



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 512-2013

NEWPCC SECONDARY CLARIFIERS 1 TO 6 REHABILITATION

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 NEWPCC SECONDARY CLARIFIERS 1 TO 6 REHABILITATION

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, July 9, 2013.

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

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

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site at 9:00 a.m. on June 26, 2013 to provide Bidders access to the Site.

B3.2 The Bidder is advised entry to the Site shall be made only by persons with confined space entry certification. A fall arrest harness meeting CSA Z259.10 shall be worn for entry into the secondary clarifiers. Fall arrest harnesses will not be supplied by the City or the Contract Administrator.

B3.3 The Bidder is advised that the site investigation is not mandatory but attendance is encouraged to observe Site conditions.

B3.4 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

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

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

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

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

B5. ADDENDA

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

- B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- B5.2.2 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.
- B5.2.3 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.

B6. SUBSTITUTES

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/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.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/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 B14.
- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.7, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

B7. BID COMPONENTS

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

B8. BID

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.

B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his/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.

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

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

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

- (a) if the Bidder is a sole proprietor carrying on business in his/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.

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

B8.4.2 All signatures shall be original.

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

B9. PRICES

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

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

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

B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B10. QUALIFICATION

B10.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
- (b) be financially capable of carrying out the terms of the Contract; and

- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

B10.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/debar.stm>

B10.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work; and
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
- (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);

B10.4 Further to B10.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractors has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/> .

B10.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B10.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B11. OPENING OF BIDS AND RELEASE OF INFORMATION

B11.1 Bids will not be opened publicly.

B11.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B11.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>

B11.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B12. IRREVOCABLE BID

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

B13. WITHDRAWAL OF BIDS

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

B14. EVALUATION OF BIDS

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

- (a) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder is within the budgetary provision for the Work, no adjustment will be made to the Total Bid Price; or
- (b) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder exceeds the budgetary provision for the Work, the Total Bid Price of all responsive Bids submitted by responsible and qualified Bidders will be adjusted by deducting the price of Item 14 (Handrail Replacement) so that the Adjusted Total Bid Price is within the budgetary provision for the Work, i.e., Adjusted Total Bid Price = Total Bid Price – Item No. 14

B14.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit price for each item shall take precedence.

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

B15. AWARD OF CONTRACT

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

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

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

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

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

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

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

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

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of rehabilitation to elements of secondary clarifiers 1, 2, 3, 4, 5 and 6 at the NEWPCC.

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

- (a) Rehabilitation of the overflow weir plate.
- (b) Rehabilitation of the wall wear plate.
- (c) Rehabilitation of the sludge collector mechanism.
- (d) Replacement of the corner sweep mechanism
- (e) Rehabilitation of the counterweight mechanism assembly.
- (f) Replacement of the scum collector assembly.
- (g) Replacement of handrail on access walkways in secondary clarifiers 1 to 10.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) “**NEWPCC**” means North End Water Pollution Control Centre

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is KGS Group, represented by:

Colin Siepman, P.Eng.
Senior Structural Engineer/Project Manager

Telephone No. 204 896-1209

Facsimile No. 204 896-0754

D4.2 At the pre-construction meeting, Mr. Siepman 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 B7.5.

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

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.

SCHEDULE OF WORK

D13. COMMENCEMENT

- D13.1 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.
- D13.2 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the pre-construction meeting.
- D13.3 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; and
 - (vi) the Subcontractor list specified in D12.
 - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D13.4 The Contractor shall not commence the Work on the Site before October 15, 2013.

D14. CRITICAL STAGES

- D14.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) No Site Work shall be allowed until October 15, 2014.
 - (b) A maximum of two (2) secondary clarifiers may be offline at any time.
 - (c) All secondary clarifiers must be functional and ready for re-commissioning by February 28, 2014.

D15. SUBSTANTIAL PERFORMANCE

- D15.1 The Contractor shall achieve Substantial Performance by February 28, 2014.
- D15.2 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.
- D15.3 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.

D16. TOTAL PERFORMANCE

- D16.1 The Contractor shall achieve Total Performance by March 15, 2014.
- D16.2 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.
- D16.3 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.

D17. LIQUIDATED DAMAGES

- D17.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City five hundred dollars (\$500.00) per Calendar Day for each and every Calendar Day following the day fixed herein for Substantial Performance during which such failure continues.
- D17.2 The amount specified for liquidated damages in D17.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.
- D17.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

CONTROL OF WORK

D18. JOB MEETINGS

- D18.1 Regular bi-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.
- D18.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D19. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

- D19.1 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).

D20. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

- D20.1 Further to B10.4, 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 B10.4.

MEASUREMENT AND PAYMENT

D21. INVOICES

- D21.1 Further to C12, the Contractor shall submit monthly invoice for Work performed to the Contract Administrator listed in D4.
- D21.2 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 work performed;
 - (e) the amount payable with GST and MRST shown as separate amounts; and
 - (f) the Contractor's GST registration number.
- D21.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.
- D21.4 Bids Submissions must be submitted to the address in B7.5.

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 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.
- D23.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.
- D23.2 Notwithstanding C13.2, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.
- D23.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

FORM H1: PERFORMANCE BOND
(See 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. 512-2013

NEWPCC SECONDARY CLARIFIERS 1 TO 6 REHABILITATION

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. 512-2013
NEWPCC SECONDARY CLARIFIERS 1 TO 6 REHABILITATION

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 are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
1-0101S-D0002-001	Cover Sheet
1-0101S-S0011-001	General Arrangement
1-0101S-S0012-001	General Notes
1-0101S-S0013-001	Secondary Clarifier – Plan
1-0101S-S0014-001	Weir and Wear Plates – Details
1-0101S-S0015-001	Sludge Collector – Plan, Sections and Details
1-0101S-S0016-001	Sludge Collector – Sections and Details
1-0101S-S0017-001	Counterweight Assembly – Sections and Details
1-0101S-S0018-001	Handrail – Plan
1-0101S-S0019-001	Handrail – Plan and Details

GENERAL REQUIREMENTS

E2. TEMPORARY USE OF CITY EQUIPMENT

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

E3. DANGEROUS WORK CONDITIONS

- E3.1 Further to clause C6.26 of the General Conditions for Constructions, the Contractor shall be aware that secondary clarifiers are considered a confined space and shall follow the "Guidelines for confined Entry Work" as published by the Manitoba Workplace Safety and Health Division.
- The Contractor shall be aware of the potential hazards that can be encountered in secondary clarifiers such as toxic gases and oxygen deficiency.
 - All Workers shall have confined space entry training. Evidence of training for all personnel shall be submitted to the Contract Administrator as part of the Safe Work Plan specified in D9.
 - A sample Confined Space Entry Permit shall be submitted for approval as part of the Safe Work Plan specified in D9.
 - Confined Space Entry Permits must be completed on a daily basis and clearly displayed at the secondary clarifier entry locations.

- (e) All confined space entry and fall arrest safety equipment is to be supplied by the contractor.
- (f) A confined space standby worker must be provided by the Contractor at all times when workers are in the secondary clarifiers.
- (g) The air in a confined space must be tested before entry and continuously tested during the time that personnel are inside the space. Equipment for continuous monitoring of gases must be explosion-proof and equipped with a visible and audible alarm. The principle tests are for oxygen deficiency, explosion range and toxic gases. Testing equipment must be calibrated in accordance with the manufacturer's specifications.

E3.2 The Contractor shall be aware that portions of the Work are at heights requiring the use of fall restraint procedures.

E3.3 All Contractor personnel and Subcontractors that will be performing the Work shall attend a two (2) hour safety training and site orientation presentation by the City of Winnipeg NEWPCC personnel to review Site specific safety procedures prior to performing any Work on Site.

E3.4 The Contract Administrator may issue a Stop Work order to the Contractor if the above guidelines are not being followed. The Contractor shall not resume his operations until the Contract Administrator is satisfied the Contractor is following the appropriate procedures. The Contractor shall have no claim for extra time or costs due to the Stop Work order for not following these safety guidelines.

E4. NEWPCC WORK REQUIREMENTS

E4.1 To maintain adequate secondary treatment capacity, a maximum of two (2) secondary clarifiers may be offline at any time. The Work Schedule shall reflect rehabilitation of the secondary clarifiers in two phases with each phase representing rehabilitation of two clarifiers.

E4.2 The Contractor must give NEWPCC management five (5) Business Days notice prior to the required shut-down or re-activation of a secondary clarifier.

E4.3 Work hours at the NEWPCC facility are Monday to Friday, 7:30 to 16:00. Work conducted outside of these hours will be subject to pre-approval by NEWPCC management.

E5. FLOW CONTROL REQUIREMENTS

E5.1 The Contractor shall erect and maintain a minimum 914 mm (3'-0") high dam at the effluent discharge channel to prevent possible backflow from the effluent channel during backwash events. The dam may consist of wood, sandbags or an inflatable device.

E5.2 The City is not responsible for any damages to construction equipment and materials resulting from the overtopping or failure of any flow control measures.

E5.3 Flow control is considered incidental to the Works of this Contract and no measurement or payment will be made for this item.

E6. CITY ASSISTANCE

E6.1 NEWPCC personnel will be available to provide assistance to the Contractor for secondary clarifier lock-outs.

E6.2 NEWPCC personnel will drain and wash down the secondary clarifiers with non-potable water prior to construction access. A typical clarifier in the drained condition may be observed during the Bidders Site Investigation.

E6.3 NEWPCC personnel will also provide assistance to the Contractor for the construction of temporary flow control measures as outlined in E5.

E7. MOBILIZATION AND DEMOBILIZATION

- E7.1 Mobilization and demobilization will include, but will not be limited to start-up costs, equipment setup and removal, field office and storage facilities setup and removal, and Site cleanup.
- E7.2 Mobilization and demobilization will be measured on a unit basis and paid for the Contract Unit Price for "Mobilization and Demobilization" in accordance with this specification, accepted and measured by the Contract Administrator.
- E7.3 Fifty (50%) percent of the Mobilization and Demobilization unit price will be paid on the first progress payment.
- E7.4 The remaining fifty (50%) percent of the Mobilization and Demobilization unit price will be paid subsequent to the completion of the Work and clean up of the Site.

E8. OFFICE, WASHROOM AND STORAGE FACILITIES

- E8.1 The Contractor shall supply office facilities meeting the following requirements:
- (a) The field office shall be for the use of site meetings and exclusive use of the Contractor.
 - (b) The building shall be conveniently located near the Site of the Work. Available locations for the field office will be discussed during the Bidders Site Investigation. Placement of the building will be subject to approval from NEWPCC management.
 - (c) The building shall be furnished with a desk, drafting table, 3m x 1.2m table, filing cabinet and a minimum of 8 chairs.
 - (d) The building shall be adequately lighted with fluorescent fixtures.
 - (e) The building shall be suitable for all weather use. It shall be equipped with an electric heater so that the room temperature can be maintained between 16-18°C.
- E8.2 The contractor shall supply washroom facilities meeting the following requirements:
- (a) The building shall be suitable for all weather use. It shall be equipped with an electric heater so that the room temperature can be maintained between 16-18°C.
 - (b) The building shall be located adjacent to the field office.
 - (c) The building shall have holding tanks for potable and waste water. Supply of potable water and removal of wastewater shall be the Contractors responsibility.
 - (d) The building shall contain at minimum, one flushing toilet and one sink.
 - (e) The washroom shall be supplied with anti-bacterial soap and liquid hand sanitizer.
- E8.3 The contractor shall supply storage facilities meeting the following requirements:
- (a) The building shall be located adjacent to the field office.
 - (b) The building shall be for the exclusive use of the Contractor for storage of equipment and materials.
- E8.4 The Contractor shall be responsible for all installation and removal costs, all operating costs and the general maintenance of the office, washroom and storage facilities.
- E8.5 The field office building and the portable washroom should be cleaned on a weekly basis and immediately prior to each bi-weekly Site meeting. The Contract Administrator may request additional cleaning when he deems necessary.
- E8.6 The office, washroom and storage facilities will be provided from the date of Commencement of the Work until Total Performance.
- E8.7 Office and Washroom facilities are considered incidental to the Works of this Contract and no measurement or payment will be made for this item.

E9. SHOP DRAWINGS

E9.1 Description

- (a) This Specification provides instructions for the preparation and submission of shop drawings.
 - (i) The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, including Site erection drawings which are to be provided by the Contractor to illustrate details of a portion of the Work.
 - (ii) The Contractor shall submit specified shop drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be shown on all submissions for Contract Administrator review.
- (b) Shop Drawings
 - (i) Original drawings are to be prepared by Contractor, Subcontractor, supplier, distributor, or manufacturer, which illustrate appropriate portions of Work; showing fabrication, layout, setting or erection details as specified in appropriate sections.
 - (ii) Shop drawings for the following structural components shall bear the seal of a registered Engineer of Manitoba
 - (a) Steel Fabrications
 - (b) Overflow Weir Plate
 - (c) Handrail Assembly
- (c) Contractor's Responsibilities
 - (i) Review shop drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.
 - (ii) Verify:
 - (a) Field Measurements
 - (b) Field Construction Criteria
 - (c) Catalogue numbers and similar data
 - (iii) Coordinate each submission with requirements of Work and Contract Documents. Individual shop drawings will not be reviewed until all related drawings are available.
 - (iv) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.
 - (v) Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission, unless Contract Administrator gives written acceptance of specified deviations.
 - (vi) Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
 - (vii) The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on previous submission.
 - (viii) After Contract Administrator's review and return of copies, distribute copies to subtrades as appropriate.
 - (ix) Maintain one (1) complete set of reviewed shop drawings, filed by Specification Section Number, at the Site of the Work for use and reference of the Contract Administrator and SubContractors.
- (d) Submission Requirements

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

E10. PAINTING

E10.1 Description

This specification shall cover all painting to be completed in the Work.

E10.2 References

- (a) Master Painters Institute (MPI)
 - (i) Architectural Painting Specifications Manual.
- (b) Society for Protective Coatings (SSPC)
 - (i) Systems and Specifications Manual, SSPC Painting Manual, Volume Two.
- (c) National Fire Code of Canada

E10.3 Quality Assurance

- (a) Conform to latest MPI requirements for painting Work including preparation and priming.

E10.4 Delivery, Handling and Storage

- (a) Deliver, store materials in original containers with labels intact. Observe manufacturer's recommendations for storage and handling.
- (b) Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

E10.5 Site Requirements

- (a) Unless specifically pre-approved by product manufacturer, perform no painting Work when:
 - (i) Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.
 - (ii) Rain or snow is forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at Site.
 - (iii) The maximum moisture content of the substrate exceeds MPI or paint manufacturer's prescribed limits.
- (b) Apply paint finish only:
 - (i) In areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - (ii) Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.
 - (iii) Apply paint only when previous coat of paint is dry or adequately cured.

E10.6 Materials

- (a) Only paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- (b) Paint materials for paint systems shall be products of a single manufacturer.
- (c) Contract Administrator will select colors and determine total number of colors to be used on project and their locations:
 - (i) Sludge collector and corner sweep assembly – Black to match existing

E10.7 Painting Systems

- (a) Structural Steel and Metal Fabrications:
 - (i) Surface Preparation to SSPC-SP10 (Near-White Blast)
 - (ii) 2 Coats Bar-Rust 235 (6-8 mils DFT per coat)

E10.8 Execution – General

- (a) Perform preparation and operations for painting in accordance with MPI Painting Specifications Manual except where specified otherwise.
- (b) Do repainting of previously painted surfaces in accordance with MPI Maintenance Repainting Manual, except where specified otherwise.
- (c) Apply paint materials in accordance with paint manufacturers' written application instructions.
- (d) Paint all new Work, except prefinished items or where indicated otherwise.
- (e) Do not paint galvanized steel, aluminum fabrications, mechanical and electrical equipment unless noted otherwise.

E10.9 Existing Conditions

- (a) Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Repair damages, defects, unsatisfactory or unfavorable conditions before proceeding with Work.
- (b) Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter and report findings to Contract Administrator. Do not proceed with Work until conditions fall within acceptable range as recommended by manufacturer.

E10.10 Protection

- (a) Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Contract Administrator.
- (b) Protect items that are permanently attached such as Fire Labels on doors and frames.
- (c) Protect factory finished products and equipment.
- (d) Protect passing pedestrians and general public in and about the building.
- (e) Remove electrical cover plates, light fixtures, surface hardware on doors, and other surface mounted equipment, fittings and fastenings prior to undertaking any painting operations. Store securely store items and re-installed after painting is completed.

E10.11 Dust Control and Containment

- (a) Erect and maintain a dust containment curtain wall at the location indicated in the Drawings. The curtain wall shall span from floor to ceiling. No abrasive blast cleaning shall occur without inspection of the dust curtain containment by the Contract Administrator or representative.
- (b) Notify NEWPCC management a minimum of three (3) working days prior to abrasive blast cleaning for deactivation of HVAC systems in the affected areas.
- (c) During abrasive blast cleaning, install and maintain one portable drum fan capable of a minimum of 20,000 c.f.m. of air movement at the location of an open wall louver to create negative air pressure within the dust containment area.
- (d) Maintain two openings in the dust containment curtain when no blast cleaning operations are being completed for ventilation purposes. The openings shall be a minimum of 10 m wide by 3 m high each.

E10.12 Cleaning and Preparation

- (a) Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements.
- (b) Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- (c) Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted.
- (d) Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.
- (e) Clean and roughen existing concrete floor surface using abrasive blasting (sandblasting or light brush shotblast). Abrasive materials must be environmentally friendly with low crystalline silica content. Sweep and pressure wash surface after blasting to remove dust and debris. Patch holes and cracks with filler. Surface should be free from moisture before application of paint.

E10.13 Application

- (a) Apply paint by brush, roller, airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- (b) Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- (c) Painting coats specified are intended to cover surface completely. If necessary apply additional coats until satisfactory coverage is obtained. Provide additional coats at not additional cost to Contract.
- (d) Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- (e) Sand and dust between coats to remove visible defects.
- (f) Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- (g) Do not paint door and miscellaneous hardware, unless indicated otherwise.
- (h) Do not paint nameplates, signage, fire labels, or other markers or signs indicated to remain.
- (i) Do not paint copper, bronze, chromium plate, nickel, stainless steel, aluminum, lead and other bright metals, unless specified otherwise.
- (j) Clean shop applied paint surfaces that become marked. Touch up with primer and paint as required.

E10.14 Restoration

- (a) Clean and re-install all hardware items removed before undertaken painting operations.
- (b) Remove protective coverings and warning signs as soon as practical after operations cease.
- (c) Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- (d) Protect freshly completed surfaces from paint droppings and dust. Avoid scuffing newly applied paint.
- (e) Restore areas used for storage, cleaning, mixing and handling of paint to clean condition.

E10.15 Method of Measurement and Payment

- (a) Painting will be considered incidental to the Work listed in individual Part E specifications and shall be included in the associated price for each applicable item. No direct measurement for payment will be made for this item.

E11. CONCRETE REPAIR

E11.1 Description

Concrete repairs shall include spall repairs to the concrete launder and spall repair to the secondary clarifier walls from potential damage during existing wear plate removal.

E11.2 Materials

- (a) The Contractor shall implement the materials and construction methods as described below to complete the works. Equivalent products and/or alternative construction methods shall be approved by the Contract Administrator prior to repairs. The Contractor shall supply to the Contract Administrator, Material Data Sheets and Product Information prior to commencing repairs for review and approval.

E11.3 Construction Methods

- (a) Concrete Spall Repairs

- (i) Identify all spalled areas scheduled for repair as identified by the Contract Administrator.
- (ii) Saw cut the perimeter of larger patches to a minimum of 25 mm outside the limits of the spalled/deteriorated area designated for repair as directed by the Contract Administrator.
- (iii) Chip and remove the delaminated concrete until sound concrete is encountered to provide a solid bond.
- (iv) Remove a minimum of 25 mm of concrete from around all encountered rebar to provide a solid bonding area.
- (v) Repair overhead and sidewall patches using a non-shrink, sulphate resistant mortar; Emaco S88 SR (or approved equivalent in accordance with B6) if depth of patch is 50 mm or less. The approved product shall be prepared and installed according to the manufacturer's instructions.
- (vi) For patches 50 mm or deeper, use a non-shrink, cementitious grout; Sika 212 HP (or approved equivalent in accordance with B6). This procedure shall require that the repair area be formed and the approved product be prepared and pumped into place as per the manufacturer's instructions.

E11.4 Measurement and Payment

- (a) Concrete Launder Spall Repairs will be measured on a square meter basis and paid for at the Contract Unit Price for "Concrete Launder Spall Repairs." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the work included in this specification.
- (b) Concrete repair incidental to the wear plate rehabilitation outlined in E12 shall be considered incidental to the Work and no measurement or payment will be made for this item.
- (c) Concrete repair incidental to the overflow weir plate rehabilitation outlined in E13 shall be considered incidental to the Work and no measurement or payment will be made for this item.

E12. WEAR PLATE REHABILITATION

E12.1 Description

This specification will cover rehabilitation of the wear plate fastened to the perimeter of the clarifier wall.

E12.2 Materials

- (a) Steel Plate: to CAN/CSA G40.20/G40.21, Grade 300W.
- (b) Threaded Anchor Rod: to ASTM A307.
- (c) Welding Electrodes: to CAN/CSA W48.1
- (d) Anchoring Grout: Ambex AAC Anchoring Capsules or approved alternate micro fine cementitious grout in accordance with B6.
- (e) Paint: Bar-Rust 235

E12.3 Construction Methods

E12.3.1 Submittals

- (a) The constructor shall submit the qualifications of the fabricator and welders to the Contract Administrator for acceptance. Submit shop drawings in accordance with E9 clearly indicating materials, thicknesses. Indicate field measurements on shop drawings.

E12.3.2 Fabrication

- (a) Fabricate Work square, true, straight and accurate to required size.
- (b) Confirm measurements for all plate sections before fabrication.
- (c) Pieces shall be of the sizes indicated in the Drawings and shall not be built from scrap pieces. Confirm sizes with field measurements.
- (d) Plate for corner sections shall be shop bent to the specified radius shown in the Drawings for ease of field installations.
- (e) The wall-facing side of all new wear plate shall be shop painted in accordance with E10.
- (f) Remove and grind smooth burrs, filings, sharp protrusions, and projections from metal fabrications to prevent possible injury.
- (g) All steel welding shall conform to CSA Standard W59. Fabricators shall be fully approved by the Canadian Welding Bureau, in conformance with CSA Standard W47.1. Welding shall be done by currently licensed welders only.

E12.3.3 Installation

- (a) Existing wear plate shall be demolished and replaced as indicated in the Drawings.
- (b) Demolish wear plate by cutting and/or grinding the plate at the welded locations. For corner portions of wear plate, prying of the wear plate may be required to locate embedded anchors. Care shall be taken to minimize concrete damage and to preserve embedded anchors in corner portions of the wall.
- (c) Repair any concrete damage resulting from demolition with structural repair mortar (Emaco S88 SR or approved alternate in accordance with B6).
- (d) Install new portions of wear plate to match the existing wear plate elevation. New wear plate shall be shop painted on the wall-facing side of the plate.
- (e) Pre-bent corner portions of wear plate shall be attached to the existing embedded anchor by a plug weld prior to embedded reinforcing bar installation.
- (f) Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- (g) Fill any gaps between the wear plate and the concrete wall with non-shrink grout (Sika 212 or approved alternate in accordance with B6).
- (h) Surface prepare new and existing plate to SSPC-SP6 (commercial blast cleaning) prior to painting.
- (i) Paint entire surface of wear plate with two coats of Bar-Rust 235 (6-8 mils DFT per coat) in accordance with E10.

E12.4 Measurement and Payment

- (a) Wear plate replacement will be measured on a linear meter basis and paid for at the Contract Unit Price for "Wear Plate Replacement." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the work included in this specification.

E13. OVERFLOW WEIR PLATE REHABILITATION

E13.1 Description

This specification will cover rehabilitation of the v-notched aluminum overflow weir plate attached to the perimeter of the concrete launder.

E13.2 Materials

- (a) Weir Plate: Aluminum Plate and Plate Washers: to CAN/CSA S157, type 6061-T651.
- (b) Anchors: HILTI HAS Stainless Steel (Type 304) threaded rods

- (c) Anchoring Adhesive: HILTI HY150, or approved alternate in accordance with B6.
- (d) Isolating sleeves shall be "Nyltite" – headed isolation sleeves as manufactured by Spaenaur of Kitchener, Ontario, or approved alternate in accordance with B6.
- (e) Waterproofing Membrane (outside of plate): Henry CM100 or approved alternate in accordance with B6.
- (f) Waterproofing Membrane (inside of plate): Henry CM100 or approved alternate in accordance with B6.
- (g) Isolation Coating: Henry CM100 or approved alternate in accordance with B6.

E13.3 Construction Methods

E13.3.1 Installation

- (a) Conduct a pre-construction survey to determine the top of the existing weir plate. The survey will facilitate installation of the new weir plate to the proper elevation.
- (b) Remove and dispose all existing aluminum overflow weir plates including all fasteners and membrane material.
- (c) Clean and prepare concrete surfaces to which new weir plate is to be affixed to SSPC-SP3 (power tool cleaning).
- (d) Apply one coat 3mm thick of waterproofing membrane to the inside face of the overflow weir plate prior to installation. The weir plate shall be affixed to the concrete launder wall prior to curing of the waterproofing membrane.
- (e) Install plate and new stainless steel fasteners. Drill fasteners holes and clean thoroughly with a wire brush and compressed air. Install fasteners as per manufacturer's installations. Ensure drilled holes into the launder wall do not exceed the specified depth as indicated on the Drawings.
- (f) Fill any potential gaps between the aluminum weir plate and the concrete launder wall with flowable membrane.
- (g) Apply two coats 1.5 mm thick each of water proofing membrane to the outside face of the overflow weir plate as shown on the drawings complete with reinforcing mesh.

E13.4 Measurement and Payment

- (a) Overflow weir plate replacement shall be measured on a linear meter basis and paid for at the Contract Unit Price for "Overflow Weir Plate Replacement." Said price shall be payment in full for removal, supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.

E14. SLUDGE COLLECTOR MECHANISM REHABILITATION

E14.1 Description

This specification will cover rehabilitation of the fixed (non-pivoting) portions of the sludge collector mechanism in the secondary clarifiers.

E14.2 Materials

- (a) All materials shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.
- (b) Steel Sections and Plates: to CAN/CSA G40.20, Grade 300W, except W, HP and HSS sections, which shall be Grade 350W.
- (c) Material intended for use in the various assemblies shall be new, straight, and clean with sharply defined profiles.
- (d) Welding materials: to CSA W59
- (e) Squeegees: Stainless Steel 316.

- (f) Squeegee Fasteners: ASTM F593, Type 304 Stainless Steel
- (g) Steel rod: to ASTM A29/A29M
- (h) Paint: Bar-Rust 235

E14.3 Construction Methods

E14.3.1 General

- (a) The entire sludge collector mechanism assembly shall be shimmed in place with wood blocking to ensure the overall elevation does not change during the work period.

E14.3.2 Existing Steel Coating Spot Repairs

- (a) Complete coating spot repairs to corroded portions of the existing sludge collector mechanism in accordance with the Drawings and E10.
- (b) The coating spot repairs shall consist of abrasive blast cleaning and re-coating of corroded sections of the existing sludge collector steel. Coating spot repairs shall be priced and paid for in 300 mm length units as shown on the Drawings.
- (c) The locations of coating spot repairs shall be field directed by the Contract Administrator or appointed representative.
- (d) All brass squeegee strips are to remain attached to the bottom of the sweep angles during spot repairs.

E14.3.3 Squeegee Replacement

- (a) Remove all existing brass squeegees from the sweep blades on the fixed portion of the sludge collector mechanism.
- (b) Clean debris from the sweep blades and drill new fasteners holes as indicated on the Drawings.
- (c) Refinish the sweep blades by abrasive blast cleaning and re-coating. Coatings shall be considered incidental to the squeegee replacement.
- (d) Mount the new stainless steel squeegee plates as shown on the drawings after the coating is touch-dry. Squeegees strips shall be 25 to 50 mm above the clarifier floor to match existing.

E14.3.4 Existing Sludge Detector Channel Removal

- (a) Remove all existing abandoned sludge detector channels located at mid-length of the sludge collector truss assembly. Coating repairs to these sections will be considered as existing Steel Coating Spot Repairs as outlined in E14.3.2.

E14.3.5 Turnbuckle Replacement

- (a) Replace all sludge collector tension rod support assemblies according to the Drawings and E10.
- (b) Turnbuckles to be manufactured by Crosby Canada or approved alternate in accordance with B6. Turnbuckles shall be shop painted with field touch-ups after installation according to the Drawings.

E14.3.6 Centre Tower Cross Bracing Repair

- (a) Remove and replace all damaged centre tower cross bracing according to the Drawings and as directed by the Contract Administrator or designated representative.
- (b) Confirm measurements for all cross brace repairs prior to fabrication.
- (c) New cross bracing shall match the geometry of the existing removed cross bracing.
- (d) New steel shall be painted in accordance with the Drawings and E10. Coatings shall be applied to field welded areas after installation.

- E14.3.7 Scum Collector Support Steel Repairs
- (a) Remove and replace the damaged scum collector supporting steel according to the Drawings.
 - (b) The scum collector mechanism shall be temporarily braced during modification as required.
- E14.3.8 Scum Collector Assembly Replacement
- (a) Remove and replace the scum collector assemblies as shown in the drawings.
 - (b) Verify existing scum collector assembly dimensions by removing a typical scum collector assembly from the secondary clarifiers prior to fabrication.
- E14.4 Measurement and Payment
- (a) Existing Steel Coating Spot Repairs - Straight Areas shall be measured on a unit basis and paid for at the Contract Unit Price for "Coating Spot Repairs – Straight Areas." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.
 - (b) Existing Steel Coating Spot Repairs – Connection Areas shall be measured on a unit basis and paid for at the Contract Unit Price for "Coating Spot Repairs – Connection Areas." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.
 - (c) Turnbuckle Replacement shall be measured on a unit basis and paid for at the Contract Unit Price for "Turnbuckle Replacement." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.
 - (d) Fixed Squeegee Replacement will be measured on a linear meter basis and paid for at the Contract Unit Price for "Fixed Squeegee Replacement." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the work included in this specification.
 - (e) Centre Tower Cross Bracing Repair shall be measured on a unit basis and paid for at the Contract Unit Price for "Centre Tower Cross Bracing Repair." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.
 - (f) Scum Collector Support Steel Modifications shall be measured on a unit basis and paid for at the Contract Unit Price for "Scum Collector Support Steel Modifications." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.
 - (g) Scum Collector Assembly Replacements shall be measured on a unit basis and paid for at the Contract Unit Price for "Scum Collector Assembly Replacements." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.
 - (h) Scum Collector Assembly Replacements shall be measured on a unit basis and paid for at the Contract Unit Price for "Scum Collector Replacements." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in the specification.

E15. CORNER SWEEP MECHANISM REHABILITATION

E15.1 Description

This specification will cover rehabilitation of the corner sweep (pivoting) portions of the sludge collector mechanism in the secondary clarifiers.

E15.2 Materials

- (a) All materials shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.
- (b) Material intended for use in the various assemblies shall be new, straight, and clean with sharply defined profiles.
- (c) Steel Sections and Plates: to CAN/CSA G40.20, Grade 300W, except W, HP and HSS sections, which shall be Grade 350W.
- (d) Steel Pipe: to ASTM A53/A53M, seamless.
- (e) Steel Rod: to ASTM A108 (Carbon).
- (f) Welding materials: to CSA W59
- (g) Fasteners: ASTM A325/A325M (Type 1).
- (h) Turnbuckles: to ASME B30.26. Carbon Finish.
- (i) Squeegees: Stainless Steel 316.
- (j) Squeegee Fasteners: ASTM F593, Type 304 Stainless Steel
- (k) Paint: Bar-Rust 235
- (l) Plastic Hinge Bushings:
 - (i) Flange Bushings: iGlide part HFM-4044-40, manufactured by Igus.
 - (ii) Sleeve Bushings: iGlide part HSM-4044-20, manufactured by Igus.
- (m) Roller Wheel: Cast Urethane (Hardness: 65 Shore D) with a GSM Nylon bushing as supplied by Hi-Tech Seals or approved equal.

E15.3 Construction Methods

E15.3.1 Submittals – Steel Pivot Arms

- (a) The constructor shall submit the qualifications of the fabricator and welders to the Contract Administrator for acceptance. Submit shop drawings in accordance with E9 clearly indicating materials, thicknesses, and connections. Indicate field measurements on shop drawings.

E15.3.2 Fabrication - Steel

- (a) Fabricate Work square, true, straight and accurate to required size. Assemble work in such a way that no disfigurements will show in the finished Work, or impair the strength.
- (b) Confirm measurements for all member sizes prior to fabrication.
- (c) Pieces shall be of the sizes indicated in the Drawings and shall not be built from scrap pieces. Confirm sizes with field measurements.
- (d) Remove and grind smooth burrs, filings, sharp protrusions, and projections from metal fabrications to prevent possible injury.
- (e) All steel welding shall conform to CSA Standard W59. Fabricators shall be fully approved by the Canadian Welding Bureau, in conformance with CSA Standard W47.1. Welding shall be done by currently licensed welders only.
- (f) Ensure all welds are sealed and continuous for the length of the joint. File or grind exposed welds smooth and flush.

E15.3.3 Submittals – Hinge Assembly

- (a) The Contractor shall submit the qualifications of the fabricator and welders to the Contract Administrator for acceptance. Submit shop drawings in accordance with E9 clearly indicating materials, thicknesses, and connections.

E15.3.4 Fabrication – Hinge Assembly

- (a) Hinge assembly shall be fabricated in accordance with the Drawings.
- (b) The sleeve bushings shall line the full height of the hinge sleeve-hinge pin interface with a collar at the top and bottom.
- (c) The hinge assembly shall be fabricated and aligned in shop and verified by the Contract Administrator prior to painting.

E15.3.5 Submittals – Roller Wheel

- (a) Submit shop drawings in accordance with E9 clearly indicating materials and dimensions of the wheel.

E15.3.6 Fabrication – Roller Wheel

- (a) Roller wheel shall be fabricated in accordance with the Drawings.
- (b) The roller wheel shall be capable of resisting a constant applied load of 100 lbs.
- (c) The bushing material shall be GSM Nylon.

E15.3.7 Installation

- (a) Remove existing pivot arms and associated equipment including corner sweep boom and hinges.
- (b) Remove and replace existing hinge supporting angle members with new channel members. Modify existing welded brace connections as required.
- (c) Mount new hinges to new pivot support channels.
- (d) Mount new pivot arms.
- (e) Mount new corner sweep boom.
- (f) Mount new stainless steel squeegee to corner sweep boom.
- (g) Connect counterweight assembly. The counterweight loading will create torque induced deflections that will need to be accommodated in adjustment of the assembly. Complete adjustments to the corner sweep boom to ensure it is level and at the proper elevation by adjusting the slotted hinge bolt connections. When the corner sweep boom is set at the proper elevation the roller wheel will be centred on the wall wear plate and the sweep 25 to 50 mm above the floor throughout a complete revolution of the sludge collector mechanism.
- (h) The sludge collector mechanism shall be dry tested for a minimum of 3 complete revolutions in the presence of the Contract Administrator or designated representative prior to re-commissioning.

E15.4 Measurement and Payment

- (a) Corner Sweep Assembly Replacement shall be measured on a unit basis and paid for at the Unit Price for “Corner Sweep Assembly Replacement.” Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.

E16. COUNTERWEIGHT MECHANISM ASSEMBLY REHABILITATION

E16.1 Description

This specification will cover rehabilitation of the counterweight assembly.

E16.2 Materials

- (a) All materials shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.
- (b) Material intended for use in the various assemblies shall be new, straight, and clean with sharply defined profiles.

- (c) Steel Sections and Plates: to CAN/CSA G40.20, Grade 300W, except W, HP and HSS sections, which shall be Grade 350W.
- (d) Welding materials: to CSA W59
- (e) Paint: Bar-Rust 235
- (f) Stainless Steel Cable: ASTM A1023/A1023M (Type 304)
- (g) Steel Rod: ASTM A29/A29M
- (h) Swivel Hook: Yoke Industrial Part # X-027-06

E16.3 Construction Methods

E16.3.1 Submittals

- (a) The constructor shall submit the qualifications of the fabricator and welders to the Contract Administrator for acceptance. Submit shop drawings in accordance with E9 clearly indicating materials, thicknesses, and connections. Indicate field measurements on shop drawings.

E16.3.2 Fabrication

- (a) Fabricate Work square, true, straight and accurate to required size. Assemble work in such a way that no disfigurements will show in the finished Work, or impair the strength.
- (b) Confirm existing field clearances and dimensions prior to fabrication of new counterweight assembly components.
- (c) Pieces shall be of the sizes indicated in the Drawings and shall not be built from scrap pieces. Confirm sizes with field measurements.
- (d) Remove and grind smooth burrs, filings, sharp protrusions, and projections from metal fabrications to prevent possible injury.
- (e) All steel welding shall conform to CSA Standard W59. Fabricators shall be fully approved by the Canadian Welding Bureau, in conformance with CSA Standard W47.1. Welding shall be done by currently licensed welders only.

E16.3.3 Installation

- (a) Remove all counterweight cables, tension rods, pulleys, guides, and trays. Care shall be taken to prevent damage to all existing welded connection points.
- (b) The existing counterweight shall be removed and refinished according to the Drawings. Installation of a new connection point shall be installed during refinishing. The swivel hook shall be painted as per the counterweight, with masking of the brass bushing to ensure no paint penetration.
- (c) Install new counterweight guides and tray.
- (d) Install new pulley assembly. Pulley assembly is to be field adjusted prior to welding to ensure that the cable line-of-action is level with the corner sweep arm connection point and is centred on the tray assembly.
- (e) Install new tension rod and stainless steel cable.
- (f) Install new buoys (failure detection floats) to the tension rod.
- (g) Install new counterweight pendulum connection and connect to the new stainless steel cable and swivel hook. Provide an extra 300 mm at the end of the cable to allow for future adjustments. Temporarily support the counterweight during installation to ensure the cable remains tensioned throughout the complete range of operation (counterweight does not bottom out).

E16.4 Measurement and Payment

- (a) The Counterweight mechanism assembly rehabilitation shall be measured on a unit basis and paid for at the Unit Price for "Counterweight Rehabilitation." Said price shall be

payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.

E17. HANDRAIL REHABILITATION

E17.1 Description

This specification will cover replacement of the existing post and chain type handrails in secondary clarifiers 1 through 10.

E17.2 Materials

- (a) Handrail: Aluminum Tube: to CAN/CSA S157, alloy type 6061-T651.
- (b) Anchors: HILTI HAS Stainless Steel (Type 304) threaded rods
- (c) Anchoring Adhesive: HILTI HY150, or approved alternate in accordance with B6.
- (d) Isolating sleeves shall be "Nyltite" – headed isolation sleeves as manufactured by Spaenaur of Kitchener, Ontario, or approved alternate in accordance with B6.
- (e) Bituminous Coating – Intertuf 16 or approved alternate in accordance with B6.

E17.3 Construction Methods

E17.3.1 Submittals

- (a) The constructor shall submit the qualifications of the fabricator and welders to the Contract Administrator for acceptance. Submit shop drawings in accordance with E9 clearly indicating materials, thicknesses, and connections. Indicate field measurements on shop drawings.

E17.3.2 Fabrication

- (a) Fabricate Work square, true, straight and accurate to required size. Assemble work in such a way that no disfigurements will show in the finished Work, or impair the strength.
- (b) Confirm existing field clearances and dimensions prior to fabrication of new handrail assemblies.
- (c) Pieces shall be of the sizes indicated in the Drawings and shall not be built from scrap pieces. Confirm sizes with field measurements.
- (d) Remove and grind smooth burrs, filings, sharp protrusions, and projections from metal fabrications to prevent possible injury.
- (e) The bottom of all base plates shall be coated with a bituminous isolation coating.
- (f) All aluminum welding shall conform to CSA Standard W59.2. Fabricators shall be fully approved by the Canadian Welding Bureau, in conformance with CSA Standard W47.1. Welding shall be done by currently licensed welders only.

E17.3.3 Installation

- (a) Remove and dispose existing post and chain guardrail, removing all base plate anchors and grinding the concrete surface smooth. Repair concrete chips and indentations with structural repair mortar (Emaco GP or approved equivalent in accordance with B6).
- (b) Install new guardrail as shown on the shop drawings.

E17.4 Measurement and Payment

- (a) Handrail replacement will be measured on a linear meter basis and paid for at the Contract Unit Price for "Handrail Replacement." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the work included in this specification.

E18. CASH ALLOWANCE FOR REPAIRS

E18.1 Description

- (a) The Cash Allowance for Repairs is intended to be used for remedial repairs directed and authorized by the Contract Administrator under E14, E15, E16 and E17.
- (b) The City reserves the right to delete any or all of the Cash Allowance from the contract if the Work intended to be covered by the Cash Allowance is not required, or if the Works intended are found to be more extensive than the provisional Cash Allowance.

E18.2 Method of Measurement and Basis of Payment

- (a) Cost of repairs shall be evaluated by the methods outlined in C7.4, and a Change Order prepared by the Contract Administrator. Cost of the Change Order will be paid on the Progress Estimate and deducted from the Cash Allowance. If the valuation of the authorized work exceeds the Value of the Cash Allowance, the Contract Value will be adjusted by the shortfall.