective measures.
- (b) Workers shall not eat, drink, smoke or chew gum or tobacco except in established locations outside the Asbestos Work Area.
- (c) Workers shall be fully protected at all times when possibility of disturbance of asbestos exists.
- (d) Provide and post at access points to the Asbestos Work Area, the procedures described under Worker Protection.

#### **E13.2 Respiratory Protection**

- (a) During wet removal and cleaning of asbestos-containing or asbestos-contaminated materials within a Type 3 enclosure, supply and use at a minimum, full face-piece powered air purifying positive pressure dust respirators with HEPA filters.

- (b) During dry removal, or if fibre levels within the Work enclosure exceeds permissible levels for use of PAPR during wet removal, supply and use Type C, pressure demand supplied air respirators with full face-piece and egress filters. Ensure workers exiting the enclosure do not disconnect their respirators from supply air hose until they have entered the shower stall.
- (c) During Site teardown, supply and use negative pressure non-powered half-face respirators equipped with HEPA cartridge filters.
- (d) Workers applying polyurethane foam shall wear full face respirators with organic vapour cartridges. Dispose of cartridges after each shift.
- (e) Provide and ensure the use of respiratory equipment appropriate for the Work being performed for persons who are required to enter the Asbestos Work Area.
- (f) Respiratory protective devices shall be certified by the National Institute of Occupational Safety and Health (NIOSH) or other testing agency acceptable to governing authorities.
- (g) Maintain respiratory equipment in proper functioning and clean condition or remove from Site.
- (h) Respiratory equipment shall be identified with permanent markings with current list of persons utilizing such equipment displayed in a clean area on Site.
- (i) Filters used shall be tested following each use in accordance with manufacturer's specifications or replaced at the following minimum frequency:
  - (i) Replace cartridge filters for negative pressure respirator every 16 hours of wear unless tested on-Site.
  - (ii) Replace PAPR cartridge filters every 8 hours of wear unless tested on Site.
  - (iii) Mark filters for rotation and regular replacement. Once worn in an Asbestos Work Area filters may not be removed from the project Site except for disposal.
- (j) Ensure that no person required to enter an Asbestos Work Area has facial hair which affects the seal between respirator and face.
- (k) Store respirators, and tested filters that will be reused, in an established clean area on Site. Charge batteries in this area.

#### E13.3 Protective Clothing and Equipment

- (a) All personnel required to enter the Asbestos Work Area must use disposable full body coveralls with attached head covering. Once coveralls are worn, treat and dispose of as asbestos-contaminated waste.
- (b) Use hard hats, safety shoes and other protective apparel required by applicable construction safety regulations.

#### E13.4 Asbestos Abatement Work Area Entry Procedures

- (a) Remove street clothes in clean change room.
- (b) Put on respirator with new or tested filters, coveralls, and head covers in clean change room or clean side of Shower Room.
- (c) Store street clothes, uncontaminated footwear, towels, etc., in clean change room.

#### E13.5 Asbestos Abatement Work Area Exit Procedures

- (a) Remove gross contamination from protective clothing using a HEPA vacuum or by wet wiping.
- (b) Proceed to equipment and access room and remove all contaminated clothing and equipment except respirator.
- (c) Store contaminated footwear, hard hats, etc., in equipment and access room.
- (d) Proceed naked to showers while still wearing respirator.

- (e) Shower, cleaning outside of respirator with soap and water. Thoroughly wet body, head and hair, remove respirator and wash body, head and hair. Wet clean inside of respirator face-piece.
- (f) Remove filters for testing or dispose of in container provided for this purpose on the clean side of the shower. Store respirators in this area after leaving the shower but prior to entering the clean change room.
- (g) Proceed to the clean change room, dry off and dress in street clothing.

#### **E14. VISITOR PROTECTION**

- E14.1 Provide clean protective clothing, equipment and approved respirators to Authorized Visitors.
- E14.2 Instruct Authorized Visitors in the use of protective clothing, respirators, and Asbestos Work Area entry and exit procedures.
- E14.3 Maintain one (1) emergency access kit (equipped with respirator, protective clothing, etc.) at each access point to Asbestos Work Area for use by the City or authorized visitors.

#### **E15. SIGNAGE**

- E15.1 Work Area Signs: Post signs in both official languages at access points to the Asbestos Work Area. Where possible, provide signage immediately prior to entering Asbestos Work Area but out of public view. Letters on signs shall be in upper case "HELVETICA MEDIUM" and read as follows:
  - (a) CAUTION (25 mm high).
  - (b) Asbestos Hazard Area (19 mm high).
  - (c) Unauthorized Entry Prohibited (19 mm high).
  - (d) Wear Assigned Protective Equipment (19 mm high).
  - (e) Breathing Asbestos Dust May Cause Serious Bodily Harm (19 mm high).
- E15.2 Container Signs: Label containers for the disposal of asbestos as follows:
  - (a) CAUTION CONTAINS ASBESTOS FIBRES (25 mm high).
  - (b) Do Not Mishandle (19 mm high).

#### **E16. WASTE AND MATERIAL HANDLING**

- E16.1 Provide the City with a copy of each completed waste transportation manifest verifying the safe transportation of waste to an authorized disposal site.
- E16.2 Asbestos-containing or asbestos-contaminated materials removed during the Work shall be treated, packaged, transported and disposed of as asbestos-contaminated waste.
- E16.3 Materials that could tear or puncture a 6 mil (0.15mm) polyethylene bag shall be packaged and disposed of in sealed rigid waste containers specified.
- E16.4 Redundant non-ACMs, rubble and debris removed during contaminated Work shall be treated, packaged, and disposed of as asbestos-contaminated waste. With written approval of the Contract Administrator non-porous materials may be cleaned, sprayed with a sealer and disposed of as clean waste.
- E16.5 Transportation of all waste and materials through Occupied Areas of the building is limited to quiet hours along predetermined routes and must be covered or placed within unmarked carts. Clean-up waste routes and loading area after each load. Use asbestos abatement precautions if appropriate or requested by the Contract Administrator .

E16.6 Garbage bins shall be dropped at designated locations and shall remain covered and enclosed (locked) while at the building Site.

E16.7 Pick-up and drop off of garbage bin(s) shall be at pre-approved times, and must not interfere with building operations.

#### **E17. DIFFERENTIAL PRESSURE MONITORING**

E17.1 Provide and install differential pressure monitors at the perimeter of each Asbestos Work Area enclosure at two (2) locations chosen by the Contract Administrator. Replace damaged or non-functional equipment upon discovery.

E17.2 Record data twice daily during contaminated Work on the standard form.

E17.3 Maintain specified differential pressure.

E17.4 Stop contaminated Work and take corrective action if pressure differential drops below the specified level. Notify the Contract Administrator immediately.

#### **E18. RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

E18.1 Re-establish objects and items relocated by the Contractor's workforce to facilitate Work.

E18.2 Re-establish electrical, communication, HVAC and other services previously disconnected or otherwise isolated to accommodate Work by this section.

E18.3 Make good at completion of Work, all damage not identified in pre-removal survey.

#### **E19. DUMP MONITORING**

E19.1 Co-operate with the Department of Conservation inspectors and immediately carry out instructions for remedial Work at dump, at no additional cost to the City.

E19.2 Ensure each shipment of containers is accompanied by a representative who will supervise dumping of containers and ensure all guidelines and regulations are followed.

E19.3 Equip each shipment of containers with full personal protective equipment and tools required to properly clean-up spilled asbestos in the case of a failure in an Asbestos Waste Container.

### **PRODUCTS AND FACILITIES**

#### **E20. MATERIALS AND EQUIPMENT**

E20.1 Materials and equipment must be in good condition and free of asbestos, asbestos debris, and fibrous materials. Disposable items must be of new materials only.

E20.2 Asbestos Waste Container: Impermeable container acceptable to Ministry of the Environment and disposal site. Labelled as required, comprised of the following:

- (a) A sealed 6 mil (0.15 mm) polyethylene bag, inside a second 6 mil (0.15 mm) sealed polyethylene bag.
- (b) A sealed 6 mil (0.15 mm) polyethylene bag, positioned inside or outside a rigid sealed container of sufficient strength to prevent perforation of the container during filling, transportation and disposal.

E20.3 Differential Pressure Monitor: Acceptable Product: Magnehelic gauge (Cat. No. 2000-00) manufactured by Dwyer Instruments Inc. Available through E. H. Price Ltd., 638 Raleigh Street, Winnipeg, Manitoba.

E20.4 Ground Fault Panel: Electrical panel equipped as follows:



- (a) Ground fault circuit interrupters of sufficient capacity to power temporary electrical equipment and lights in Asbestos Work Area.
  - (b) Interrupters to have a 5 mA ground fault protection.
  - (c) Necessary accessories including main switch disconnect, ground fault interrupter lights, test switch to ensure unit is working, and reset switch.
  - (d) Openings sealed to prevent moisture or dust penetration.
- E20.5 HEPA Vacuum: Vacuum with necessary fittings, tools and attachments. Discharged air must pass through a HEPA filter.
- E20.6 Lock-down Agent: Sealant for purpose of trapping residual dust and shall be capable of withstanding surface temperature of substrate. Product must be compatible with replacement materials and must have flame spread and smoke development ratings of less than 50 and shall leave no stain when dry. Acceptable product: Serpiflex Shield or approved equal.
- E20.7 Negative Air Exhaust Ducting (Flexible): Airtight tubing with metal reinforcement or approved equal. Mechanically affixed each exhaust duct to the unit's exhaust with metal hose clamp. Diameter of duct to equal negative air discharge. Acceptable product: Thermalflex S-LP 10 flexible ducting as manufactured by Flexible Technologies.
- E20.8 Negative Air Unit: Portable air handling system which extracts air directly from the Asbestos Work Area and discharges air to exterior of building. Equipped as follows:
- (a) Pre-filter and HEPA filter. Air must pass HEPA filter before discharge.
  - (b) Pressure differential gauge to monitor filter loading.
  - (c) Auto shut off and warning system for HEPA filter failure.
  - (d) Separate hold down clamps to retain HEPA filter in place during change of pre-filter.
- E20.9 Polyethylene Sheeting: 6 mil (0.15 mm) minimum thickness unless otherwise specified, in sheet size to minimize joints.
- E20.10 Polyurethane Foam: Slow expanding one component foamed-in place polyurethane rigid insulation. Foam must have acceptable fire and smoke development ratings or be removed at completion of Work.
- E20.11 Protective Coveralls: Disposable full body coveralls complete with hoods. Acceptable material: Tyvek coveralls or approved equal.
- E20.12 Rip-Proof Polyethylene Sheeting: 8 mil (0.20 mm) fabric made up from 5 mil (0.13 mm) weave and two (2) layers of 1.5 mil (0.05 mm) poly laminate or approved equal. In sheet size to minimize on-Site seams and overlaps.
- E20.13 Shower Hose: Water lines for supply of hot & cold water to shower facilities to be rated for use at 200 psi (1380 kPa) or twice the working pressure whichever is greater. Supply lines to be continuous and free of fittings, joints or couplings. Acceptable Product: No. 71-92 Daco; as available from MacMor Industries, Winnipeg, Manitoba.
- E20.14 Sprayer: Airless sprayer capable of providing a fine mist or spray while maintaining sufficient velocity to penetrate surface of ACM through to substrate without blowing loose the material as it is being wetted.
- E20.15 Wetting Agent: Non-sudzing surface active agent. Acceptable product: Aqua-Gro or approved equal.
- E21. HOARDING WALLS**
- E21.1 Walls separating an Asbestos Work Area from an Occupied Area or another Work area shall be constructed as follows:

- (a) Lower Perimeter Hoarding Wall: 2" x 4" (50 mm x 100 mm) wood or metal studs at 16" (400 mm) o/c with continuous sill and top plate, covered with one (1) layer of polyethylene sheeting on each side of wall. Install 1/2" (12 mm) plywood over exterior polyethylene where wall is exposed to Occupied Areas. Use good-one-side 1/2" (13 mm) paint plywood (minimum two (2) coats) at locations where exposed to non-construction areas. Colour of paint to be selected by the City.
- (b) Upper Perimeter Hoarding Wall: 2" x 4" (50 mm x 100 mm) wood or metal studs at 16" (400 mm) o/c with continuous sill and top plate, covered with two (2) layers of polyethylene sheeting on Work area side. Frame to be anchored to underside of structure and extend down to top of ceiling or top of wall/hoarding wall at Site perimeter. This wall shall be constructed so as to remain intact when the wall below is removed. Install wall under contaminated conditions. Use rip-proof polyethylene at locations where exposed to non-construction areas.
- (c) Exterior Hoarding Wall: Construct as per lower perimeter hoarding wall using exterior grade painted plywood (colour of paint to be selected by the Contract Administrator).

## **E22. DECONTAMINATION FACILITIES**

### **E22.1 Workers' Decontamination Facility**

- (a) A decontamination facility comprised of four (4) linked rooms, an Equipment and Access Room, a Shower Room, a Respirator Storage Room, and a clean change room. Rooms, Occupied Areas and Asbestos Work Areas, shall be separated by curtained doorways at each door.

### **E22.2 Equipment and Access Room: Room between Shower Room and Asbestos Work Area. Minimum requirements as follows:**

- (a) Waste receptor for contaminated clothing or equipment not to be reused.
- (b) Storage facilities for any personal protective equipment to be reused in Asbestos Work Areas.
- (c) Minimum size of 48 square feet (4.5 square metres).

### **E22.3 Shower Room: Room between Respirator Storage Room and Equipment and Access Room. Minimum requirements as follows:**

- (a) One (1) walk through shower unit for every six (6) workers.
- (b) Provide a constant supply of hot and cold water, controllable at each shower. Water supply must be sufficient to provide water at a minimum temperature of 40 °C (maximum 50 °C) in a volume required for all workers to properly decontaminate.
- (c) Terminate water supply runs at individual hot and cold shut-off valves located on clean side of Shower Room. Connect shower to these valves.
- (d) Provide sump pumps, sufficient for volume of waste water being discharged from showers and drip pans. Direct waste shower water to sanitary sewer drains.
- (e) Provide power switch adjacent to each shower for operating sump pumps.
- (f) Provide soap, shampoo and clean towels to workers and authorized visitors.

### **E22.4 Respirator Storage Room: Room between the Shower Room and the clean change room. Minimum requirements as follows:**

- (a) Install ground faulted power supply, hooks and shelves on clean side of shower for storage of respirators and recharging of batteries as required.
- (b) Provide 6 mil poly waste container for disposal of respirator cartridge filters.
- (c) Minimum room size of 48 square feet (4.5 square metres).

### **E22.5 Clean Change Room: Room between the Respirator Storage Room and Occupied Areas. Minimum requirements as follows:**

- (a) Provide lockers or hangers for workers' street clothes and personal belongings.
- (b) Provide and install a vented wood door in wood frame at doorway to Occupied Area. Door must have locking passage. Provide three (3) keys to the Contract Administrator.
- (c) Provide and install temporary water heater for showers where required.
- (d) Minimum size of 64 square feet (5.9 square metres).

**E22.6 Waste and Equipment Decontamination Facility**

- (a) Waste and equipment decontamination facility comprised of three (3) linked rooms: a Container Cleaning Room, a Holding Room and a Transfer Room. Purpose of this system is to provide a means to decontaminate drums, scaffolding, asbestos waste containers, vacuum, spray equipment, other tools, equipment and materials required in the Asbestos Work Area. Rooms, Occupied Areas and Asbestos Work Areas, shall be separated by curtained doorways at each door.

**E22.7 Container Cleaning Room:** Room between Asbestos Work Area and Holding Room of sufficient size to allow proper washing of equipment and waste containers or double-bagging of asbestos waste. All wash water shall be treated as asbestos-contaminated waste. Minimum size of 48 square feet (4.5 square metres).

**E22.8 Holding Room:** Room between Container Cleaning Room and Transfer Room, of sufficient size to accommodate at least two (2) rigid waste containers or largest item of equipment used. Minimum size of 48 square feet (4.5 square metres).

**E22.9 Transfer Room:** Room between Holding Room and Occupied Area, acting as an airlock for the transfer of waste. At doorway to Occupied Area, provide and install a vented wood door in wood frame. Door must have locking passage set or hasp and lock. Provide three (3) keys to the Contract Administrator. Minimum size of 48 square feet (4.5 square metres).

**E23. CONSTRUCTION OF DECONTAMINATION FACILITIES**

**E23.1 Floor:**

- (a) Lay one (1) sheet of rip-proof polyethylene over floor area that will be covered by decontamination facility prior to erecting wall framing.
- (b) Turn 24" (600 mm) of rip-proof polyethylene up the outside of the decontamination facility and overlap with the polyethylene sheeting covering the exterior perimeter wall.
- (c) In the Container Cleaning Room, Equipment and Access Room, Holding Room, Transfer Room, Respirator Storage Room, and clean change room, cover floor with a second layer of rip-proof polyethylene overlapped and sealed to the polyethylene sheeting on the walls.
- (d) In Shower Room, provide a 40" (1000 mm) wide x 108" (2700 mm) long x 6" (150 mm) deep sealed drip pan below shower stall and extending 36" (900 mm) into Shower Room on both sides of the shower stall. Install a wooden duck-board walking surface over drip pan on both sides of the shower stall.
- (e) In the Container Cleaning Room, provide a 6" (150 mm) deep sealed drip pan of sufficient size to allow proper washing of equipment and waste containers while containing all wash water. Cover drip pan with duck-board walking surface.

**E23.2 Perimeter Walls:**

- (a) 2" x 4" (50 mm x 100 mm) wood framing at 16" (400 mm) o/c with continuous top and sill plates.
- (b) Cover interior of wall with one (1) layer of polyethylene sheeting.
- (c) Install 1/2" (13 mm) plywood sheeting over lower 48" (1200 mm) of interior polyethylene sheeting in waste and equipment decontamination facility.

- (d) For perimeter walls exposed to Asbestos Work Area, cover exterior of framing with 1/2" (13 mm) plywood sheathing caulked and sealed at joints then cover plywood with one (1) layer rip-proof polyethylene.
- (e) For perimeter walls exposed to the Occupied Area, install a layer of polyethylene directly over the framing, and cover with 1/2" (13 mm) plywood sheathing. Use good-one-side 1/2" (13 mm) painted plywood (minimum two (2) coats) at locations where exposed to non-construction areas. Colour of paint to be selected by the Contract Administrator.

#### E23.3 Interior Walls:

- (a) Construct walls to separate the rooms of the decontamination facilities using 2" x 4" (50 mm x 100 mm) wood framing at 24" (600 mm) o/c with continuous top and sill plates.
- (b) Cover walls with one (1) layer of polyethylene sheathing on each side. Install 1/2" (13 mm) plywood sheathing over rip-proof polyethylene sheathing on lower 48" (1200 mm) of the waste and equipment decontamination facility.

#### E23.4 Roof:

- (a) Size of joists is to be determined by span. For spans up to 10 feet (3.3 meters) use as a minimum 2" x 6" (50 mm x 150 mm) wood joist at 16" (400 mm) o/c with continuous 2" x 6" (50 mm x 150 mm) headers.
- (b) Where roof is exposed to the Asbestos Work Area, cover joists with 3/4" (20 mm) plywood sheathing, caulked and taped at all joints. Cover plywood with two (2) layers of rip-proof polyethylene. One (1) layer to extend continuously over rip-proof polyethylene on the perimeter walls.
- (c) Where roof is exposed to the Occupied Area, install a layer of polyethylene directly over joists. Cover polyethylene with good-one-side 1/2" (13 mm) painted plywood (minimum two (2) coats) at locations where roof of facility is visible to building occupants in non-construction areas. Colour of paint to be selected by the Contract Administrator.
- (d) At underside of joist install one (1) layer of polyethylene.
- (e) Minimum interior clear height 6' - 6" (2.0 m) to underside of joist.

#### E23.5 Curtained Doorway:

- (a) Install two (2) flap doors, full width and height of door opening at all doors between chambers, facilities and Asbestos Work Area.
- (b) Construct each flap door of two (2) layers of rip-proof polyethylene sheathing with all edges tape reinforced. Use wood strapping to securely fasten flap doors to head and alternate jambs.
- (c) Weight each flap to ensure automatic closure.
- (d) Provide direction arrows on flaps to indicate opening.

### **E24. CLEAN SITE PREPARATION**

- E24.1 Moving of equipment, tools, supplies, and stored materials which can be performed without disturbing ACMs will be performed by others.
- E24.2 Erect hoarding walls between Asbestos Work Area and Occupied Areas.
- E24.3 Pre-clean all surfaces using HEPA vacuum or damp cloth prior to installing protection.
- E24.4 Erect worker and waste decontamination facilities at locations approved by the Contract Administrator.
- E24.5 Pressure test water supply lines to the decontamination facilities in place using compressed air methods. Lines must be tested at a minimum of 200 psi (1380 kPa) or twice the working pressure which ever is greater. Test must confirm lines as having maintained specified pressure

with no significant drop having occurred over a period of not less than 1 hour as witnessed by the Contract Administrator.

- E24.6 Provide one (1) specified ground fault electrical panel for each 1,000 square feet (300 square metres) of Asbestos Work Area. All electrical apparatus including temporary heating equipment shall be supplied from a ground fault system. Ensure safe installation of electrical lines and equipment by skilled tradesmen.
- E24.7 Install temporary lighting in all Work areas at levels that will provide for a safe and efficient use of the Work area - minimum 550 LUX.
- E24.8 Where Site Conditions permit the isolation of existing power supply within the Asbestos Work Area without disturbance of asbestos ensure existing power supply to Work area is isolated at panel, tagged, disconnected or grounded where necessary. Power supply to remaining areas of building must not be disrupted during work of this Section.
- E24.9 Maintain fire alarms, sensors and detectors operational. Provide necessary protection without hampering the detection ability of this system.
- E24.10 Establish negative pressure within the Asbestos Work Areas as follows:
- (a) Provide negative air units in place sufficient to maintain specified airflow and pressure differential between contaminated Asbestos Work Area and Occupied Areas.
  - (b) Distribute negative air units evenly throughout Site.
  - (c) Provide weighted flaps in perimeter seal to provide make-up air.
  - (d) Operate negative pressure units continuously from completion of Clean Site Preparation until start of final dismantlement.
  - (e) Replace pre-filters frequently to maintain specified flow.
  - (f) Replace HEPA filter as required to maintain flow rate and integrity of unit.
  - (g) Install and make airtight all negative air discharge ducting. Use rigid sheet metal ductwork in Occupied Areas (painted in non-construction areas). Colour of paint to be selected by the City.
  - (h) Install in-line booster fans along the length of discharge ducting wherever Site conditions require negative air unit discharge to be directed over distances greater than 12 m (40 ft). Position booster fans so as to avoid any disruption to operations in Occupied Areas.
  - (i) Leak test in place using DOP Method, negative pressure units which discharge directly into Occupied Areas.
  - (j) Discharge into Occupied Areas only with written approval of the Contract Administrator.
- E24.11 Install negative air discharge panels as follows:
- (a) Remove existing windows or doorways where necessary and replace with a 3/4" (18 mm) painted plywood panel (colour to match frame).
  - (b) Install panel securely in window or door frame and make weather-tight with caulking (colour to match frame).
  - (c) For each negative pressure unit, provide a 12" (300 mm) diameter, screened, duct opening through panel.
  - (d) Provide exterior ducting as required to ensure negative air units do not discharge within 5 metres of building access points in use by building occupants or fresh air intakes. Direct discharge away from building access points or fresh air intakes.
  - (e) Reinstall windows or doorways upon completion of Work.
  - (f) Submit shop drawing for conditions encountered.
- E24.12 Independently seal below ceiling openings to Work area using polyethylene, tape, caulking, polyurethane foam, etc., including but not limited to windows, doors, vents, diffusers, etc.

- E24.13 Seal openings in floor using plugs, tape, caulking, rip-proof polyethylene, etc. Floor openings are to be sealed independently prior to installation of floor polyethylene. Include floors of duct and service shafts.
- E24.14 Pre-clean with HEPA vacuum and make watertight all electrical trenches and headers located in floor of Work area using caulking and tape. Cover entire plate or panel with two (2) layers of independently sealed rip-proof polyethylene. Install so as to overlap plate or panel edges by minimum of 6".
- E24.15 Maintain emergency and fire exits from Asbestos Work Area, or establish alternative exits satisfactory to Provincial Fire Marshall and local authorities having jurisdiction. Maintain extra routes from Occupied Areas. Place emergency exit signs at locations so as to clearly mark exit route. Seal emergency exit door so as not to impede use of door during emergency evacuation.
- E24.16 Install battery powered emergency lights so as to:
- (a) Light exit routes through Asbestos Work Area.
  - (b) Light worker emergency exits from Asbestos Work Area.
  - (c) Provide lighting throughout Asbestos Work Area upon loss of power to ground fault panel.
- E24.17 Provide a fire extinguisher at each emergency exit in the decontamination facilities. Protect extinguishers with polyethylene in a manner that will not hamper use in an emergency.
- E24.18 Install polyethylene and plywood so as to protect surfaces in the Asbestos Work Area that may be damaged. Carefully protect finishes that are scheduled to remain in place.
- E24.19 Install minimum two (2) layers of rip-proof polyethylene (independently sealed) on floor surfaces. Extend floor protection a minimum of 12" (300 mm) up all vertical surfaces in the Work area.
- E24.20 On existing Work area walls forming the perimeter of the building, install one (1) layer of rip-proof polyethylene.
- E24.21 On existing Work area walls adjacent to Occupied Areas, install two (2) layers of independently supported polyethylene.
- E24.22 Install one (1) layer polyethylene on interior walls within the Work area and exterior perimeter walls of the building.
- E24.23 At junction of floor and wall surface overlap floor polyethylene with wall polyethylene by a minimum of 150 mm at each layer. One (1) layer of wall polyethylene must always overlap the top layer of floor polyethylene.
- E24.24 For hoarding walls exposed to the Asbestos Work Area; install polyethylene as specified in Paragraph E23 - Hoarding Walls.
- E24.25 Stagger or offset seams of polyethylene wherever multiple layers are used and ensure each layer is independently sealed.
- E24.26 Provide required tools, equipment, vacuums and asbestos waste receptacles within the Asbestos Work Area.
- E24.27 Post required signs at all access points to the sealed Asbestos Work Area.
- E24.28 Schedule and obtain written approval of Milestone Inspection A (Clean Site Preparation) before proceeding.

## **E25. CONTAMINATED PERIMETER PREPARATION**

- E25.1 Where Site preparations as outlined in Paragraph E27 above may result in the disturbance of asbestos or asbestos-contaminated materials, complete this Work (Contaminated Perimeter Preparation) during Quiet Hours after shutting down HVAC systems affecting the Work area.
- E25.2 Proceed with Contaminated Perimeter Preparation while utilizing full personal protective procedures and equipment, amended water and HEPA vacuums.
- E25.3 Prior to commencement of, and throughout Contaminated Perimeter Preparation, complete frequent smoke testing to ensure air movement at perimeter of the Work area and at service shafts, etc., is flowing inward into the Asbestos Work Area.
- E25.4 If smoke testing indicates there is insufficient air movement, stop Work and immediately notify the Contract Administrator.
- E25.5 Provide additional negative air units as required to ensure proper air flow.
- E25.6 Repeatedly mist the air throughout the performance of this Work while maintaining surfaces within the Asbestos Work Area in a damp state.
- E25.7 Remove sections of tile, plaster or drywall ceilings, grids or other obstructions to access ducts, shafts and perimeter decking, to complete required isolation, seals and/or installation of hoarding walls.
- E25.8 Remove ceilings in sections equal to the Work that can be performed in one shift.
- E25.9 Isolate HVAC or exhaust systems which terminate within the Asbestos Work Area as follows:
- (a) Isolate ductwork as close as possible to perimeter of Asbestos Work Area.
  - (b) Cap ducts with metal of gauge equal to sheet metal being capped.
  - (c) Seal seams of cap with duct sealant, tape and polyethylene sheeting.
  - (d) Seal openings in dormant ductwork using polyethylene and tape.
  - (e) If ducts are to be reactivated, smoke test seal immediately upon system reactivation. Reseal and retest as required.
- E25.10 Where required to install Upper Perimeter Hoarding to complete isolation proceed as follows:
- (a) Drape polyethylene drop sheet a minimum of 36" (915 mm) out over ceiling tiles at perimeter of Asbestos Work Area beneath line of removal.
  - (b) At locations where sprayed or trowel applied materials are present saturate and remove a line of asbestos 12" (300 mm) wide from surface of deck and beams.
  - (c) Remove asbestos following wet removal techniques and place directly into waste container. Do not allow material removed to fall to the floor.
  - (d) Use HEPA vacuum at all times adjacent to point of removal and for cleaning.
  - (e) Install hoarding progressively as Work advances.
- E25.11 Isolate and identify remaining electrical and communication systems within the Asbestos Work Area. Systems and services required to remain live are to be clearly tagged LIVE by a qualified electrician.
- E25.12 Seal holes in existing perimeter walls, columns, deck, etc. exposed by removal of ceiling at perimeter of Asbestos Work Area.
- E25.13 Cover perimeter walls, shafts, etc. adjacent to Occupied Areas exposed by removal of ceilings at perimeter of Asbestos Work Area with two (2) layers polyethylene. Cover other perimeter and interior walls with one (1) layer of polyethylene.

E25.14 Schedule and obtain written approval of Milestone Inspection B (Contaminated Perimeter Preparation) before proceeding.

## **E26. CONTAMINATED SITE PREPARATION**

E26.1 Repeatedly mist the air throughout the performance of this Work while maintaining surfaces within the Asbestos Work Area in a damp state.

E26.2 Isolate HVAC or exhaust systems which are required to remain active within or through the Asbestos Work Area as follows:

- (a) Isolate systems that remain active during quiet hours while systems are deactivated.
- (b) Clean outside of duct and fully seal outside of duct or equipment using duct sealant, tape and two (2) layers rip-proof polyethylene so as to make air tight.
- (c) Cap opening in duct present in the Asbestos Work Area using metal of gauge equal to sheet metal being capped. Seal seams of cap with duct sealant, tape and polyethylene sheeting so as to make air tight.
- (d) Smoke test seals regularly and maintain.
- (e) Include in this preparation all ductwork and equipment presently insulated with asbestos-containing products.

E26.3 Maintain fire alarms, sensors and detectors operational. Provide necessary protection without hampering the detection ability of this system.

E26.4 Remove or protect remaining equipment or surface mounted fixtures scheduled to be reused or turned over to the City which could not be completed previously without the disturbance of ACM.

E26.5 Remove remaining drywall, tile, plaster or other ceiling systems including associated items, grids, supports, hangers, furring and tracking. Cut hangers back to within 15 mm of clip or insert.

E26.6 Seal holes or penetrations in deck, shafts, walls, columns, ducts, etc. when exposed by ceiling removal.

E26.7 Temporarily support existing electrical, communication and mechanical services, temporary lighting and items previously supported by the ceiling systems.

E26.8 Pre-clean then protect in place using polyethylene and tape remaining mechanical equipment, ducting and piping scheduled to remain that can not be readily cleaned following completion of Work.

E26.9 Protect electrical and communication systems, etc. scheduled to remain with polyethylene and tape. Include all communication, coaxial, triaxial, fire and public address systems, wiring, conduit, speakers, heat and smoke detectors, alarms, lights, equipment and instrumentation including junction boxes, speakers, thermostats, etc.

E26.10 Ensure protection of pneumatic control lines located in Asbestos Work Area. Notify the Contract Administrator if lines are damaged prior to or during Work of this section.

E26.11 Following isolation and identification of electrical and communication systems, remove electrical equipment, services, light fixtures, BX cable, conduit, wiring, receptacles, speakers and associated items, equipment, tracking, supports and hangers scheduled for demolition.

E26.12 Remove mechanical equipment and services, flexible and rigid ductwork, air diffusers, mixing boxes, air boots, associated insulation and other such items, equipment, tracking, supports and hangers scheduled for demolition.



- E26.13 Remove and dispose of localized sections of walls, partitions and bulkheads scheduled for demolition at locations required to facilitate access for asbestos removal. Include with the above, top course (400 mm) of hollow and solid masonry walls within the Asbestos Work Area scheduled to remain.
- E26.14 Sequence the above Work at times approved by the Contract Administrator. Do not demolish any existing walls that form the perimeter of the Asbestos Work Area without the expressed written permission of the Contract Administrator.
- E26.15 Schedule and obtain written approval of Milestone Inspection C (Before Bulk Removal) before proceeding.

## **E27. MAINTENANCE OF CONTAMINATED ASBESTOS WORK AREA**

- E27.1 Maintain enclosures in tidy condition and free of dislodged asbestos or other debris.
- E27.2 Ensure Asbestos Abatement Work Area enclosures, barriers, and polyethylene linings are effectively sealed and taped. Repair damage and remedy defects immediately.
- E27.3 Visually inspect enclosures at beginning and end of each working period. Inspection must be performed by overall superintendent or supervisory personnel.
- E27.4 Inspect negative air units including discharge ducting at beginning and end of shift.

## **E28. MAINTENANCE OF DECONTAMINATION FACILITIES**

- E28.1 Maintain access to decontamination facilities in a locked state when not being used for worker access, egress, or waste and equipment movement.
- E28.2 Maintain and clean decontamination facilities at the following frequency:
- (a) Thoroughly clean worker decontamination facility at beginning and end of each shift change.
  - (b) Clean equipment and waste facility on a frequent basis during waste or equipment removal and at the completion of each shift.
- E28.3 Visually inspect decontamination facilities at beginning and end of each working shift. Inspection must be performed by overall supervisor or shift supervisor.

## **E29. WET REMOVAL OF ASBESTOS**

- E29.1 Proceed with selective demolition of mechanical and electrical equipment, building components, materials and items scheduled for demolition at locations required to facilitate access to concealed ACMs.
- E29.2 Ensure any non-asbestos debris or rubble generated during this selective demolition is removed from the immediate area prior to commencement of any asbestos removal.
- E29.3 This Section shall remain responsible for the clean-up and disposal of all debris or rubble not able to be successfully segregated from asbestos-containing or asbestos-contaminated materials during the selective demolition as completed by this Section.
- E29.4 In areas of wet removal of spray or trowel applied material, spray asbestos with amended water using airless spray equipment. Saturate asbestos to prevent release of airborne fibres during removal. Fully saturated asbestos may be scraped directly into waste containers or may be allowed to fall to floor.
- E29.5 Remove asbestos-containing mechanical insulation scheduled for removal in layers, while maintaining exposed surfaces of insulation or lagging in a wet condition. Where necessary

puncture surface of insulation to thoroughly saturate asbestos. Full saturation of insulation will not be required if material is immediately bagged and not allowed to fall to floor.

- E29.6 All dislodged debris and fibres shall be maintained in wet state and placed in waste containers for disposal as Work progresses and at the end of each shift.
- E29.7 Repeatedly mist the air throughout the performance of this Work while maintaining surfaces within the Asbestos Work Area in a damp state.
- E29.8 Remove as directed by the Contract Administrator, non-operating mechanical services, ducting, ceiling structures or similar items, obstructions and sections of walls at service shafts, chases and cavities as required to remove ACMs.
- E29.9 Following completion of gross asbestos removal Work, perform the following:
- (a) Wet clean all surfaces from which asbestos has been removed with stiff bristle brushes, vacuums, wet-sponges etc. to remove visible residue and fibrous materials.
  - (b) Wet clean all other surfaces in the Asbestos Work Area, including the decontamination facilities, equipment, surfaces of polyethylene sheeting, floor and walls surfaces, ducts and similar items not covered with polyethylene sheeting.
  - (c) Remove all wash water as contaminated waste.
  - (d) Repeat final cleaning procedures until the Work area is at a standard of cleanliness acceptable to the Contract Administrator.
- E29.10 As Work progresses, and at regular intervals, transport sealed and labelled asbestos waste containers from the Asbestos Work Area to an authorized waste disposal site.
- E29.11 Remove and dispose of as asbestos-contaminated waste the pre-filters from all negative air units.
- E29.12 Schedule and obtain written approval of Milestone Inspection D (Visual Clearance) before proceeding.

### **E30. WASTE AND MATERIAL HANDLING**

- E30.1 Removal of waste containers and decontaminated equipment and materials from the Asbestos Work Area shall be performed using the waste decontamination facility as follows:
- (a) Prior to entering the waste decontamination facility Container Cleaning Room, the first worker (fully protected inside the Asbestos Work Area) shall remove any visible gross asbestos contamination from the surface of the item being removed from the Asbestos Work Area.
  - (b) The first worker then passes the item to a second worker located in the Container Cleaning Room. The second worker then wet sponges, cleans, double bags and/or wraps and seals the item prior to passing the item through the curtained doorway to a third worker in the Holding Room. (The second and third worker shall be fully protected with respirator and disposable clothing and may only leave the decontamination facility via the Asbestos Work Area).
  - (c) Without entering the Transfer Room, the third worker then passes the item through the curtained doorway to a fourth worker located within the Transfer Room.
  - (d) The fourth worker then removes the item from the Transfer Room and transports it to the disposal bin. (The fourth worker must never enter the Holding Room.)

### **E31. APPLICATION OF LOCK-DOWN AGENT**

- E31.1 Obtain the Contract Administrator's written authorization to proceed prior to applying lock-down agent.

- E31.2 Paint surfaces from which ACM has been removed with a heavy coat (two (2) passes) of lock-down agent.
- E31.3 Apply one (1) coat of lock-down agent as required to cover all other surfaces in the Asbestos Work Area, including all polyethylene and surfaces scheduled for demolition.
- E31.4 Restrict access to Asbestos Work Area and operate negative air units for a 12 hour period prior to Milestone Inspection E (Air Monitoring Clearance).
- E31.5 Schedule and obtain written approval of Milestone Inspection E (Air Monitoring Clearance) before proceeding.

## **E32. ASBESTOS WORK AREA TEARDOWN AND DISMANTLING**

### **E32.1 Teardown**

- (a) Continue to restrict access by other trades, unauthorized personnel, etc., to the Asbestos Work Area, until approval of Milestone Inspection F (Dismantling Inspection) is obtained.
- (b) Maintain perimeter seals, decontamination facilities and negative air unit(s) fully functional until approval of Milestone Inspection F (Dismantling Inspection) is obtained.
- (c) Ensure use of half-face respirators with high efficiency filters and disposable clothing, during teardown and removal of asbestos-contaminated polyethylene, tape, foam pack, caulking and enclosures from Asbestos Work Area.
- (d) Phase the removal of polyethylene, tape, polyurethane foam, caulking and enclosures from the Asbestos Work Area so as to maintain perimeter isolation as long as possible.
- (e) Remove polyethylene sheeting from wall and floor surfaces by rolling it inwardly onto itself.
- (f) While removing the top layer of polyethylene sheeting from surfaces protected by two (2) layers of polyethylene sheeting, cut the lower layer of polyethylene sheeting so as to expose the baseboards, window sills, cabinets, shelves and other horizontal surfaces that may be contaminated by fallen ACM.
- (g) Visible fibres or residue found during removal of polyethylene shall be immediately removed using a HEPA vacuum or damp cloth.
- (h) Place polyethylene, tape, cleaning material, clothing and other contaminated waste in containers and dispose of as asbestos waste.

### **E32.2 Clean up**

- (a) Equipment used in contaminated Asbestos Work Area shall be washed to remove asbestos contamination, or double bagged for transportation prior to being removed from Asbestos Work Areas, via waste and equipment decontamination facility.
- (b) Seal vacuum, hoses and fittings, and all tools used in contaminated Work Site in 6 mil polyethylene bags prior to removal from Work Area.
- (c) Clean-up Asbestos Work Area, decontamination chambers, and all other surfaces that may be contaminated. Remove polyethylene protection from floor surfaces within the decontamination chambers at this time.
- (d) Wash and mop with clean water all surfaces in the Asbestos Work Area.
- (e) Schedule and obtain written approval of Milestone Inspection F (Dismantling Inspection) before proceeding.

### **E32.3 Dismantling**

- (a) Hoarding walls, platforms, scaffolding, tunnels, etc., used to separate Occupied Areas from Asbestos Work Area, are to remain in place until completion of Work in the area by other trades or until authorized to be remove by the Contract Administrator.

- (b) Remove from the area decontamination facilities, temporary lights, ground fault panels, negative pressure units and all other equipment located within the Work area not scheduled to remain.
- (c) Immediately upon shutting down negative air units, seal air inlet grill, ducting and exhaust vent with polyethylene tape. Dispose of unit pre and intermediate filters as asbestos-contaminated waste.
- (d) Damp mop and clean Occupied Areas following completion of dismantlement.

### **E33. GLOVEBAG ABATEMENT**

#### **E33.1 Materials and Equipment**

- (a) Glove Bag: Single use prefabricated, 0.25 mm (10 mil) minimum thickness polyvinylchloride bag with integral 0.25 mm (10 mil) thick polyvinylchloride gloves and elasticized ports. Bag must be equipped with reversible double-pull double-throw zipper to facilitate progressive movement along pipe and also be equipped with interior zip and straps for sealing ends of bag around pipe. Acceptable product: Safe-T-Strip manufactured by Asbesguard Equipment Inc., in configurations suitable for work.
- (b) Knife: Knife with fully retractable blade for use inside glove bag.
- (c) Securing Straps: For glove bag, reusable nylon straps at least 1" wide with metal tightening buckle for sealing ends of bags around pipe and insulation.
- (d) Sprayer: Garden reservoir type, low velocity, capable of producing mist or fine spray.

### **E34. PREPARATION**

- E34.1 Submit pre-removal damage survey to the Contract Administrator.
- E34.2 Moving of equipment, tools, supplies, and stored materials which can be performed without disturbing asbestos will be performed by others.
- E34.3 Segregate Asbestos Work Area use by closing doors, placing of barricades or tape barriers, etc., at the perimeter of each phase or work area.
- E34.4 At locations where the Asbestos Work Area will remain visible to other trades or building occupants, provide a second line of barricades, tape barriers, etc., a minimum of 20 feet (6 m) apart to form a buffer zone adjacent to each Asbestos Work Area.
- E34.5 Isolate or otherwise shutdown HVAC system, vents and diffusers located within the Asbestos Work Area.
- E34.6 Provide required tools, equipment, vacuum, materials and waste receptors within the established Asbestos Work Area.
- E34.7 Post required signs in all areas where access to the Asbestos Work Area is possible.
- E34.8 Do not commence contaminated work until authorized by the Contract Administrator.

### **E35. MAINTENANCE OF CONTAMINATED WORK AREA**

- E35.1 Maintain work area in a clean and tidy state.
- E35.2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.

### **E36. PIPE INSULATION REMOVAL**

- E36.1 Prior to start of work, ensure work area has been isolated with tape barriers, saw-horses, or other barriers, posted with notices marking the area as asbestos removal area site and that authorization to proceed has been received from the Contract Administrator.
- E36.2 Provide polyethylene drop sheet under piping where damaged or unjacketed insulation is present.
- E36.3 Spray surface of damaged jacketing with mist of amended water then tape over area of damage to provide temporary repair.
- E36.4 Mist areas of insulation with no jacketing and wrap with polyethylene.
- E36.5 Clean surface of pipe or minor amounts of fallen or damaged insulation by HEPA vacuuming or by damp wiping.
- E36.6 Place tools necessary to remove insulation in tool pouch then zip bag onto pipe and seal ends of bag with cloth securing straps. For valve glove bags, seal valve cover with wire tie or equivalent.
- E36.7 Place hands into gloves and use necessary tools to remove insulation from pipe.
- E36.8 Arrange insulation in bag to obtain full capacity of bag.
- E36.9 Roll jacketing carefully to minimize the possibility of ripping or puncturing bags.
- E36.10 Insert nozzle of spray pump into bag through valve and wash down pipe and interior of bag thoroughly. Alternate use of each hand to aid washing process.
- E36.11 Wet surface of insulation in lower section of bag and any exposed end of asbestos insulation remaining on pipe.
- E36.12 If bag is to be removed from pipe for use at a new location, seal closure strip from inside of bag then insert nozzle of HEPA vacuum into valve opening and evacuate air from balance of bag. Re-install and seal in new location before re-opening closure strip. Repeat insulation removal operation.
- E36.13 If bag is to be moved along the same pipe, insert nozzle of HEPA vacuum into valve opening and evacuate air from bag prior to loosening holding straps then carefully move bag along length of pipe and re-seal to pipe using double-pull zipper to pass hangers. Repeat insulation removal operation.
- E36.14 Should the glove bag become ripped, cut or opened in any way, cease work and repair opening before continuing work. If the rip, cut or opening cannot be easily repaired, dispose of as contaminated waste and replace with new.
- E36.15 Spilled material must be cleaned up using a HEPA vacuum immediately upon discovery.
- E36.16 To remove bag after completion of insulation removal or as each bag is filled:
  - (a) Wash top section of glove bag and tools thoroughly.
  - (b) Place tools in one hand (glove), then pull out inverted, twist to create a separate pouch, tape inverted hand at two (2) separate locations 1" apart to seal pouch.
  - (c) Remove inverted glove and tools by cutting between the two (2) tape seals.
  - (d) Place inverted glove and tools into the next clean glove bag to be used or into a water bucket, open pouch underwater and clean tools and then allow to dry.
  - (e) Insert nozzle of HEPA vacuum into valve opening and evacuate air from bag. Remove nozzle from valve opening and seal over end of valve with tape.
  - (f) Pull a 6 mil polyethylene bag over glove bag before removing from pipe.

- (g) Remove securing straps, unfasten zipper and place sealed glove bag into a sealed 6 mil polyethylene bag so as to create an asbestos waste container.

- E36.17 Ensure newly exposed section of pipe is free of residue before resuming removal work or leaving the area. If necessary, after removal of each section of asbestos, vacuum all surfaces of pipe, using HEPA filtered vacuum equipment or wet wipe with damp cloth.
- E36.18 Before completion of shift, seal surfaces of exposed pipe with lock-down agent to seal any residual fibres.
- E36.19 Cover exposed ends of remaining asbestos insulation with heavy coat of bridging encapsulant.
- E36.20 Label mechanical systems as specified to identify location at which removal of ACM has been completed under work of this Contract.
- E36.21 Remove drop sheet and dispose of as contaminated waste.

**E37. SITE DISMANTLEMENT AND CLEAN-UP**

- E37.1 Following completion of work within each separate Asbestos Work Area, and again at the completion of each work shift, inspect the work area to ensure required removal and clean-up have been completed and the area is free of any visible signs of asbestos or other debris. Inspection must be completed by Shift Superintendent.
- E37.2 Schedule and obtain written approval of Milestone Inspection E (Air Monitoring Clearance) before proceeding with the removal of all barricades, etc.