



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 124-2017**

**SUPPLY AND INSTALLATION OF GRIT CLASSIFIERS FOR THE WEST END  
SEWAGE TREATMENT PLANT**

## TABLE OF CONTENTS

### PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	3

### PART B - BIDDING PROCEDURES

B1. Contract Title	1
B2. Submission Deadline	1
B3. Site Investigation	1
B4. Enquiries	1
B5. Confidentiality	1
B6. Addenda	2
B7. Substitutes	2
B8. Bid Components	3
B9. Bid	4
B10. Prices	4
B11. Disclosure	5
B12. Qualification	5
B13. Opening of Bids and Release of Information	6
B14. Irrevocable Bid	6
B15. Withdrawal of Bids	6
B16. Evaluation of Bids	7
B17. Award of Contract	7

### PART C - GENERAL CONDITIONS

C0. General Conditions	1
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### PART D - SUPPLEMENTAL CONDITIONS

#### General

D1. General Conditions	1
D2. Scope of Work	1
D3. Definitions	1
D4. Contract Administrator	1
D5. Contractor's Supervisor	2
D6. Ownership of Information, Confidentiality and Non Disclosure	2
D7. Notices	2

#### Submissions

D8. Authority to Carry on Business	3
D9. Safe Work Plan	3
D10. Insurance	3
D11. Performance Security	3
D12. Subcontractor List	4
D13. Detailed Work Schedule	4

#### Schedule of Work

D14. Commencement	5
D15. Construction Sequencing	6
D16. Substantial Performance	6
D17. Total Performance	6
D18. Liquidated Damages	7

#### Control of Work

D19. Job Meetings	7
D20. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	7
D21. The Workplace Safety and Health Act (Manitoba) – Qualifications	7

#### Measurement and Payment

D22. Payment	7
--------------	---

**Warranty**

D23. Warranty	7
Form H1: Performance Bond	8
Form H2: Irrevocable Standby Letter of Credit	10
Form J: Subcontractor List	12

**PART E - SPECIFICATIONS**

**General**

E1. Applicable Specifications and Drawings	1
E2. General	2
E3. Grit Classifiers	4
E4. Electrical Components	6
E5. Instrumentation & Valving	7
E6. Process Piping	7
E7. Shop Testing	8
E8. Quality Control	8
E9. Installation Work	9
E10. Start Up Procedures	13
E11. Functional Testing	14
E12. Operation and Maintenance Manuals	14

## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 SUPPLY AND INSTALLATION OF GRIT CLASSIFIERS FOR THE WEST END SEWAGE TREATMENT PLANT

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, March 8, 2017.

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, a Site meeting will be held at 10:00 am on February 27, 2017 to provide Bidders access to the Site. Bidders must be at the front entrance of the WEWPCC facility located at 7740 Wilkes Avenue at the time noted above to obtain access

B3.2 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B3.3 Bidders attending the Site meeting shall provide and wear their own CSA approved safety footwear, hard hat and safety glasses.

### **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. CONFIDENTIALITY**

B5.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

- (a) was known to the Bidder before receipt hereof; or
- (b) becomes publicly known other than through the Bidder; or

(c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

B5.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Bid Opportunity to the media or any member of the public without the prior written authorization of the Contract Administrator.

## **B6. ADDENDA**

B6.1 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.

B6.2 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.

B6.2.1 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/>

B6.2.2 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.

B6.2.3 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.

## **B7. SUBSTITUTES**

B7.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.

B7.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B7.3 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.

B7.4 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.

- B7.5 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.
- B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B7.8 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 B16.
- B7.9 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.

## **B8. BID COMPONENTS**

- B8.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
  - (b) Form B: Prices;
- B8.2 Further to B8.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B7.
- B8.3 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.
- B8.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B8.5 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
- B8.5.1 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.
- B8.6 Bidders are advised not to include any information/literature except as requested in accordance with B8.1.
- B8.7 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 B16.1(a).

B8.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204 949-1178.

B8.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.

B8.8.2 Bids submitted by internet electronic mail (e-mail) will not be accepted.

## **B9. BID**

B9.1 The Bidder shall complete Form A: Bid, making all required entries.

B9.2 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.

B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.

B9.3 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.

B9.4 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;
- (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.

B9.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B9.4.2 All signatures shall be original.

B9.5 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.

## **B10. PRICES**

B10.1 The Bidder shall state the lump sum price in Canadian funds for the Work on Form B: Prices.

B10.1.1 Notwithstanding C12.2.3(c), prices on Form B: Prices shall not include the Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable.

B10.2 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

## **B11. DISCLOSURE**

B11.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B11.2 The Persons are:

- (a) Waste 'n WaterTech Ltd.
- (b) Veolia Water Technologies Canada Inc.

## **B12. QUALIFICATION**

B12.1 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.

B12.2 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>

B12.3 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);

B12.4 Further to B12.3(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/Subcontractors has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (b) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (c) 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/>).



B12.5 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.

B12.6 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.

### **B13. OPENING OF BIDS AND RELEASE OF INFORMATION**

B13.1 Bids will not be opened publicly.

B13.2 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/bidopp.asp>

B13.3 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/>

B13.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).

### **B14. IRREVOCABLE BID**

B14.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.

B14.2 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.

### **B15. WITHDRAWAL OF BIDS**

B15.1 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.

B15.1.1 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.

B15.1.2 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.

B15.1.3 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 B15.1.3(b), declare the Bid withdrawn.

B15.2 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 B14.2 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.

## **B16. EVALUATION OF BIDS**

B16.1 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 B12 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B7.

B16.2 Further to B16.1(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.

B16.3 Further to B16.1(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.

B16.4 Further to B16.1(c), the Total Bid Price shall be the lump sum price shown on Form B: Prices.

## **B17. AWARD OF CONTRACT**

B17.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B17.2 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.

B17.2.1 Without limiting the generality of B17.2, 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.

B17.3 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 B16.

B17.3.1 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.

B17.4 Notwithstanding C4, the City may issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.

B17.5 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 the complete removal and disposal of the current two (2) grit classifiers, associated piping and hardware and the supply, delivery, and installation of two (2) new grit classifiers, associated piping, accessories and electrical works to the West End Sewage Treatment Plant

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

(a) Removal of current grit classifiers, including but not limited to:

- (i) The removal of all piping as noted in the drawings and specifications,
- (ii) Disconnection of all electrical components
- (iii) Removal of the current grit classifiers and hardware
- (iv) Proper disposal of all removed equipment.

(b) Installation of two (2) new grit classifiers including but not limited to:

- (i) Supply, delivery, offloading, hoisting and installation of two (2) new grit classifiers, piping and associated components
- (ii) All piping and electrical works as specified
- (iii) Commissioning

D2.3 The Contractor and any project related Sub-Contractors shall be made aware of the Environmental Preservation and Compliance obligations as per the Wastewater Services Environmental Preservation and Compliance Statement – Appendix A

D2.4 Existing electrical and welding outlets will be available for work inside the facility. No electrical power will be available for Contractor's trailer. An area for tables and chairs for lunch and office work, not exceeding forty (40) square meters, will be supplied inside the facility. One of the facility washrooms will be designated for Contractor use.

D2.5 There is no potable water supply available on Site. Flushing water (secondary effluent) will be available for use in pipe hydrostatic testing. Secondary effluent contains Fecal and E-Coli coliforms and other contaminants consistent with wastewater treatment. Contractor shall take appropriate precautions when handling secondary effluent.

#### D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

(a) "**WEWPCC**" means West End Sewage Treatment Plant;

D3.2 Notwithstanding C1.1, when used in this Bid Opportunity:

#### D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is:

Matt Gillies, P.Eng.  
Project Engineer

Telephone No. 204 391-5488

Email Address mattgillies@winnipeg.ca

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.

D4.3 Bids Submissions must be submitted to the address in B8.

**D5. CONTRACTOR'S SUPERVISOR**

D5.1 At the pre-construction meeting, the Contractor shall identify his/her designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

**D6. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE**

D6.1 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.

D6.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D6.3 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.

D6.4 A Contractor who violates any provision of D6 may be determined to be in breach of Contract.

**D7. NOTICES**

D7.1 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.

D7.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D7.3, D7.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D4.1.

D7.3 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

D7.4 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 facsimile number:

The City of Winnipeg  
Legal Services Department  
Attn: Director of Legal Services

Facsimile No.: 204 947-9155

**D7.1 Bids Submissions must not be submitted to the above facsimile numbers. Bids must be submitted in accordance with B8.**

**SUBMISSIONS**

**D8. AUTHORITY TO CARRY ON BUSINESS**

D8.1 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.

**D9. SAFE WORK PLAN**

D9.1 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.

D9.2 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>

**D10. INSURANCE**

D10.1 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) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
- (c) all risks installation floater, carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

D10.2 Deductibles shall be borne by the Contractor.

D10.3 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.

D10.4 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.

**D11. PERFORMANCE SECURITY**

D11.1 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.

D11.1.1 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.

D11.2 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.

## **D12. SUBCONTRACTOR LIST**

D12.1 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.

## **D13. DETAILED WORK SCHEDULE**

D13.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D13.2 The detailed work schedule shall consist of the following:

- (a) a critical path method (C.P.M.) schedule for the Work;
  - (b) a Gantt chart for the Work based on the C.P.M. schedule;
- all acceptable to the Contract Administrator.

D13.3 Further to D13.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:

- (a) Phase 1:
  - (i) Submittals, fabrication, and delivery of equipment to WEWPCC.
- (b) Phase 2:
  - (i) Removal, installation, and commissioning of east grit classifier and associated equipment.
- (c) Phase 3:
  - (i) Removal, installation, and commissioning of west grit classifier and associated equipment.

D13.4 Further to D13.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

D13.5 The detailed work schedule shall be based on the following time constraints pertaining to work at WEWPCC:

- (a) Standard working hours at WEWPCC are from 7:00 am to 3:45 pm Monday to Friday.
- (b) The Contractor may request extended working hours where necessary to accommodate system shutdowns and tie-ins. The Contractor shall obtain approval for all extended working hours and shall submit a request to the Contract Administrator 1 week in advance of the proposed extended working hours.
- (c) Please be advised that the City of Winnipeg observes the following holidays and no work is permitted by the contractor on these days
  - (i) New Year's Day
  - (ii) Louis Riel Day
  - (iii) Good Friday
  - (iv) Easter Monday
  - (v) Victoria Day
  - (vi) Canada Day
  - (vii) Terry Fox Day
  - (viii) Labour Day
  - (ix) Thanksgiving Day
  - (x) Remembrance Day
  - (xi) Christmas Day
  - (xii) Boxing Day

## **SCHEDULE OF WORK**

### **D14. COMMENCEMENT**

- D14.1 The Contractor shall not commence any Work until he/she is in receipt of a Purchase Order from the Award Authority authorizing the commencement of the Work.
- D14.2 The Contractor shall not commence any Work on the Site until:
  - (a) the Contract Administrator has confirmed receipt and approval of:
    - (i) evidence of authority to carry on business specified in D8;
    - (ii) evidence of the workers compensation coverage specified in C6.15;
    - (iii) the Safe Work Plan specified in D9;
    - (iv) evidence of the insurance specified in D10;
    - (v) the performance security specified in D11;
    - (vi) the Subcontractor list specified in D12; and
    - (vii) the detailed work schedule specified in D13.
  - (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.
  - (c) Two (2) new grit classifiers have been satisfactorily delivered to Site.
- D14.3 The Contractor shall not commence the Work on the Site before September 1, 2017.
- D14.4 The City intends to award this Contract by April 7, 2017
  - D14.4.1 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.



## **D15. CONSTRUCTION SEQUENCING**

- D15.1 Construction on Site may not occur between February 1 and September 1 (Unless approved by the Contract Administrator). Furthermore, WEWPCC must have two operational grit classifiers during these months.
- D15.2 Grit classification and removal is essential to Plant operations and is critical during the replacement of the grit classifiers. As such, only one grit classifier may be out of service at any given time during construction. All reasonable measures should be taken to minimize the time out of service.
- D15.3 Contractor to provide The City one (1) week notice to coordinate and approve the shut-down of one (1) Grit classifier
- D15.4 Upon successful delivery of the new two (2) Grit classifiers to Site and approval by The City that one (1) Grit classifier may be shut-down for replacement, the following sequence may occur:
- (a) East Grit classifier (HM340) may be removed
  - (b) Hoist new west grit classifier (HM330) into the grit/screenings mezzanine and store behind existing west Grit classifier. Due to space constraints, the only opportunity to hoist the west grit classifier to the Mezzanine is while the east grit classifier (HM340) is removed. Contractor to propose alternate plan if available.
  - (c) Hoist east grit classifier replacement (HM340) into Grit/Screenings Mezzanine and install
  - (d) Work on the west grit classifier (HM330) replacement may only commence once the east grit classifier replacement has been completely installed and proven fully functional and operational for five (5) consecutive days.
  - (e) Once approval is provided for shut-down of the west grit classifier (HM330), it may be removed and replaced.

## **D16. SUBSTANTIAL PERFORMANCE**

- D16.1 The Contractor shall achieve Substantial Performance by November 30, 2017.
- D16.2 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.
- D16.3 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.

## **D17. TOTAL PERFORMANCE**

- D17.1 The Contractor shall achieve Total Performance by December 15, 2017.
- D17.2 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.
- D17.3 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.

## **D18. LIQUIDATED DAMAGES**

- D18.1 If the Contractor fails to achieve Total Performance in accordance with the Contract by the day fixed herein for Total Performance, the Contractor shall pay the City one thousand dollars (\$1000) per Working Day for each and every Working Day following the day fixed herein for Total Performance during which such failure continues.
- D18.2 The amount specified for liquidated damages in D18.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Total Performance by the day fixed herein for same.
- D18.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

## **CONTROL OF WORK**

### **D19. JOB MEETINGS**

- D19.1 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.
- D19.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

### **D20. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

- D20.1 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).

### **D21. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS**

- D21.1 Further to B12.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B12.4.

## **MEASUREMENT AND PAYMENT**

### **D22. PAYMENT**

- D22.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

## **WARRANTY**

### **D23. WARRANTY**

- D23.1 Warranty is as stated in C13.

**FORM H1: PERFORMANCE BOND**  
(See D11)

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. 124-2017

SUPPLY AND INSTALLATION OF GRIT CLASSIFIERS FOR THE WEST END SEWAGE TREATMENT PLANT

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 D11)

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

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 124-2017

SUPPLY AND INSTALLATION OF GRIT CLASSIFIERS FOR THE WEST END SEWAGE  
TREATMENT PLANT

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 (2007 Revision), International Chamber of Commerce Publication Number 600.

\_\_\_\_\_  
(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 reference drawings are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
124-2017_Drawing_1-0103A-E0003-002-R1	Modified Single Line Diagram
124-2017_Drawing_1-0103G-M0026-001-R1	Grit /Screening Receiving Ventilation – New Conditions
124-2017_Drawing_HE1.01-R3	Area H- Headworks Power Plans
124-2017_Drawing_HE2.01-R3	Area H- Headworks Details
124-2017_Drawing_WEP-85-R2	Process and Instrumentation Diagram No.3 – Grit Removal
124-2017_Drawing_WEP-128-A-R2	Structural Plan at El. 248.500
124-2017_Drawing_WEP-149-R1	Grit/Screenings Receiving Mezzanine Process Plan and Details
124-2017_Drawing_WEP-151-R1	Grit and Screening Equipment Process Sections
124-2017_Drawing_WEP-166-R1	Screenings Room Mezzanine Level Instrumentation Layout
124-2017_Drawing_WEP-421-R0	Headworks – Dewatering Screw Conveyor #1 WAH330
124-2017_Drawing_WEP-422-R0	Headworks – Dewatering Conveyor #1 Level Switch WAH334
124-2017_Drawing_WEP-423-R0	Headworks – Dewatering Conveyor #1 Flushing Water Valve WAH335
124-2017_Drawing_WEP-424-R0	Headworks – Dewatering Screw Conveyor #2 WAH340
124-2017_Drawing_WEP-425-R0	Headworks – Dewatering Conveyor #2 Level Switch WAH344
124-2017_Drawing_WEP-426-R0	Headworks – Dewatering Conveyor #2 Flushing Water Valve WAH345



## **E2. GENERAL**

### **E2.1 REFERENCES**

- (a) The following is a list of applicable standards that may be referenced in this section, Part E: Specifications
  - (i) Occupational Health and Safety Act (OSHA)
  - (ii) CSA-C22.1-2015, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations. (CEC)
  - (iii) National Electrical Manufacturers' Association (NEMA)
    - (i) MG 1, Motors and Generators
  - (iv) NEMA 250-2003, Enclosures for Electrical Equipment (1000 Volts Maximum)
  - (v) 2010 National Building Code of Canada, with 2011 Manitoba Amendments (NBC)
  - (vi) ANSI/AWWA C151/A21.51-09
  - (vii) American Society of Mechanical Engineers (ASME)
    - (i) B16.1 Grey Iron Pipe Flanges and Flanged Fittings Classes 25, 125, 250
  - (viii) ANSI/ASME B1.20.1, Pipe Threads, General Purpose
  - (ix) ANSI/ASME B16.5, Pipe Flanges and Flanged Fittings
  - (x) ANSI/ASME B16.9, Factory-Made Wrought Steel Butt Welding Fittings
  - (xi) ANSI/ASME B16.11, Forged Steel Fittings, Socket Welding and Threaded
  - (xii) ANSI/ASME B31.3, Process Piping
  - (xiii) ANSI/ASME B36.10M, Welded and Seamless Wrought Steel Pipe
  - (xiv) ASTM A53, Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless
  - (xv) ASTM A105/A105M, Forgings, Carbon Steel, for Piping Components
  - (xvi) ASTM A307, Carbon Steel Bolts and Studs, 60 000 psi Tensile Strength
  - (xvii) ASTM A536, Ductile Iron Castings
  - (xviii) AWWA C606, Grooved and Shouldered Joints
  - (xix) AWWA C151, Ductile-Iron Pipe Centrifugally Cast
  - (xx) AWWA C153, Ductile-Iron Compact Fittings
  - (xxi) AWWA C110, Ductile-Iron and Gray-Iron Fittings
  - (xxii) CSA B51, Boiler, Pressure Vessel, and Pressure Piping Code
  - (xxiii) MSS SP58, Pipe Hangers and Supports – Materials, Design, Manufacture, Selection, Application, and Installation

### **E2.2 SHOP DRAWINGS**

- (a) The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data.
- (b) The Contractor shall submit specified shop drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be on all submissions for Engineering review.
- (c) Provision of Shop Drawings will be considered incidental to the price for supply and delivery of equipment and materials.
- (d) Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- (e) Allow ten (10) days for Contract Administrator review of each submission.

- (f) Adjustments made on shop drawings by Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Contract Administrator prior to proceeding with Work.
- (g) Make changes in shop drawings as Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify Contract Administrator in writing of revisions other than those requested.
- (h) Submission Requirements
  - (i) Accompany submissions with transmittal letter, containing:
    - (i) Date
    - (ii) Project title and Bid Opportunity number
    - (iii) Contractor's name and address
    - (iv) Number of each shop drawing, product data and sample submitted
    - (v) Specification Section, Title, Number and Clause
    - (vi) Drawing Number and Detail/Section Number
    - (vii) Other pertinent data
  - (ii) Submissions shall include:
    - (i) Date and revision dates
    - (ii) Project title and Bid Opportunity number
    - (iii) Name and address of:
      - ◆ Contractor
      - ◆ Subcontractor
      - ◆ Supplier
      - ◆ Manufacturer
    - (iv) Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
    - (v) Details of appropriate portions of Work as applicable:
      - ◆ Certified general arrangement drawings showing all important details including materials of construction, dimensions, loads on supporting structures, and anchor bolt locations.
      - ◆ A list of all exclusions from drawings and specifications.
      - ◆ Descriptive literature, bulletins and/or catalogs of the equipment, including performance specifications.
      - ◆ Setting or erection details.
      - ◆ Complete data on motors and gear reducers.
      - ◆ Wiring diagrams and electrical schematics for all equipment to be furnished.
      - ◆ Equipment weights.
      - ◆ Recommendations for short and long term storage.
      - ◆ Parts list including a list of recommended spare parts.
  - (i) After Contract Administrator's review, distribute copies.
  - (j) Submit electronic copy of shop drawings for each product.
  - (k) If upon review by Contract Administrator, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

- (a) Pay costs of transportation of products required in performance of Work.
- (b) The Contractor may use the 1 US ton overhead crane located at WEWPCC to transport the grit classifiers and other materials through the equipment hatch. No item exceeding this capacity shall be lifted using the crane. All items shall be suitable for transport through the 2 metre by 2 metre equipment hatch. Removal of current equipment and materials shall also be through this hatch.
- (c) The Contractor is required to provide all equipment necessary for the transportation of goods at the Site, including but not limited to a forklift.
- (d) Contractor is responsible for all off-loading and handling of equipment at the Site.

**E2.4 EQUIPMENT REFERENCE LIST**

- (a) Below list of equipment IDs and descriptions provided for reference.

<b>Equipment ID</b>	<b>Description</b>
H340	East Grit Classifier
H330	West Grit Classifier
H344 LSH	East Grit Classifier Float/Level Switch
H334 LSH	West Grit Classifier Float/Level Switch
H345 FCV	East Grit Classifier Flush Water Solenoid Valve
H335 FCV	West Grit Classifier Flush Water Solenoid Valve
MCC-2HA	MCC location for East Grit Classifier
MCC-1HA	MCC location for West Grit Classifier

**E3. GRIT CLASSIFIERS**

E3.1 The Contractor shall supply and install two (2) new grit classifiers and all necessary equipment required for their complete installation in accordance with the requirements hereinafter specified.

E3.2 Replace existing grit classifiers with new to match specifications of existing. Existing grit classifiers are as follows:

- (a) John Meunier SAM Grit Dewatering Screw, manufactured by Veolia Water Technologies Canada Inc.
  - (i) Model: GDSC/12-12-25XA
  - (ii) Each unit includes:
    - (i) Dewatering shafted screw with spray nozzle washing system, c/w motor and gear drive
    - (ii) Inlet hopper, trough, overflow, drain connection in the lower end, and removable covers, c/w floor mounted support frame.
    - (iii) Krebs D10LB hydro-cyclone, Ø250 mm c/w support
  - (iii) Performance:
    - (i) Each Classifier unit recovers a minimum of 95% of material greater than 0.100 mm diameter (150 Mesh) with a specific gravity of 2.65 or greater.
  - (iv) Capacity:
    - (i) Inlet flow rated capacity: 16 L/s (with hydro-cyclone)
  - (v) Connections:
    - (i) Overflow diameter connection: 6.0 in (152 mm)
    - (ii) Drain pipe connection: 2.0 in (51 mm)
    - (iii) Drain pan connection: 0.75 in (19 mm)
    - (iv) Cyclone Inlet diameter connection : 4.0 in (102 mm)

- (v) Cyclone Outlet diameter connection: 6.0 in (152 mm)

E3.3 New grit classifiers shall be as follows:

- (a) Each grit classifier shall include, but not limited to, an inclined trough in which the dewatering screw conveyor is mounted, a spray nozzle washing system in the upper portion of the dewatering screw conveyor, a hydro-cyclone, inlet hopper/settling tank, support structure, drive assembly, and miscellaneous accessories required for a complete operating system.
- (b) Performance:
  - (i) Each Classifier unit shall recover a minimum of 95% of material greater than 0.100 mm diameter (150 Mesh) with a specific gravity of 2.65 or greater.
- (c) Capacity:
  - (i) Inlet flow rated capacity: 16 L/s (with hydro-cyclone)
  - (ii) Hydraulic Capacity (Hopper): 54m<sup>3</sup>/h
  - (iii) Solids Handling Capacity (Screw): 3.4m<sup>3</sup>/h
- (d) Design Standard:
  - (i) John Meunier SAM Grit Dewatering Screw model GDSC/14-12-25XA fitted with Krebs D10LB hydro-cyclone and spray nozzle washing system
- (e) Construction:
  - (i) Inlet Hopper, Covers: 304 Stainless Steel
    - (i) The inlet hopper shall be welded construction and welded on top of the trough to form an integral unit. The hopper's sides shall be inclined sufficiently to prevent grit build up
    - (ii) An overflow weir integral to the hopper shall be used to maintain constant water volume. A 6" diameter overflow connection shall be used to return degritt water
    - (iii) The top of the hopper shall be closed by means of removable covers
  - (ii) Trough: 304 Stainless Steel
    - (i) Transport trough to be U shaped
    - (ii) The upper end of the trough shall have an end plate to receive the screw conveyor drive. The drive shall support the upper end of the screw
    - (iii) The lower end of the trough shall have an end plate fitted with a pedestal plate supporting a pillow block bearing. This bearing, external of the trough shall support the lower end of the screw. The end plate shall be fitted with a greasable packing gland seal, which is to be continually greased by means of spring-loaded grease cup. Submerged bearings inside the tank are not permitted
    - (iv) The pedestal plate to include a drain pan with ¾" drain to collect packing gland drips
    - (v) The trough shall have a 2" drain connection at the lower end
    - (vi) The upper end of the trough shall have a discharge outlet
    - (vii) The upper end of the trough to have a spray nozzle washing system to aid in organics removal
  - (iii) Support structure: 304 Stainless Steel
    - (i) Integral support structure shall be made of structural angles and channels. It shall be firmly anchored to the operating floor. Concrete modifications/mounting pads, and anchor bolts to be supplied and installed by the contractor per manufacturer' recommendations.
  - (iv) Screw shaft & Screw: Carbon Steel shaft epoxy coated to Manufacturer's standard. Abrasion resistant steel screw flights with hard facing on leading edge and face.
  - (v) Hydro-cyclone:

- (i) Each hydro-cyclone shall have a carbon steel cyclone head, cylinder and cone, each independently lined with neoprene replaceable liners. The apex housing shall be aluminum with neoprene liner. The vortex finder shall be made of unlined NiHard material.
- (ii) A quick connection clamp to be provided between Apex and lower cone to allow for easy removal of apex clogs without disconnecting any piping for the cyclone itself.
- (vi) Drive Unit:
  - (i) The main drive shaft shall be driven by means of speed-reducing gearbox and motor. The motor shall not overload under normal operating conditions and shall be designed for heavy duty 24 hours per day service duty.
  - (ii) Motor Power Supply: 575V, 3 phase, 60Hz
  - (iii) Motor to be NEMA Premium Efficient
  - (iv) Enclosure to be rated for installed location
  - (v) Motor Service Factor: Minimum 1.15
- (vii) Fasteners & Hardware: 304 Stainless Steel
- (f) Hazardous Location Classification: Class 1, Zone 2
- (g) Lifting lugs to be supplied and suitably attached for equipment assemblies and components weighting over 45 kg.
- (h) Design equipment with due regard to safety of operation, accessibility, and durability of parts and compliance with applicable OHSA, provincial, and local safety regulations
- (i) Design equipment, anchorage, and support systems for vertical and lateral loading in accordance with NBC
- (j) Extra Materials:
  - (i) Furnish, tag, and box for shipment and storage the following spare parts:

Item	Quantity
Lower shaft seal	Two complete sets
Liners for inlet head, cyclone, cone and apex	Two complete sets
Gaskets for hydro-cyclone	Two complete sets

- (k) Size Requirements:
  - (a) Drawings have been provided to give a rough approximation of the size constraints of the site, including overhead HVAC. It is the contractor's responsibility to confirm that the equipment provided is suitable for the Site prior to fabrication. Any additional Work required for the proper installation and operation of the equipment is the responsibility of the Contractor.
  - (l) Approved Manufacturers: Veolia Water Technologies Canada Inc. Enviro-Care, or approved equal.
  - (m) Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B7.

#### E4. ELECTRICAL COMPONENTS

E4.1 Motor starters and circuit breakers for the grit classifiers located in the Motor Control Center (MCC), MCC-1HA and MCC-2HA are to be replaced as part of this contract. All aspects of the electrical works are the responsibility of the contractor. This includes but not limited to, sizing starters and breakers appropriately for supplied grit classifier motors in accordance with all applicable CEC codes and local regulations, integration of starters and breakers into existing MCC cabinets with field modifications as required, and wiring to motors.

**E4.2 Motor Starters:**

- (a) 509 3-phase open type full voltage NEMA starters c/w
- (b) 120V 60Hz coil
- (c) Reset button (Field modifications by contractor on MCC panel door if required)
- (d) Connection provisions for hour run meter and motor running light
- (e) Terminal connections for H330/340-X1, X2, 3, 13, 14 per drawings WEP-421 & WEP-424
- (f) Manufacturer: Allen-Bradley or equal

**E4.3 Motor Circuit Protector (HMCP)**

- (a) 600V, 3 pole, with magnetic trip only and adjustable magnetic trip range.
- (b) Manufacturer: Eaton or equal

**E5. INSTRUMENTATION & VALVING**

**E5.1 Solenoid Valves**

- (a) Two-way internal pilot operated, brass body, suitable for wastewater service. Solenoid coil molded epoxy, 120 volts AC, 60Hz. Solenoid enclosure type 4 minimum.
- (b) Manufacturer: Asco, Jefferson or equal

**E5.2 Pressure Gauges:**

- (a) Provide pressure gauges with gauge isolator suitable for wastewater service at the inlet of each cyclone, and at the inlet of the wash water system on the grit classifier
- (b) Manufacturer: Ashcroft, Wika, Winters or equal

**E5.3 Ball Valves:**

- (a) Carbon steel body, stainless steel ball, 2-piece body, full port, NPT connections, PTFE seat and packing, blowout-proof stem, steel hand level with vinyl grip. Minimum rated 4140 kPa WOG/CWP, 1035 kPa SWP.
- (b) Acceptable Products: Flow-Tek, MAS, Apollo, or equal

**E6. PROCESS PIPING**

**E6.1 Pipe**

- (a) 50mm (2") and under: Carbon steel, schedule 80, threaded, ASTM A53-B seamless
- (b) 75mm (3") and over: Carbon steel, schedule 40, roll-grooved, A53-B seamless
- (c) Cyclone Vent Piping: Schedule 80 PVC, Solvent socket welded joints, ANSI B16.1 flanges where required.

**E6.2 Fittings and Joints**

- (a) Fittings
  - (i) 50mm (2") and under: Threaded, A105N
  - (ii) 75mm (3") and over: Grooved joint fittings shall be FM approved, rigid type A536 ductile iron, Victaulic. The lining and coating of the fitting shall match the lining and coating of the steel piping system When required, furnish with grooved type flange adapters of same manufacturer as grooved end couplings
- (b) Joints
  - (i) 50mm (2") and under: Threaded NPT taper pipe threads in accordance with ASME B1.20.1, or grooved end meeting requirements of AWWA C606; flanged at equipment where required

- (ii) 75mm (3") and over: Grooved end meeting the requirements of AWWA C606; Flanged at equipment where required.
- (c) Roll-Grooved Coupling
  - (i) FM approved, rigid type, Victaulic Style 07, c/w Flush seal gasket
- (d) Flanges: When required, furnish with grooved type flange adapters of same manufacturer as grooved end couplings, ANSI B16.5 150lb, ASTM A536.
- (e) Threaded Joints: NPT taper pipe threads in accordance with ASME B1.20.1
- (f) Unions or Flanges: Provide at each piping connection to equipment or instrumentation on equipment side of each block valve to facilitate installation and removal. Flange Gaskets: Water and Sewage service, full-face gasket, neoprene elastomer, 3mm, (1/8") thick, suitable for B16.1 125lb and B16.5 150lb flanges
- (g) Flange Bolting: A307 Grade B zinc coated bolts, A563 Grade A zinc coated heavy hex nuts

**E6.3 Insulating Flanges, Couplings, and Unions:**

- (a) Materials:
  - (i) In accordance with applicable piping material specified in Pipe Data Sheet(s). Complete assembly shall have ASME B31.9 rating equal to or higher than that of joint and pipeline.
  - (ii) Galvanically compatible with piping.
  - (iii) Resistant for intended exposure, operating temperatures, and products in pipeline
- (b) Union Type, 50mm and smaller:
  - (i) Screwed or solder-joint.
  - (ii) O-ring sealed with molded and bonded insulation to body.
- (c) Flange Type, 64mm and Larger:
  - (i) Flanged, complete with bolt insulators, dielectric gasket, bolts, and nuts.
- (d) Flange Insulating Kits:
  - (i) Gaskets:
    - (i) Full-face, Type E with O-ring seal.
    - (ii) Supplemented with neoprene facing on each side to accomplish seal.
  - (ii) Insulating Sleeves: Full-length fiberglass reinforced epoxy (NEMA LI 1, G-10 grade).
  - (iii) Insulating Washers: High strength phenolic. (NEMA LI 1, G-10 grade).
  - (iv) Steel Washers: Plated, hot-rolled steel, 3.2mm thick.

**E6.4** At locations where piping passes through penetrations in the floor, structure or walls, pipes are to be adequately supported and the annular space between the piping and the structure to be sealed to create a water tight seal.

**E7. SHOP TESTING**

**E7.1** Each grit classifier shall be factory assembled and tested for mechanical and electrical operation prior to delivery and ready for installation. The results of these tests shall be submitted to the Contract Administrator prior to shipping.

**E8. QUALITY CONTROL**

**E8.1** Contract Administrator may order any part of the Work to be reviewed or inspected if Work is suspected to be not in accordance with Contract Documents.

- (a) If, upon review such Work is found not in accordance with Contract Documents, correct such Work and pay cost of additional review and correction.

- (b) If such work is found in accordance with Contract Documents, Contractor will be compensated for review and replacement at a cost negotiated by the Contract Administrator.

E8.2 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Contract Administrator as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

E8.3 Make good other work damaged by removals or replacements promptly.

E8.4 If in opinion of the Contract Administrator it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, a deduction from the Contract Price of the difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Contract Administrator.

## **E9. INSTALLATION WORK**

### **E9.1 Hazards**

- (a) The Contractor shall be aware of the potential hazards that can be encountered in the area such as explosive and toxic gases. The Contractor's Safe Work Plan shall address these issues.
- (b) The contractor is advised that there is the potential for H<sub>2</sub>S gas to be present in the area of work. The contractor must follow instructions of plant staff regarding safety requirements and supply own personal monitor devices for gas detection. If conditions warrant, all workers must either leave the area, utilize a mask/supplied air, or provide fans/ventilation to remove H<sub>2</sub>S from the area. Any fans required shall be supplied by the Contractor.
- (c) Work in areas defined as electrical hazardous locations is subject to the following requirements.
- (d) Work must be performed in accordance with Manitoba Department of Labour requirements.
- (e) All tools must be appropriately rated for the hazardous location, unless a Gas Free Work Permit (GFWP) system is utilized in accordance with ISA TR12.13.03-2009. Specific requirements include, but are not limited to:
  - (i) A signed Gas Free Work Permit (GFWP) is required to be completed each day.
  - (ii) A portable gas detection system is to be provided and utilized adjacent to each unrated tool or work that could potentially produce an ignition source.
    - (i) Check each portable detection systems for functionality with a known concentration of combustible gas daily
    - (ii) Take initial measurements to confirm the absence of a combustible concentration of gas throughout the work area.
    - (iii) Provide continuous gas detection monitoring adjacent to the work.
    - (iv) Monitoring of gas detection equipment to be provided by properly trained personnel.
    - (v) Provide and maintain contingency plans for emergencies. Train all personnel in appropriate response to emergencies
  - (iii) Monitor the existing ventilation systems, and provide appropriate response in the event of ventilation failure.
  - (iv) Gas detectors must be approved to detect both combustible gasses and H<sub>2</sub>S.
- (f) Minimize hot work including but not limited to operations involving open flames, heat, or sparks such as brazing, cutting, grinding, soldering, and torching. If there is a practical and safer way to do the work without hot work, the alternative method shall be used. Where hot work is required, as a minimum, follow the City's hot work requirements,



including but not limited to, hot work permitting procedures. See appended City of Winnipeg – Hot Work Permit

- (g) Hazardous Location Classification: Class 1 Zone 2
- E9.2 As the work will require shutdown of plant processes, Work on site must not commence until approved and coordinated with plant staff. Contractor must give one (1) week notice to the Contract Administrator ahead of all work that requires shutdown of plant processes.
- E9.3 Scope of installation
- (a) Complete removal of current grit classifiers, piping and hardware.
  - (b) Complete installation of new grit classifiers in every respect, which when installed, will be ready for use
  - (c) Proper disposal of removed material.
  - (d) All necessary pipework as per E9.10
  - (e) All electrical work as per E9.11
- E9.4 All equipment and material needed for Work shall be new and supplied by the Contractor.
- E9.5 Installation and anchoring including any required concrete work of grit classifiers shall be in accordance with manufacturer instructions. Anchor bolts, installation hardware, and fasteners required shall be supplied by contractor as specified by the manufacturer.
- E9.6 Orientation of new grit classifiers shall match current installation
- E9.7 Accuracy of dimensions for new piping, flanges, Victaulic couplings, and other equipment items is the Contractor's responsibility. Any fit issues between Site conditions and new materials to be installed remain with the Contractor.
- E9.8 Where dimensional details are required, collect Site dimensions and coordinate with applicable drawings. However, dimensional accuracy remains with the Contractor as drawings are provided for reference only.
- E9.9 Piping
- (a) General
    - (i) Specification covers the requirements for materials, fabrication, and erection of piping and components. It includes installation of all piping and piping components. It includes fabrication in place or in the field fabrication shop for all piping not furnished as pipe spools.
    - (ii) Contractor shall be responsible for obtaining and providing registrations, data reports, certifications, permits and other authorizations required for compliance with codes and regulations. Contractor shall provide such assistance as may be required to enable Owner to obtain certification and acceptance of piping systems by the Authority having Jurisdiction.
    - (iii) Contractor is to have a current Certificate of Authorization for pressure piping installation registered with the Authority having Jurisdiction. Provide proof of registration to the Contract Administrator.
  - (b) Demolition
    - (i) Demolish existing grit classifier piping, and dispose of all demolished piping unless otherwise noted.
  - (c) Material Control, Handling, and Storage
    - (i) Precautions shall be taken during handling, fabrication, storage, loading, and installation to protect flange surface finishes and all ends from damage. All ends shall be capped when delivered.

- (ii) Piping which has been coated with paint prior to erection shall be handled with care to avoid damage to coatings. Slings protected with fabric or hose sleeves shall be used for lifting.
  - (iii) Shipping protection provided for pipe, pipe spools, and piping components shall be visually inspected by Contractor when material is received at the site before unloading from truck. Any damaged or deficient protection shall be brought to the attention of Owner for resolution.
  - (iv) Raw materials, equipment and components shall be protected at all times against exposure to salt water or spray, rain, and moisture from an industrial atmosphere.
  - (v) Raw materials and fabricated components shall preferably be stored inside a warehouse. Where this is not possible, storage shall be such that it is out of contact with the ground and has adequate moisture proof coverage. All fabricated items shall have all openings blanked or otherwise sealed with water and moisture tight covers.
- (d) Flanges
- (i) Protection of flange face surface finish is required. Precautions shall be taken throughout handling and fabrication operations to protect the gasket surface finish of the flanges.
  - (ii) Loose flanges and fittings, other than installing materials, that require attachment by field welding, shall be shipped tack-welded to the piece to which they are to be welded at the point marked FW (field weld) or FFW (field-fit weld).
- (e) Welding
- (i) Welding shall be in accordance with approved welding procedures registered by or acceptable to the Authority having Jurisdiction.
  - (ii) Welding shall be performed by certified welders or welding machine operators holding a current pressure welder's authorization issued by or acceptable to the Authority having Jurisdiction. The welder or welding machine operator shall not perform welding utilizing procedure of which he has not been duly authorized.
- (f) Cleaning
- (i) After completion of fabrication, piping shall be free of loose scale, weld splatter, sand, chips, oil, grease, and other foreign material. Each pipe spool shall be visually inspected to ensure proper cleanliness.
- (g) Piping Installation
- (i) Pipe, pipe spools, and in-line components shall be inspected internally for foreign material during final installation. Material shall be removed prior to installation and bolting or welding in place.
  - (ii) End protectors shall not be removed from piping and equipment until ready for final connection. Weld end and gasket surfaces shall be inspected for damage when covers are removed. Contract Administrator shall be informed of any damage. Repairs shall not be made without approval of Contract Administrator.
  - (iii) Piping shall be properly supported to prevent excessive deflection during handling and installation.
  - (iv) Bolting – The use of washers or other packing to use up excessive length of flange bolts is not acceptable. The length of machine and stud bolts shall be such that nuts are fully engaged with a minimum of two full threads protruding and that studs are centered.
  - (v) Field-routed piping shall be located such that it does not obstruct operating aisles, walkways, or equipment operation, maintenance, or removal.
- (h) Scope of Pipe Replacement
- (i) East & west grit classifiers
    - (i) Intake

- ◆ Replace all 4" intake pipe and piping components from and including the first Victaulic coupling at each 90 degree elbow under the floor to the inlet of the hydro-cyclone above the floor
  - ◆ Install pressure gauge with gauge isolator suitable for wastewater service and ball valve at inlet of hydro-cyclone
  - ◆ Provide a flushing connection (2") located at the tee at the top of the intake piping as currently installed. Includes one (1) two inch (2") ball valve and cam-lock style female quick connection. See reference picture Figure 2 in Appendix D for detail.
- (ii) Discharge
- ◆ Replace all 6" discharge pipe and piping components above the floor from hydro-cyclone outlet and hopper overflow connections to and including first Victaulic coupling under the floor.
  - ◆ Discharge piping vent height to match existing or as required by manufacturer instructions. Top of discharge piping to be piped to inlet hopper using PVC pipe to match existing. See reference pictures Figure 3 in Appendix D for detail.
- (iii) Drain
- ◆ Drain from grit classifier shall tie into 6" discharge piping. Drain connection to have three (3) two inch (2") ball valves with one (1) cam-lock style female quick connection to match existing. See reference pictures Figure 4 for detail.
- (iv) Flushing Water
- ◆ Replace flushing water solenoid valves and manually operated ball valves. Connect piping to dewatering screw washing system inlet connection. Piping between solenoid valves and dewatering screw washing system inlet to have pressure gauge with gauge isolator installed. See reference pictures Figure 6 for detail.
- (i) Inspection and Testing
- (i) Inspect and test all piping, valves, and all other equipment as per the manufacturer's instructions and recommendations.
  - (ii) Hydrostatically test all lines using secondary effluent water as the test medium.
  - (iii) Zero leakage is permitted throughout the specified test period for all piping.
  - (iv) Give the Contract Administrator a minimum of 2 business days' notice prior to testing.

#### E9.10 Electrical

- (a) References:
- (i) CSA-C22.1-2015, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
  - (ii) NEMA 250-2003, Enclosures for Electrical Equipment (1000 Volts Maximum).
- (b) Scope of Work:
- (i) Disconnect existing electrical cables from existing grit classifiers.
  - (ii) Disconnect and remove motor starters and motor circuit protectors (HMCP) in existing Motor Control Centers (MCC); MCC-1HA and MCC-2HA and replace and connect with new.
  - (iii) Wire motors of new equipment to Motor Control Centers (MCC); MCC-1HA and MCC-2HA.
  - (iv) Remove existing grit classifier flushing water solenoid valves and replace and connect with new.
  - (v) Remove suspended mechanical float switch and reinstall onto new grit classifiers.

- (c) The electrical installation shall be in accordance with CSA C22.1-15, Canadian Electrical Code, Part 1 (23<sup>rd</sup> edition), Safety Standard for Electrical Installations, the current edition of the Canadian Electrical Code, Provincial and Municipal codes and regulations.
- (d) Responsibility for all aspects of the electrical installation lies with the contractor. This includes but not limited to any and all works, approvals, permits associated with the grit classifier installation as required by CEC, Provincial and Municipal codes and regulations. Where there is a discrepancy, the most stringent code or regulation shall apply.
- (e) Motor starters and HMCP's to be sized appropriately for motors supplied with new grit classifiers in accordance with all applicable CEC codes and local regulations
- (f) Provide all electrical hook-ups for complete equipment operation.
- (g) Install equipment, conduit and cables in a workmanlike manner to present a neat appearance to the satisfaction of the Contract Administrator.
- (h) Verify all existing voltages prior to equipment ordering.
- (i) Equipment and material to be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from Electrical Inspection Department to ensure certification for use in Manitoba.
- (j) Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.
- (k) Identify cables with permanent indelible identifying markings
  - (i) Cable tags shall have letter sizes of 4mm or greater and shall be impressed within the cable.
  - (ii) Tags shall be permanently mounted to all cables entering or leaving an enclosure.

#### E9.11 Automation

- (a) The grit pumping and dewatering system is currently operated in one of three modes using a Distributed Control System (DCS): Hand, Computer Manual, and Computer Automatic. Refer to Appendix B for the operation and control manual of the grit pumping and dewatering system.
- (b) Modifications to DCS are not permitted

#### E9.12 Control of Installation

- (a) Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- (b) Comply with manufacturer's instructions, including each step in sequence.
- (c) Should manufacturer's instructions conflict with Contract Documents, request clarification from Contract Administrator before proceeding.
- (d) Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- (e) Perform Work by persons qualified to produce required and specified quality. Employ only tradesmen holding valid Provincial Trade Qualification certificates.
- (f) Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

### **E10. START UP PROCEDURES**

- E10.1 The Contractor shall provide a Manufacturer authorized representative for this part of the Work. It is the Contractor's responsibility to coordinate with the Manufacturer to ensure an authorized representative is present for start-up services.
- E10.2 Coordinate schedule with Contract Administrator for start-up of various equipment and systems.

- E10.3 Verify that each piece of equipment has been checked for proper operation to prevent damage during start-up.
- E10.4 Verify that electrical components for equipment are complete and tested.
- E10.5 Manufacturer's authorized representative to inspect, check, and approve mechanical and electrical equipment and installation prior to start-up.
- E10.6 Execute start-up under supervision of applicable Manufacturer's representative and Contractors' personnel in accordance with manufacturers' instructions.
- E10.7 Submit a written report that equipment has been properly installed and is functioning correctly.
- E10.8 Execute and complete approved Change Orders as necessary.

#### **E11. FUNCTIONAL TESTING**

- E11.1 Contractor to provide services to confirm proper operation of equipment.
- E11.2 In the event that testing indicates that the equipment is not operating at the desired efficiency, the Contractor shall adjust and make changes to the equipment at Contractor's expense. Testing will be repeated at the cost of the contractor until the discharged grit is in compliance with the stated performance requirements.

#### **E12. OPERATION AND MAINTENANCE MANUALS**

- E12.1 Three (3) sets of Operation and Maintenance Manuals shall be submitted to the Contract Administrator for review. The Contractor shall provide these manuals ten (10) Calendar Days in advance before the commencement of equipment start-up.
- E12.2 All instructions in these manuals shall be in the English language to guide the City in the proper operation and maintenance of the equipment.
- E12.3 Bind contents in a three (3) – "D-Ring", hard-covered, plastic-jacketed binder with full cover and spine insert. Organize contents into applicable sections of work, parallel to Specifications breakdown.
- E12.4 Provide all required data in electronic format. Text documents shall be Microsoft Word or Adobe format. Drawings, scanned documents, parts lists, and test forms shall be in Adobe format. Documents that require scanning shall be high quality scans, and fully legible. Documents shall be submitted on a high quality compact disk or USB data stick. Compact disk and case shall be labelled in type, with the following;
  - (a) Bid Opportunity Number;
  - (b) Job Title, and
  - (c) Description of Equipment.
- E12.5 The following shall be included:
  - (a) Title sheet, labelled "Operation and Maintenance Instructions", containing project name and date;
  - (b) List of contents;
  - (c) Approved shop drawings of equipment as per E3;
  - (d) As Built drawings, marked "AS BUILT", and signed by the Contractor;
  - (e) Certified shop test results;
  - (f) Names, addresses, and telephone numbers of all major sub-contractors and suppliers;
  - (g) Detailed specification and operation and maintenance instructions for all items of equipment provided including a preventative maintenance program;

- (h) An itemized list of spare parts recommended for five years of services, particularly those components where failure of which will render the equipment supplied inoperable. Any special tools or other ancillary items necessary for commissioning and/or proper operation and maintenance shall also be listed.
- (i) Part books that illustrate and list all assemblies, sub-assemblies, and components;
- (j) Routine test procedures;
- (k) Troubleshooting chart showing description of common issues, probable cause, and suggested remedy.

E12.6 The Contractor shall modify and supplement the manual as required by the Contract Administrator. When accepted, six (6) additional copies, including electronic versions, shall be provided to the Contract Administrator

## **APPENDICES**

**Appendix A - WWD Environmental Preservation and Compliance Standard**

**Appendix B – Operation and Control of Grit Pumping and Dewatering Process**

**Appendix C – Hot Work Permit**

**Appendix D – Site Reference Pictures**