



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 747-2012**

**SUPPLY AND DELIVERY OF A NITROGEN GENERATOR**

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## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 SUPPLY AND DELIVERY OF A NITROGEN GENERATOR

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, October 17, 2012.

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. ENQUIRIES**

B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

B3.2 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 promptly notify the Contract Administrator of the error, discrepancy or omission at least five (5) Business Days prior to the Submission Deadline.

B3.3 If the Bidder is unsure of the meaning or intent of any provision therein, the Bidder should request clarification as to the meaning or intent prior to the Submission Deadline.

B3.4 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.

B3.5 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.

B3.6 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

### **B4. ADDENDA**

B4.1 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.

B4.2 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.

B4.2.1 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/bidopp.asp>

B4.2.2 The Bidder is responsible for ensuring that he/she 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.

B4.3 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.

## **B5. SUBSTITUTES**

- B5.1 The Work is based on the materials, equipment, methods and products specified in the Bid Opportunity.
- B5.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B5.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least seven (7) Business Days prior to the Submission Deadline.
- B5.4 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 material, equipment, method or product 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 Contract;
  - (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 Contract.
- B5.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her 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.
- B5.6 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.
- B5.6.3 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/she wishes to inform.
- B5.7 If the Contract Administrator approves a substitute as an "approved equal", any Bidder may use the approved equal in place of the specified item.
- B5.8 If the Contract Administrator approves a substitute as an "approved alternative", any Bidder bidding that approved alternative may base his/her 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 B13.
- B5.9 No later claim by the Contractor for an addition to the price(s) because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B5.10 Notwithstanding B5.2 to B5.9, and in accordance with B6.7, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B13.1(a).

## **B6. BID SUBMISSION**

- B6.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
  - (b) Form B: Prices.
- B6.2 Further to B6.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B5.
- B6.3 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.
- B6.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B6.5 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
- B6.5.4 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.
- B6.6 Bidders are advised not to include any information/literature except as requested in accordance with B6.1.
- B6.7 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 B13.1(a).
- B6.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204-949-1178.
- B6.8.5 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B6.9 Bids submitted by internet electronic mail (e-mail) will not be accepted.

## **B7. BID**

- B7.1 The Bidder shall complete Form A: Bid, making all required entries.
- B7.2 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/her own name, his/her 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/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

- B7.2.6 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B7.2.
- B7.3 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.
- B7.4 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/her 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 and the corporate seal, if the corporation has one, should be affixed;
  - (d) if the Bidder is carrying on business under a name other than his/her 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.
- B7.4.7 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B7.5 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.

## **B8. PRICES**

- B8.1 The Bidder shall state the lump sum price in Canadian funds for the Work on Form B: Prices.
- B8.1.8 The price on Form B: Prices shall include:
- (a) duty;
  - (b) freight and cartage;
  - (c) Provincial and Federal taxes except the Goods and Services Tax (GST) and Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable and all charges governmental or otherwise paid;
  - (d) profit and all compensation which shall be due to the Contractor for the Work and all risks and contingencies connected therewith.
- B8.2 Payment of the lump sum price will be made to the Contractor in accordance with the payment schedule set out in D11.

## **B9. QUALIFICATION**

- B9.1 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, or if the Bidder does not carry on business in Manitoba, in the jurisdiction where the Bidder does carry on business; 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.
- B9.2 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>

B9.3 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);

B9.4 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.

B9.5 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.

## **B10. OPENING OF BIDS AND RELEASE OF INFORMATION**

B10.1 Bids will not be opened publicly.

B10.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements or evaluated prices) 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>

B10.3 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>

B10.4 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.

## **B11. IRREVOCABLE BID**

B11.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.

B11.2 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.

## **B12. WITHDRAWAL OF BIDS**

B12.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B12.1.9 Notwithstanding C21, 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.

- B12.1.10 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.
- B12.1.11 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 B12.1.11(b), declare the Bid withdrawn.
- B12.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B11.2 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.

### **B13. EVALUATION OF BIDS**

- B13.1 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 therefrom (pass/fail);
  - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B9 (pass/fail);
  - (c) Total Bid Price;
  - (d) economic analysis of any approved alternative pursuant to B5;
- B13.2 Further to B13.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission 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.
- B13.3 Further to B13.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.
- B13.4 Further to B13.1(c), the Total Bid Price shall be the lump sum price shown on Form B: Prices.

### **B14. AWARD OF CONTRACT**

- B14.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B14.2 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.
- B14.2.12 Without limiting the generality of B14.2, 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.

B14.3 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 B13.

B14.3.13 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

B14.4 Notwithstanding C4 and Paragraph 5 of Form A: Bid, the City will issue a purchase order to the successful Bidder in lieu of the execution of a Contract.

B14.5 The Contract Documents, as defined in C1.1(n) (ii), in their entirety shall be deemed to be incorporated in and to form a part of the purchase order notwithstanding that they are not necessarily attached to or accompany said purchase order.

## **PART C - GENERAL CONDITIONS**

### **C0. GENERAL CONDITIONS**

- C0.1 The *General Conditions for the Supply of Goods* (Revision 2008 05 26) are applicable to the Work of the Contract.
- C0.1.14 The *General Conditions for the Supply of Goods* 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 Supply of Goods*.

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

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

D1.1 In addition to the *General Conditions for the Supply of Goods*, 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 the supply and delivery of a nitrogen generator.

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

D3.1 The Contract Administrator is:

John Amos  
Wastewater Treatment Plant Supervisor  
2230 Main Street  
Winnipeg MB R2V 4T8  
Telephone No.: (204) 986-4845  
Facsimile No.: (204) 986-4809

#### **D4. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE**

D4.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractors own use, or for the use of any third party.

D4.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D4.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;

- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
- (b) the Contract, all deliverables produced or developed; and
- (c) any statement of fact or opinion regarding any aspect of the Contract.

D4.4 A Contractor who violates any provision of D4 may be determined to be in breach of Contract. Notices.

#### **D5. NOTICES**

D5.1 Notwithstanding C21.3, 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

## SUBMISSIONS

### D6. AUTHORITY TO CARRY ON BUSINESS

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

## SCHEDULE OF WORK

### D7. COMMENCEMENT

- D7.1 The Contractor shall not commence any Work until he/she is in receipt of a notice of award from the City authorizing the commencement of the Work.
- D7.2 The Contractor shall not commence any Work until:
- (a) the Contract Administrator has confirmed receipt and approval of:
    - (i) evidence of authority to carry on business specified in D6;
    - (ii) evidence of the workers compensation coverage specified in C6.16;
  - (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

### D8. DELIVERY

- D8.1 Goods shall be delivered within one hundred twelve (112) Calendar Day(s) of the award of contract, f.o.b. destination, freight prepaid to:
- Marc Goovaerts  
North End Water Pollution Control Centre  
2230 Main Street  
Winnipeg MB
- D8.2 Goods shall be delivered between 8:00 a.m. and 3:30 p.m. on Business Days.

## MEASUREMENT AND PAYMENT

### D9. INVOICES

- D9.1 Further to C10, the Contractor shall submit an invoice for each order delivered to:
- The City of Winnipeg  
Corporate Finance - Accounts Payable  
4th Floor, Administration Building, 510 Main Street  
Winnipeg MB R3B 1B9
- Facsimile No.: (204) 949-0864  
Email: [CityWpgAP@winnipeg.ca](mailto:CityWpgAP@winnipeg.ca)
- D9.2 Invoices must clearly indicate, as a minimum:
- (a) the City's purchase order number;
  - (b) date of delivery;
  - (c) delivery address;
  - (d) type and quantity of goods delivered;

- (e) the amount payable with GST and MRST shown as separate amounts; and
- (f) the Contractor's GST registration number.

D9.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.

D9.4 Bids Submissions must be submitted to the address in B6.5.

**D10. PAYMENT**

D10.1 Further to C10, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

**D11. PAYMENT SCHEDULE**

D11.1 Further to C10, payment shall be in accordance with the following payment schedule:

- (a) Seventy five percent (75%) on delivery of the nitrogen generator and associated components;
- (b) Five percent (5%) on delivery of the spares;
- (c) Ten percent (10%) on the successful start-up and commissioning of the nitrogen generator;
- (d) Five percent (5%) on the delivery of the Operation and Maintenance Manual;
- (e) Five percent (5%) on the provision of Operation and Maintenance Manual Training.

**WARRANTY**

**D12. WARRANTY**

D12.1 Warranty is as stated in C11.

## **PART E - SPECIFICATIONS**

### **GENERAL**

#### **E1. APPLICABLE SPECIFICATIONS AND DRAWINGS**

- E1.1 These Specifications shall apply to the Work.
- E1.2 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B5.

#### **E2. NITROGEN GENERATOR ASSEMBLY**

- E2.1 Nitrogen Generator assembly complete with air compressor and integral refrigerant dryer, air receiver, premium filtration package with drain valves, economiser valve, membrane separator, purity controller, nitrogen receiver, pressure safety valves, manual valves, no-loss condensate drain, oil and water separator, nitrogen analyzer system, hand held nitrogen analyzer, check valve, vent valve, pressure gauges, pressure transmitter for Nitrogen tank, interconnecting piping, instrument tubing, all shop assembled (one or two skids), tested, and factory test run. Acceptable Product

- (a) The following product are acceptable:
- (i) Pneumatech PMNG series Nitrogen Generator;

- E2.3 The Contractor shall include all items, accessories and services that are usual or necessary to complete the work, but which may not have been specifically mentioned herein.

- E2.4 Applicable Codes and Standards

- (a) The following codes, standards and regulations in force on the closing date of the Bid Opportunity shall apply to the work:
- (i) National Building Code of Canada
  - (ii) Canadian Electrical Code
  - (iii) CSA B51 Boiler, Pressure Vessel, and Pressure Piping Code.
  - (iv) American Society of Mechanical Engineers (ASME)  
Boiler and Pressure Vessel Code Section VIII, Division 1, Pressure Vessels
  - (v) ASME B16.11 Forged Fittings, Socket-Welding and Threaded
  - (vi) ASME B31.3 Process Piping
  - (vii) ASTM A53/A53M Standard Specification for Pipe, Steel, Black and Hot-dipped, Zinc-coated Welded and Seamless
  - (viii) ASTM A181/A181M Standard Specification for Carbon Steel Forgings for General Purpose Piping.
  - (ix) Manitoba Workplace Safety & Health
  - (x) Guards to OSHA 29 CFR 1910
  - (xi) CSA Standard Z432-04, Safeguarding of Machinery.
  - (xii) Welding to CSA and AISC as applicable
  - (xiii) Steel Structures Painting Code (SSPC)
  - (xiv) CSA C22.1 Canadian Electrical Code - Part I
  - (xv) CSA C22.2, No. 100 Motors and Generators
  - (xvi) CSA Z107.51 Procedure for In-Situ Measurement of Noise from Industrial Equipment

- E2.5 Identification

- (a) Provide stainless steel nameplates attached to the nitrogen generator and air compressor listing the Manufacturer, Model, Serial No., rated capacity, and other pertinent data.

- (b) Provide stainless steel nameplates attached to the air receiver and nitrogen receiver listing the Manufacturer, Model, Serial No., Year Built, Size, CRN, MAWP, Corrosion Allowance, ASME "U" Stamp, and other pertinent data.

## E2.6 Submittals

- (a) Submit the following after award and prior to delivery of the products:
  - (i) Submit shop drawings / general arrangement drawings of nitrogen generator package assembly including air compressor, air receiver, filtration package, economiser valve, membrane separator, purity controller, nitrogen receiver, no-loss drain, and oil and water separator for review prior to fabrication.
  - (ii) Submit performance data for air compressor, filters, and nitrogen generator.
  - (iii) Submit ASME U-1A and U-4 forms for pressure vessels
  - (iv) Submit ASME Section VIII calculations for pressure vessels
  - (v) Submit NDE test results
  - (vi) Submit hydro-test reports
  - (vii) Submit shop drawings for overpressure relief devices including documents showing registration with local authority (CRN Manitoba), make and model number, and serial number.
  - (viii) Submit complete details regarding power requirements, including all motor ratings.
  - (ix) Submit wiring diagrams of all status and alarm contacts.
  - (x) Submit Installation, Operating and Maintenance (IOM) manual, complete parts list, and list of recommended spare parts.
  - (xi) Provide one (1) set of submittals in electronic format (.pdf).

## E2.7 Design Conditions

- a) The equipment shall be designed and constructed to meet the following service conditions and minimum performance parameters:
  - (i) Environment: nitrogen generator unit to be installed inside the NEWPCC Nitrogen Removal Facility exhaust fan room, which has an electrical classification of unclassified.
  - (ii) Elevation (Winnipeg, Manitoba, Canada): 235 m above sea level.
  - (iii) Ambient temperature, interior: 5 to 40 degrees C.
  - (iv) Duty: nitrogen generator shall be designed for heavy duty, continuous operation 24 hours per day.
  - (v) Compressor Electrical Power Supply: 575 Volts, 3 Phase, 60 Cycles.
  - (vi) N2 Generator Electrical Power Supply: None required.
  - (vii) Drain Valves Power Supply: 115 Volts, 1 Phase, 60 Cycles
  - (viii) Service: on-site nitrogen generation for padding of methanol tanks.
  - (ix) Nitrogen Generator Requirements
    - Capacity: 2.5 Nm<sup>3</sup>/hr (90 scfh) minimum
    - Purity: 98% (Nitrogen and inert gases)
    - Design Temperature: 25 °C
    - Design Pressure at Membrane: 7 bar (101.5 psig)
  - (x) Air Compressor Requirements
    - Maximum Working Pressure: 10.3 bar (150 psig)
    - Capacity (Free Air Delivery): 28 m<sup>3</sup>/h (ISO 1217, Annex C) minimum
    - Dryer: Built-in refrigerant dryer
    - Motor Size (kW): By Contractor

- (xi) Air Receiver Requirements
  - Maximum Allowable Working Pressure: 13.8 bar (200 psig)
  - Hydro-test pressure: 17.9 bar (260 psig)
  - Min. Design Metal Temperature: -29 °C (-20 °F)
  - Max. Design Metal Temperature: 204 °C (400 °F)
  - Size: 230 litres (60 US gallons) minimum
  - Corrosion Protection: Exterior coating
  - Corrosion allowance, interior: 1.6 mm (0.0625 inches) or 0 mm (0.0 inches) if coated
  - Corrosion allowance, exterior: 0 mm (0.0 inches)
  - Pressure Safety Valve (PSV) set pressure: 11.4 bar (165 psig)
  
- (xii) Nitrogen Receiver Requirements
  - Maximum Allowable Working Pressure: 13.8 bar (200 psig)
  - Hydro-test pressure: 17.9 bar (260 psig)
  - Min. Design Metal Temperature: -29 °C (-20 °F)
  - Max. Design Metal Temperature: 204 °C (400 °F)
  - Size: 757 litres (200 US gallons) minimum
  - Corrosion Protection: Exterior coating
  - Corrosion allowance, interior: 1.6 mm (0.0625 inches) or 0 mm (0.0 inches) if coated
  - Corrosion allowance, exterior: 0 mm (0.0 inches)
  - Pressure Safety Valve (PSV) set pressure: 11.4 bar (165 psig)

#### E2.8 Equipment Arrangement

- (a) Nitrogen generator may be packaged as one complete skid or as two skids with the air compressor as one and the nitrogen generator as the other.
- (b) Air compressor to be mounted onto horizontal air receiver tank.
- (c) Nitrogen generator to be mounted to vertical nitrogen receiver tank.
- (d) Arrangement of filtration equipment to be coordinated with site conditions to provide easy access for installation and maintenance.
- (e) Oil and water separator to be shipped loose.

#### E2.9 Air Compressor Skid

- (a) Air Compressor
  - (i) The compressor shall be oil cooled, positive displacement, rotary screw type.
  - (ii) Air cooled unit designed for ambient temperatures to 46 °C.
  - (iii) Built-in refrigerant dryer with water separator and electronic automatic drain.
  - (iv) Inlet air filter to be 99.9% efficient at 3 microns and above.
  - (v) Air end to consist of high efficiency asymmetric profiled, precision machined rotors, within a housing made from high quality, close grain cast iron. Taper roller thrust and roller bearings.
  - (vi) Direct drive arrangement with motor specifically designed for the torque, speed, and horsepower characteristics of the compressor and have a 1.25 service factor.
  - (vii) Sound enclosure with sound attenuation covering entire unit. Multiple quick release latched panels. Sound level to be less than 80 dBa at one meter.
  - (viii) Compressor to utilize rigid steel piping, flexible connectors and nylon tubing as necessary to provide vibration-free operation. Pipes and fittings to be plated for corrosion resistance. Compressor, after manufacturing and assembly, shall be



100% inspected and tested to provide a piping system which minimizes potential leaks and maintenance.

- (ix) Compressor to be mounted onto horizontal air receiver tank.
  - (x) Control of the compressor is to be managed by a microprocessor based controller. The compressor shall be capable of pressure set points at 1 psig increments and operator adjustable bandwidth. The control system is to include safety controls, operational instruction, data feedback, capacity control, operational control, and maintenance and service information. Information displays to include current status, energy status, calibration routines, warning messages, and alarms.
  - (xi) CSA or cUL approved.
- (b) Air Receiver Tank
- (i) Horizontal air receiver tank with mild steel supports for anchorage to concrete floor.
  - (ii) CRN for Manitoba
  - (iii) Factory installed compressed air piping between compressor and tank.
  - (iv) Pressure gauge.
  - (v) Threaded inlet, outlet, and drain connections.
  - (vi) Manual isolation valve at discharge.
  - (vii) Drain piping, manual isolation valve, and fittings as required for connection to no-loss drain.
  - (viii) Automatic electronic no-loss drain.
  - (ix) Pressure Safety Valve (PSV), capacity rated for compressor output, CRN (Manitoba)
  - (x) Exterior finish: shop primed, and finish coat painted.
  - (xi) Interior finish: epoxy painted, or uncoated if corrosion allowance is provided in accordance with E2.7(xi).
- (c) Premium Filtration Package
- (i) 6 stage filtration for high level of membrane protection and low pressure drop.
  - (ii) 2-stage initial high efficiency pre-filter complete with automatic no-loss drain.
  - (iii) 3<sup>rd</sup>-stage instrument grade coalescing filter complete with electronic no-loss drain.
  - (iv) 4<sup>th</sup>-stage carbon bed (minimum 2 kg carbon pellets) to capture all oil vapour passing stages 1 to 3.
  - (v) Final stages (5 and 6) include 2-stage high efficiency dust filter with manual drain valve.
  - (vi) All factory assembled, with interconnecting piping and supports.
  - (vii) Maximum pressure drop (new condition) across all filters to be 34 kPa gauge (5 psig).
  - (viii) Provide differential pressure gauges or alternative means to signal when filters require replacement.
- (d) No-loss Condensate Drain
- (i) Provide automatic condensate drain for air receiver.
  - (ii) Unit designed for electronic level-controlled discharge of condensate without loss of compressed air.
  - (iii) Should the unit fail to operate properly, and alarm shall be generated and be indicated by a flashing a red LED. An alarm relay shall be provided for optional remote indication. While in the Alarm mode, the unit shall open periodically to discharge condensate.
  - (iv) 115 Volt, 1 Phase, 60 Cycles
  - (v) CSA or cUL approved
  - (vi) CRN for Manitoba
  - (vii) Product standard: Bekomat Model 31/32

E2.10 Nitrogen Generator Skid (May be combined into one skid with air compressor)

- (a) Energy economizer valve installed upstream of nitrogen generator, starts and stops the flow of compressed air to the membranes based on nitrogen receiver pressure.
  - (i) Fully pneumatic operation, operator adjustable operating range
  - (ii) Supply and install pneumatic tubing from nitrogen receiver to the economizer valve including manual isolation valve, and fittings as required.
- (b) Membrane Separator
  - (i) Membrane technology to separate oxygen and other small molecules in a compressed air stream from nitrogen and other large inert gas molecules.
  - (ii) Painted steel cabinet, mounted to nitrogen receiver tank. Large service access door. Air supply and nitrogen discharge pressure gauges mounted in front panel.
  - (iii) Nitrogen purity controller (95 to 99.9%), with operator adjustable screw, installed in the nitrogen discharge piping.
  - (iv) Valve mounted in nitrogen discharge line for checking purity with the hand held nitrogen analyzer.
  - (v) Check valve installed in the nitrogen discharge line.
- (c) Nitrogen Analyzer System
  - (i) Battery operated nitrogen analyzer unit mounted in front panel of nitrogen generator.
  - (ii) On/off button, with auto shutoff to conserve battery life.
  - (iii) Calibrate button and 3-way valve allows operator to calibrate the sensor, and monitor the nitrogen content of the discharge stream.
- (d) Portable Nitrogen analyzer
  - (i) Nitrogen analyzer with hose and chuck for connection to sampling valves.
  - (ii) LED display
- (e) Nitrogen Receiver Tank
  - (i) Vertical air receiver tank with mild steel base ring assembly for anchoring to concrete floor.
  - (ii) CRN for Manitoba
  - (iii) Lifting lugs.
  - (iv) Factory installed piping between nitrogen generator and tank.
  - (v) Pressure gauge.
  - (vi) Threaded connections for inlet, outlet, PSV, pressure transmitter, and purge vent.
  - (vii) Manual isolation valve at discharge.
  - (viii) Valve mounted in discharge line for checking purity with the hand held nitrogen analyzer.
  - (ix) Vent piping, manual isolation valve, and fittings as required for purging air from receiver during start-up.
  - (x) Pressure Safety Valve (PSV), capacity rated for compressor output, CRN (Manitoba), with piping from PSV discharge to within 450 mm of the floor.
  - (xi) Exterior finish: shop primed, and finish coat painted.
  - (xii) Interior finish: epoxy painted, or uncoated if corrosion allowance is provided in accordance with E2.7(xii).

E2.11 Oil-Water Separator

- (a) Condensate enters through mufflers and depressurizes in the expansion chamber. Emulsified oil water mixture enters the first chamber and sweeps through an oleophilic filter. The filter gradually sinks as it gets more saturated with oil. A level stick indicates when the oleophilic filter requires replacement. Partially cleaned condensate flows to a second chamber. The second chamber contains a disposable filter containing activated carbon pellets to capture any remaining oil, and discharges purified water to a floor drain.

- (b) No electrical power required.
- (c) CRN for Manitoba
- (d) Product standard: Pneumatech OWS-75 or approved equal.

## E2.12 Instrumentation

### E2.12.15 Pressure Transmitter

- (a) Connection: Nitrogen Receiver Tank
- (b) Process Gas: Nitrogen
- (c) Process Pressure Range: 0 – 1380 kPa
- (d) Process Connection: 12mm (1/2") NPT
- (e) Output Signal: 4 – 20mA + HART
- (f) Measured Pressure Range: 0 – 1000 kPa
- (g) Power Supply: Loop Powered, 2-wire
- (h) Electrical Connection: Screw Terminal, 12mm (1/2") NPT
- (i) Local Indicator: Required - LCD
- (j) Accuracy:  $\pm 0.1\%$  full scale
- (k) Approvals:
  - (i) CSA or equivalent
  - (ii) CRN for Manitoba
- (l) Class of Product: Industrial Grade
- (m) Mounting: Provide brackets as required for tank mounting.
- (n) Acceptable Products:
  - (i) Endress and Hauser
  - (ii) Siemens
  - (iii) Rosemount
  - (iv) or approved equal in accordance with B5.

### E2.13 Inspection

- (a) The Contractor is responsible for the testing and inspection of all materials and work in accordance with this specification and all applicable codes, laws, and regulations.
- (b) The Contractor shall submit all applicable inspection, testing, and quality control procedures for approval.
- (c) The Contractor shall notify the Contract Administrator prior to the start of fabrication, and when components are completed and ready for final inspection and tests. The City reserves the right for its authorized representative to inspect the equipment at any time during their fabrication to assure that materials and workmanship are in accordance with this Specification and applicable Codes.

### E2.14 Preparation for Shipment

- (a) Surfaces shall be free from all contaminants including moisture, dirt, grease, and rust;
- (b) All items shall be suitably protected from damage during shipping and handling;
- (c) Bolts and nuts shall be coated with a suitable thread lubricant to prevent galling;
- (d) All bolting and other parts shall be suitably packaged and identified to avoid loss or damage during shipment;
- (e) Nitrogen Generator shall not be released for shipment without the approval of the Contract Administrator.

### **E3. SPARE PARTS**

#### **E3.1 Spare Parts**

- (a) Provide the following spare parts:
  - (i) One (1) compressor start-up kit
  - (ii) All spare parts required to operate the nitrogen generator (including air compressor, filters, and all other components included in the supply package) for one year. Spares shall include, but not be limited to:
    - 1. Compressor air intake filter kit.
    - 2. Compressor oil and filter change.
    - 3. Replacement filters for premium filtration system.
    - 4. Replacement filters for oil and water separator.

### **E4. TECHNICAL ASSISTANCE DURING START-UP AND COMMISSIONING**

- E4.1 The Nitrogen Generator will be installed by the City.
- E4.2 Provide the services of a qualified factory trained technical representative to provide technical assistance during start-up and commissioning.
- E4.3 Perform an inspection of the nitrogen generator installation prior to start-up.
- E4.4 Assist the City is start-up and commissioning.
- E4.5 A minimum allowance of four hours on site (not including travel) to be provided.

### **E5. OPERATIONS AND MAINTENANCE MANUALS**

- E5.1 Provide complete Operations and Maintenance Manuals, in English, for the compressor, nitrogen generator, and all associated components.
  - (a) Number of copies required:
    - (i) Five (1) paper copies.
    - (ii) Two (2) electronic copies, PDF format on two (2) separate Compact Disks (CDs).
  - (b) Supply paper copies in binders: vinyl, hard covered, 3 'D' ring, with spine and face pockets.
  - (c) Provide overall Title sheet, labelled "Operation and Maintenance Manual", and containing the following:
    - (i) project name and date
    - (ii) City's Contract number
    - (iii) the name and address of the Contractor
    - (iv) and the issue date.
  - (d) Provide overall table of contents and labelled dividers for each section.
  - (e) Include all drawings, provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
  - (f) Operation and Maintenance Manual must include:
    - (i) Detailed instruction, operation, and maintenance instructions.
    - (ii) Dimensioned installation drawings.
    - (iii) Arrangement drawings, incorporating a complete bill of materials.
    - (iv) A complete parts list.

**E6. TRAINING**

- E6.1 Provide four (4) hours of on-site training and support at the City's North End Water Pollution Control Centre (NEWPCC) for City operations and maintenance personnel. All training content provided shall be covered in the Operations and Maintenance Manuals specified in E5.
- E6.2 On-site training and support to be provided by a factory trained technician with expertise in the compressor installation, operation, and maintenance.
- E6.3 Price to include all travel, meals, expenses, and other associated costs.