



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 588-2015

**AUTOMATED SECURITY GATES AND ASSOCIATED PAVEMENT WORKS,
MCPHILLIPS PUMPING STATION AND PLINGUET YARD**

TABLE OF CONTENTS

PART A - BID SUBMISSION

| | |
|---|----|
| Form A: Bid | 1 |
| Form B: Prices | 4 |
| Form G1: Bid Bond and Agreement to Bond | 17 |
| Form G2: Irrevocable Standby Letter of Credit and Undertaking | 19 |

PART B - BIDDING PROCEDURES

| | |
|---|---|
| B1. Contract Title | 1 |
| B2. Submission Deadline | 1 |
| B3. Site Investigation | 1 |
| B4. Enquiries | 1 |
| B5. Confidentiality | 1 |
| B6. Addenda | 2 |
| B7. Substitutes | 2 |
| B8. Bid Components | 3 |
| B9. Bid | 4 |
| B10. Prices | 4 |
| B11. Disclosure | 5 |
| B12. Qualification | 5 |
| B13. Bid Security | 6 |
| B14. Opening of Bids and Release of Information | 6 |
| B15. Irrevocable Bid | 7 |
| B16. Withdrawal of Bids | 7 |
| B17. Evaluation of Bids | 7 |
| B18. Award of Contract | 8 |

PART C - GENERAL CONDITIONS

| | |
|------------------------|---|
| C0. General Conditions | 1 |
|------------------------|---|

PART D - SUPPLEMENTAL CONDITIONS

General

| | |
|--|---|
| D1. General Conditions | 1 |
| D2. Scope of Work | 1 |
| D3. Contract Administrator | 2 |
| D4. Contractor's Supervisor | 2 |
| D5. Ownership of Information, Confidentiality and Non Disclosure | 2 |
| D6. Notices | 2 |
| D7. Furnishing of Documents | 3 |

Submissions

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

Schedule of Work

| | |
|------------------------------|---|
| D14. Commencement | 5 |
| D15. Working Days | 5 |
| D16. Substantial Performance | 5 |
| D17. Total Performance | 6 |
| D18. Liquidated Damages | 6 |
| D19. Scheduled Maintenance | 6 |

Control of Work

| | |
|---|----|
| D20. Job Meetings | 6 |
| Measurement and Payment | |
| D21. Payment | 7 |
| Warranty | |
| D22. Warranty | 7 |
| Form H1: Performance Bond | 8 |
| Form H2: Irrevocable Standby Letter of Credit | 10 |
| Form J: Subcontractor List | 12 |
| Form L: Detailed Work Schedule | 13 |

PART E - SPECIFICATIONS

General

| | |
|--|----|
| E1. Applicable Specifications and Drawings | 1 |
| E2. Traffic Control | 1 |
| E3. Traffic Management | 1 |
| E4. Water Obtained From the City | 2 |
| E5. Surface Restorations | 2 |
| E6. Operating Constraints For Work In Close Proximity To The Mcphillips Pumping Station Feederman | 2 |
| E7. Condition, Protection of, and Access to the Aqueduct | 5 |
| E8. Environmental Protection | 5 |
| E9. Record Drawings | 8 |
| E10. Work Around Rail Tracks | 8 |
| E11. Removal of Existing Pipes | 8 |
| E12. Bollard Covers | 9 |
| E13. Removal of existing bollards | 9 |
| E14. Installation of Bollards | 10 |
| E15. Removal, salvaging and installation of fencing and gates | 10 |
| E16. Manual Chainlink Gates | 11 |
| E17. Pedestrian Pre-Hung Gate | 12 |
| E18. Alpha Gate Specification | 13 |
| E19. Cast-In-Place Concrete Pile Foundations | 17 |
| E20. Electrical Work | 24 |

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

- B1.1 Automated Security Gates and Associated Pavement Works, McPhillips Pumping Station and Plinguet Yard

B2. SUBMISSION DEADLINE

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, **March 9, 2016**.
- B2.2 Bids determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.
- B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. SITE INVESTIGATION

- B3.1 Further to C3.1, the Bidder may make an appointment to view the Sites by contacting the Contract Administrator.
- B3.2 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B4. ENQUIRIES

- B4.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.
- B4.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.
- B4.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.
- B4.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.
- B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B4 unless that response or interpretation is provided by the Contract Administrator in writing.

B5. CONFIDENTIALITY

- B5.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:
- (a) was known to the Bidder before receipt hereof; or
 - (b) becomes publicly known other than through the Bidder; or
 - (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

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

B6. ADDENDA

B6.1 The Contract Administrator may, at any time prior to the Submission deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.

B6.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

B6.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B6.2.2 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B6.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B7. SUBSTITUTES

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

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

B7.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.

B7.4 The Bidder shall ensure that any and all requests for approval of a substitute:

- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
- (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
- (c) identify any anticipated cost or time savings that may be associated with the substitute;
- (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
- (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

B7.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.

- B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B17.
- B7.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B7.10 Notwithstanding B7.2 to B7.9, in accordance with B8.6, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B17.1(a).

B8. BID COMPONENTS

- B8.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices;
 - (c) Bid Security
 - (i) Form G1: Bid Bond and Agreement to Bond, or
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or
a certified cheque or draft;
- B8.2 Further to B8.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B7.
- B8.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B8.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B8.4.1 Samples or other components of the Bid 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.
- B8.5 Bidders are advised not to include any information/literature except as requested in accordance with B8.1.
- B8.6 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 B17.1(a).
- B8.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B8.8 Bids shall be submitted to:
The City of Winnipeg

Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B9. BID

- B9.1 The Bidder shall complete Form A: Bid, making all required entries.
- B9.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.
- B9.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B9.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, shall be affixed;
 - (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B9.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B9.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B10. PRICES

- B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B10.2 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.
- B10.3 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.
- B10.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B11. DISCLOSURE

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

B11.2 The Persons are:

- (a) N/A

B12. QUALIFICATION

B12.1 The Bidder shall:

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

B12.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B12.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B12.4 Further to B12.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

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

B12.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B12.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B13. BID SECURITY

B13.1 The Bidder shall provide bid security in the form of:

- (a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or
- (b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking 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 included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or
- (c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.

B13.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B13.1.2 All signatures on bid securities shall be original.

B13.1.3 The Bidder shall sign the Bid Bond.

B13.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B13.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B13.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B13.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B13.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B13.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

B14. OPENING OF BIDS AND RELEASE OF INFORMATION

B14.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B14.1.1 Bidders or their representatives may attend.

B14.1.2 Bids determined by the Manager of Materials, or his/her designate, to not include the bid security specified in B13 will not be read out.

B14.2 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/>

- B14.3 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/>
- B14.4 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.

B15. IRREVOCABLE BID

- B15.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.
- B15.2 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 until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

B16. WITHDRAWAL OF BIDS

- B16.1 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.
- B16.1.1 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.
- B16.1.2 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 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B16.1.3 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 12 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B16.1.3(b), declare the Bid withdrawn.
- B16.2 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 B15.2 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, including the right to retain the Bidder's bid security.

B17. EVALUATION OF BIDS

- B17.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation therefrom (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B11.1 (pass/fail);
 - (c) Total Bid Price;

(d) economic analysis of any approved alternative pursuant to B7.

B17.2 Further to B17.1(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.

B17.3 Further to B17.1(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.

B17.4 Further to B17.1(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.

B17.4.1 Further to B17.1(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.

B18. AWARD OF CONTRACT

B18.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B18.2 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.

B18.2.1 Without limiting the generality of B18.2, 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.

B18.3 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 B17.

B18.3.1 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.

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:

- (a) Concrete Road Construction
 - (i) McPhillips Pumping Station;
 - (ii) Plinguet Yard – Plinguet Access; and
 - (iii) Plinguet Yard – Dawson Access.
- (b) Automated/Manual Gate Installation
 - (i) McPhillips Pumping Station;
 - (ii) McPhillips Pumping Station – Logan Access;
 - (iii) Plinguet Yard – Plinguet Access;
 - (iv) Plinguet Yard – Dawson Access; and
 - (v) Plinguet Yard – Messier Rail Access.

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

- (a) Concrete Road Construction
 - (i) Pavement and Sidewalk Removal;
 - (ii) Excavation and subgrade compaction;
 - (iii) Planing existing asphalt overlay (in rehabilitation areas);
 - (iv) Placement of separation fabric;
 - (v) Subbase and base course construction;
 - (vi) Adjustment manhole, catchbasin and appurtenances;
 - (vii) Installation of catchbasins and sewer service pipe
 - (viii) Supply and install light post and LED Light complete with electrical/communication conduit and bollards;
 - (ix) Construction of 200 mm reinforced concrete pavement;
 - (x) Full depth concrete joint repairs (in rehabilitation areas);
 - (xi) Construction of concrete median slabs;
 - (xii) Construction of concrete curbs (150 mm and 180 mm barrier curb, 150 mm and 180 mm modified barrier curb, and ramp curb);
 - (xiii) Placement of asphalt overlay in rehabilitation areas (average thickness 50 mm);
 - (xiv) Sidewalk construction;
 - (xv) Boulevard grading and placement of topsoil and sod; and
 - (xvi) Restoration.
- (b) Automated/Manual Gate Installation
 - (i) Remove existing chain link fencing;
 - (ii) Supply and install automated gates with dual height card readers, loops, electrical/communication conduit and bollards;
 - (iii) Supply and install pedestrian manual security access gates complete with electrical/communication conduit;

- (iv) Supply and install manual gates with manual security access; and
- (v) Supply and install new chain link fencing.

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is Morrison Hershfield Limited, represented by:

Gwen Coolidge, P.Eng.
Transportation Engineer

Telephone No. 204-977-8370

Email gcoolidge@morrisonhershfield.com

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

D3.3 Bids Submissions must be submitted to the address in B8.8

D4. CONTRACTOR'S SUPERVISOR

D4.1 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.

D4.2 At least two (2) business days prior to the commencement of any Work on the site, the Contractor shall provide the Contract Administrator with a phone number where the supervisor identified in D4.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

D5.1 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.

D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D5.3 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.

D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

D6. NOTICES

D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D3.1.

- D6.3 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

- D6.1 **Bids Submissions** must be submitted to the address in B8.8.

D7. FURNISHING OF DOCUMENTS

- D7.1 Upon award of the Contract, the Contractor will be provided with five (5) complete sets of the Bid Opportunity. If the Contractor requires additional sets of the Bid Opportunity, they will be supplied to him/her at cost.

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 shall 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, broad form property damage cover 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) an 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 City Solicitor 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 the date specified in the C4.1 for the return of the executed Contract.

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 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 If the bid security provided in his/her Bid was not a certified cheque or draft pursuant to B13.1(c), 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 letter of intent and prior to the commencement of any Work on the Site and in no event later than the date specified in the C4.1 for the return of the executed Contract.

D12. DETAILED WORK SCHEDULE

D12.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract.

D12.2 The detailed work schedule shall consist of the following:

- (a) a Gantt chart for the Work; or
- (b) Form L: Detailed Work Schedule

acceptable to the Contract Administrator.

D12.3 Further to D12.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

D13. SUBCONTRACTOR LIST

D13.1 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 or prior to a pre-construction meeting, or at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the C4.1 for the return of the executed Contract.

SCHEDULE OF WORK

D14. COMMENCEMENT

- D14.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D14.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D8;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the twenty-four (24) hour emergency response phone number specified in D4.2.
 - (iv) the Safe Work Plan specified in D9;
 - (v) evidence of the insurance specified in D10;
 - (vi) the performance security specified in D11; and
 - (vii) the subcontractor list specified in D13; and
 - (viii) the detailed work schedule 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.
- D14.3 The Contractor shall not commence the Work on the Site before May 16, 2016, and shall commence the Work on Site no later than May 20, 2016, as directed by the Contract Administrator and weather permitting.
- D14.4 The City intends to award this Contract by **April 25, 2016**.
- D14.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D15. WORKING DAYS

- D15.1 Further to C1.1(jj);
- D15.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record his/her assessment. On a weekly basis the Contract Administrator will provide the Contractor with a record of the Working Days assessed for the preceding week. The Contractor shall sign each report signifying that he/she agrees with the Contract Administrator's determination of the Working Days assessed for the report period.
- D15.1.2 Work done to restore the Site to a condition suitable for Work, shall not be considered "work" as defined in the definition of a Working Day.
- D15.1.3 When the Work includes two or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types of Work in determining whether the Contractor was able to work in assessing Working Days.

D16. SUBSTANTIAL PERFORMANCE

- D16.1 The Contractor shall achieve Substantial Performance within fifty (50) consecutive Working Days of the commencement of the Work as specified in D15.
- D16.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

D16.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D17. TOTAL PERFORMANCE

D17.1 The Contractor shall achieve Total Performance within fifty-five (55) consecutive Working Days of the commencement of the Work as specified in D15.

D17.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

D17.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

D18. LIQUIDATED DAMAGES

D18.1 If the Contractor fails to achieve Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

- (a) Substantial Performance – one thousand dollars (\$1,000);
- (b) Total Performance – five hundred dollars (\$500).

D18.2 The amounts specified for liquidated damages in D18.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Substantial Performance or Total Performance by the days fixed herein for same.

D18.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D19. SCHEDULED MAINTENANCE

D19.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

- (a) Reflective crack maintenance during one year maintenance warranty as specified in CW 3250; and
- (b) Sod maintenance as specified in CW 3510.

D19.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D20. JOB MEETINGS

D20.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City, and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor

respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

- D20.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

MEASUREMENT AND PAYMENT

D21. PAYMENT

- D21.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D22. WARRANTY

- D22.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.
- D22.2 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) 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.
- D22.2.1 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. 588-2015

Automated Security Gates and Associated Pavement Works, McPhillips Pumping Station and Plinguet Yard

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. 588-2015

Automated Security Gates and Associated Pavement Works, McPhillips Pumping Station and Plinguet Yard

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> | <u>Drawing (Original) Sheet Size</u> |
|--------------------|--|--|
| 0 | Cover Sheet, Location Plan & Drawing Index | D |
| 1-0640A-F0001-001 | McPhillips Pumping Station – Hillock Access - Plan, Profile & Sections | D |
| 1-0640A-F0002-001 | McPhillips Pumping Station – Hillock Access - Plan & Details | D |
| 1-0640A-F0003-001 | McPhillips Pumping Station - Logan Access – Plan & Details | D |
| D-14028 | Plinguet Yard - Plinguet Access – Plan, Profile & Section | D |
| D-14029 | Plinguet Yard - Plinguet Access – Plan & Details | D |
| D-14030 | Plinguet Yard - Dawson Access – Site Plan & Details | D |
| D-14031 | Plinguet Yard - Dawson Access – Plan & Details | D |
| D-14032 | Plinguet Yard - Messier Access – Site Plan & Details | D |
| D-14178 | Cast-in-Place Concrete Pile Foundations - Details and Section | D |
| D-14179 | Hillock Access Electrical – Plan | D |
| D-14180 | Plinguet Access Electrical - Plan | D |
| D-14181 | Dawson Access Electrical - Plan | D |
| D-14182 | Messier Access Electrical - Plan | D |

E2. TRAFFIC CONTROL

- E2.1 Further to Clauses 3.6 and 3.7 of CW1130:
- (a) Where directed, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. Payment shall be in accordance with CW3410.
- (b) In accordance with the Manual of Temporary Traffic Control in Work Areas on City Streets, the Contractor (“Agency” in the manual) shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.

E3. TRAFFIC MANAGEMENT

- E3.1 Further to Clause 3.7 of CW 1130:

- E3.1.1 Intersecting street and private approach access shall be maintained at all times.
- E3.1.2 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.
- E3.1.3 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.
- E3.1.4 At the Plinguet Yard, access to Dawson Access and Plinguet Access cannot be closed at the same time.

E4. WATER OBTAINED FROM THE CITY

- E4.1 Further to clause 3.7 of CW 1120, the Contractor shall pay for all costs, including sewer charges, associated with obtaining water from the City in accordance with the Waterworks and Sewer By-laws.

E5. SURFACE RESTORATIONS

- E5.1 Further to clause 3.3 of CW 1130, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

E6. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO THE MCPHILLIPS PUMPING STATION FEEDERMAN

DESCRIPTION

- E6.1 General
 - (a) This Section details operating constraints for all Work to be carried out in close proximity to the McPhillips Pumping Station Feedermain. Close proximity shall be deemed to be any construction activity within a 5 m offset from the centreline of the Feedermain.
 - (b) The McPhillips Pumping Station Feedermain is a critical component of the City of Winnipeg Regional Water Supply System and work in close proximity to the pipeline shall be undertaken with an abundance of caution. The pipe cannot be taken out of service for extended periods to facilitate construction and in advertent damage caused to the pipe would likely have catastrophic consequences.
 - (c) Work around the Feedermain shall be planned and implemented to minimize the time period that work is carried out in close proximity to the pipe and to ensure that the pipeline is not subjected to excessive construction related loads, including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement.
 - (d) The McPhillips Pumping Station Section Header and West End Feedermain is constructed of Pre-stressed Concrete Cylinder Pipe (Lined Core) conforming to AWWA Standard C301. AWWA C301 pipe has limited ability to withstand increased earth and live loading. Therefore, every precaution must be undertaken to ensure that applied loading during all phases of construction is within accepted loading parameters.
- E6.2 Submittals
 - (a) Submit proposed construction equipment specifications to the Contract Administrator for review seven (7) days prior to construction. The submissions need to include sufficient data on operational weights, dimensions, and payloads to facilitate assessment that the proposed construction equipment is not in excess of the typical construction loading that this assessment was based on. Submittal shall include:

- (i) Equipment operating weight and dimensions including wheel or track base, track length or axle spacing, track widths or wheel configurations;
 - (ii) Payload weights; and
 - (iii) Load distributions in the intended operating configuration.
- (b) Submit a Construction Method Statement with proposed construction plan including haul routes, excavation equipment locations, loading positioning and base construction sequencing, to the Contract Administrator for review seven (7) days prior to construction. Do not commence construction until the Construction Method Statement has been reviewed and accepted by the Contract Administrator.

CONSTRUCTION METHODS

E6.3 General

- (a) The section of the Feedermain affected by construction runs parallel to Hillock Avenue west of McPhillips on the north side approximately 4.00 m South of the North property line and turns to enter the Pumping Station.

E6.4 Contractors carrying out repair Work or working in close proximity to the Feedermain shall meet the following conditions and technical requirements: As per City of Winnipeg Specification CW 3110.

- (a) Pre-work, Planning and General Execution
- (i) No Work shall commence at the Site until the Equipment Specifications and Construction Method Statement have been submitted and accepted, and the Feedermain location has been clearly delineated in the field. Work over the Feedermain shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications on the pipe. All proposed construction equipment must be submitted to Contract Administrator for review prior to construction. Work in areas in close proximity to the Feedermain shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications by the Contract Administrator.
 - (ii) Contact the City of Winnipeg WWD Department, Construction Services Coordinator (Duane Baker) prior to construction.
 - (iii) Notify WWD well in advance of construction to coordinate required service interruptions.
 - (iv) Where Work is in close proximity to the Feedermain, utilize construction practices and procedures that do not impart excessive vibration loads on the Feedermain or that would cause settlement of the subgrade below the Feedermain.
 - (v) Crossing of the Feedermain is prohibited in the time period from removal of existing roadway structure until the completion of granular base construction. At all times prior to completion of final paving; reduce equipment speeds to levels that minimize the effects of impact loading to the pipe.
 - (vi) For construction Work activities either longitudinally or transverse to the alignment of the Feedermain, work only with equipment and in the manner stipulated in the accepted Construction Method Statement and the supplemental requirements noted herein.
 - (vii) Where Work is in proximity to the Feedermain, utilize construction practices and procedures that do not impart excessive vibration loads on the Feedermain or that would cause settlement of the subgrade below the Feedermain.
 - (viii) The pipeline elevation datum relative to the proposed roadway shall be adequately verified. Deviations from the elevations noted herein shall be reported to Contract Administrator for review prior to construction of the subgrade.
 - (ix) Construction operations should be staged in such a manner as to limit multiple construction loads at one time, (e.g. offset crossings sufficiently from each other, rollers should remain a sufficient distance behind spreaders to limit loads. A reasonable offset distance is 3m between loads).

- (x) The Contractor and all Site supervisory personnel and equipment operators have to be formally briefed to ensure that they are fully cognizant of the associated restrictions, constraints, and risks associated with working adjacent to and over this pipeline. New personnel introduced after commencement of the project need to be formally orientated as to the significance and constraints associated with working over the Feedermain.
- (b) Demolition and Excavation
 - (i) Use of pneumatic concrete breakers within 3 metres of the Feedermain is prohibited. Pavement shall be full depth saw-cut and carefully removed. Use of hand held jackhammers for pavement removal will be allowed.
 - (ii) Where there is less than 1.6 metres of earth cover over the Feedermain and further excavation is required either adjacent to or over the Feedermain, utilize only smooth edged excavation buckets, soft excavation or hand excavation techniques. Where there is less than 1 metre of cover over the Feedermain, carefully expose the Feedermain by hand excavation to delineate the location and depth of the main, and provide full time supervision of the excavation.
 - (iii) Where there is less than 2.5 m of earth cover over the Feedermain, offset backhoe or excavation equipment from Feedermain, a minimum of 3 m from Feedermain centerline, to carry out excavation.
 - (iv) Equipment should not be allowed to operate while positioned directly over the Feedermain.
 - (v) For Feedermain inspection, expose the top 1/3 of the Feedermain by hand excavation, for a minimum length of 1 metre, to allow City to inspect condition of the main. Notify City a minimum of 24 hours in advance of exposure, and allow a minimum of 2 hours for City to complete inspection works. Backfill test excavation with bedding sand upon completion.
- (c) Subgrade Construction
 - (i) Subgrade compaction shall be prohibited within 2 metres of the Feedermain. Subgrade compaction within 3 metres of the Feedermain shall be limited to non-vibratory methods only.
 - (ii) Subgrade, sub-base and base course construction shall be kept in a rut free condition at all times. Construction equipment is prohibited from crossing pipelines if the grade is insufficient to support the equipment without rutting.
 - (iii) Subgrade conditions should be inspected by personnel with competent geotechnical experience (e.g. ability to adequately visually classify soils and competency of subgrade, sub-base, and base course materials). In the event of encountering unsuitable subgrade materials above the Feedermain, proposed design revisions shall be submitted to this office for review to obtain approval from the Water and Waste Department relative to any change in conditions.
 - (iv) Construction operations shall be staged to minimize the time period between excavation to subgrade and placement of granular sub-base materials. Should bare subgrade be left overnight, measures shall be implemented to protect the subgrade against inadvertent travel over it and to minimize the impact of wet weather.
- (d) Sub-base and Base Course Construction
 - (i) Granular material, construction material, soil or other material shall not be stockpiled on the pipelines or within 5 metres of the pipe centerline.
 - (ii) Sub-base or base course materials shall not be dumped directly on pipelines but shall be stockpiled outside limits noted in these recommendations and shall be carefully bladed in-place.
 - (iii) Sub-base compaction within 3 metres of the centreline of the Feedermain shall be either carried out by static methods (without vibration) or with smaller approved equipment such as hand held plate packers or smaller roller equipment.

MEASUREMENT AND PAYMENT

E6.5 No measurement or payment will be made for the works listed in this specification.

E7. CONDITION, PROTECTION OF, AND ACCESS TO THE AQUEDUCT

E7.1 Condition of the Aqueduct

E7.1.1 The Aqueduct is constructed of reinforced concrete and in some areas contains numerous cracks. The Aqueduct, therefore, shall be considered as a fragile structure. All work procedures conducted by the Contractor on and/or near the Aqueduct shall be well planned and executed to ensure that the Aqueduct is not subjected to construction related loads, including excessive vibrations and concentrated asymmetrical lateral loads.

E7.2 Protection of the Aqueduct

E7.2.1 Contractors working in the vicinity of the Aqueduct shall ensure that:

- (a) Equipment shall only be permitted to cross the Aqueduct at designated road crossing locations.
- (b) Granular material, construction material, soil or other material shall not be stockpiled on the Aqueduct or within 10 metres of the Aqueduct centreline.
- (c) Construction practices or procedures at or near the Aqueduct shall not impart excessive vibration loads on the Aqueduct and/or cause settlement of the subgrade below the Aqueduct.

E7.2.2 It is the Contractor's responsibility to ensure that all work crew members understand, observe and work the requirements of Specifications.

E7.3 Equipment Restrictions

E7.3.1 Equipment must cross the Aqueduct in a responsible and careful manner (i.e. slowly).

E8. ENVIRONMENTAL PROTECTION

E8.1 The Contractor shall be aware that the Aqueduct is for potable water supply and no contamination by fuel, chemicals, etc. shall be permitted at any time. Fuels or chemicals shall not be stored within 30 metres of the Aqueduct.

E8.2 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the environmental protection measures as herein specified.

E8.3 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:

E8.3.1 Federal

- (a) Canadian Environmental Protection Act (CEPA) c.16
- (b) Transportation of Dangerous Goods Act and Regulations c.34

E8.3.2 Provincial

- (a) The Dangerous Goods Handling and Transportation Act D12
- (b) The Endangered Species Act E111
- (c) The Environment Act c.E125
- (d) The Fire Prevention Act F80
- (e) The Manitoba Nuisance Act N120

- (f) The Public Health Act c.P210
- (g) The Workplace Safety and Health Act W120
- (h) Current applicable associated regulations
- (i) The Fisheries Act
- (j) The Migratory Birds Act
- (k) The Historic Resources Act
- (l) Drinking Water Safety Act

E8.3.3 The Contractor is advised that the following environmental protection measures apply to the Work.

E8.3.4 Materials Handling and Storage

- (a) Construction materials shall not be stored within ten (10) metres of the Aqueduct centreline without the approval of the Contract Administrator.

E8.3.5 Fuel Handling and Storage

- (a) The Contractor shall abide by the requirements of Manitoba Conservation storage and handling of Petroleum Products and Allied Products Regulations for handling and storage of fuel products.
- (b) All fuel handling and storage facilities shall comply with The Dangerous Goods and Transportation Act Storage and Handling of Petroleum Products Regulation and any local land use permits.
- (c) Fuels, lubricants, and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act shall be stored and handled within the approved storage areas.
- (d) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
- (e) Products transferred from the fuel storage area(s) to specific work sites shall not exceed the daily usage requirement.
- (f) When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, a groundsheet of suitable material (such as HDPE) and size shall be spread on the ground to catch the fluid in the event of a leak or spill. No repairs within 30 m of Aqueduct or watercourse will be permitted.
- (g) Refuelling of mobile equipment and vehicles shall take place at least 30 m from a watercourse.
- (h) The area around storage sites and fuel lines shall be distinctly marked and kept clear of snow and debris to allow for routing inspection and leak detection.
- (i) A sufficient supply of materials, such as absorbent material and plastic oil booms, to clean up minor spills shall be stored nearby on site. The Contractor shall ensure that additional material can be made available on short notice. All refuelling vehicles shall be equipped with a spill response kit.

E8.3.6 Waste Handling and Disposal

- (a) The construction area shall be kept clean and orderly at all times during and at completion of construction.

- (b) At no time during construction shall personal or construction waste be permitted to accumulate for more than one day at any location on the construction site, other than at a dedicated storage area as may be approved by the Contract Administrator.
- (c) Indiscriminate dumping, littering, or abandonment shall not take place.
- (d) No on-site burning of waste is permitted.
- (e) Equipment shall not be cleaned within 30 m of watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.

E8.3.7 Dangerous Goods/Hazardous Waste Handling and Disposal

- (a) Dangerous goods/hazardous waste are identified by, and shall be handled according to, The Dangerous Goods Handling and Transportation Act and Regulations.
- (b) The Contractor shall be familiar with The Dangerous Goods Handling and Transportation Act and Regulations and meet training requirements for these Regulations.

E8.3.8 Emergency Spill Response

- (a) The Contractor shall ensure that due care and caution is taken to prevent spills.
- (b) The Contractor shall report all major spills of petroleum products or other hazardous substances with the potential for impacting the environment and threat to human health and safety to the Contract Administrator and Manitoba Conservation, immediately after occurrence of the environmental accident, by calling the 24-hour emergency telephone number (204) 945-4888.
- (c) The Contractor shall designate a qualified supervisor as the on-site emergency response coordinator for the project. The emergency response coordinator shall have the authority to redirect manpower in order to respond in the event of a spill. (Should include reference to a site-specific Emergency Response Plan and Environmental Protection Plan.)
- (d) The following actions shall be taken by the person in charge of the spilled material or the first person(s) arriving at the scene of a hazardous material accident or the on-site emergency response coordinator:
 - (i) Notify emergency-response coordinator of the accident:
 - identify exact location and time of accident
 - indicate injuries, if any
 - request assistance as required by magnitude of accident Manitoba Conservation 24-hour Spill Response Line (204) 945-4888, RCMP (Oakbank Detachment) (911), City of Winnipeg Fire Department (911), Springfield Ambulance (911), company backup, contact Contract Administrator
 - (ii) Assess situation and gather information on the status of the situation, noting:
 - personnel on site
 - cause and effect of spill
 - estimated extent of damage
 - amount and type of material involved
 - proximity to waterways and the Aqueduct
 - (iii) If safe to do so, try to stop the dispersion or flow of spill material:
 - approach from upwind
 - stop or reduce leak if safe to do so
 - dyke spill material with dry, inert sorbent material or dry clay soil or sand
 - prevent spill material from entering waterways and utilities by dyking

- prevent spill material from entering Aqueduct manholes and other openings by covering with rubber spill mats or diking

- (iv) Resume any effective action to contain, clean up, or stop the flow of the spilled product.

E8.4 The emergency response coordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to the Manitoba Conservation according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.

E9. RECORD DRAWINGS

E9.1 The Contractor shall keep one (1) complete set of white prints at their office, including all Addenda, Change Orders, Field Instructions, and other revisions for the purposes of Record Drawings. As the Work proceeds, the Contractor shall clearly record in red pencil all as-built conditions which deviate from the original Contract documents.

E9.2 The Record Drawings shall be available for review by the Contract Administrator upon request at any time during the performance of the Work.

E9.3 Prior to achieving Substantial Performance, the Contractor shall submit the Record Drawings prepared to the Contract Administrator for her review and use. If, in the opinion of the Contract Administrator, the Record Drawings are incomplete or inaccurate, the Record Drawings will be returned to the Contractor and the Contractor shall revise and resubmit the Record Drawings at his cost.

E10. WORK AROUND RAIL TRACKS

E10.1 The Contractor shall provide the Contract Administrator with at least twenty-four (24) hours notice prior to commencing or continuing any work in close proximity to the rail tracks at Plinguet Yard Site.

E10.2 The rail tracks at the site haul water treatment chemicals (sodium hydroxide, ferric chloride, phosphoric acid and fluorosilicic acid) in railcar quantities to the Water Treatment Plant at Deacon on an almost daily basis (Monday to Friday) as well as gasoline to the intake on a monthly basis.

E10.3 For work at the Plinguet site, all work shall be carried out without interfering with the railway operations. From Monday to Friday, the Contractor shall contact the Railway Traffic Controller (204-986-4175) daily upon arriving on site to advise of daily work activities and receive notification of proposed train movements in either direction. If work is going to be performed on Holidays, Saturdays or Sundays, the Contractor shall contact the Water Treatment Plant Control Centre (204-986-5000) upon arriving on site to advise of daily work activities and receive notification of proposed train movements in either direction.

E10.4 No construction activities, material storage or the siting of vehicles and/or equipment shall be undertaken closer than 3050 mm from the centreline of the nearest railway track during any and all train movements.

E10.5 For any and all emergency situations involving the railway, immediately contact the Water Treatment Plant Control Centre at telephone number 204-986-4781.

E11. REMOVAL OF EXISTING PIPES

DESCRIPTION

E11.1 This Specification shall amend and supplement Specification CW 2130 and CW 3210.

CONSTRUCTION METHODS

- E11.2 Removal of existing pipes shall consist of existing catchbasin or curb inlet leads which are to be removed in order to facilitate the installation of new catchbasins or catch pits.
- E11.3 Contractor shall dispose of all removed materials.

MEASUREMENT AND PAYMENT

- E11.4 The removal of existing pipes by excavating, removing and disposing of existing pipe will be measured on a length basis. The length to be paid for shall be the total number of linear metres of pipe removed from the specified area measured horizontally at grade. Removal of existing pipes will be paid for at the Contract Unit Price for "Removal of Existing Pipes", which price shall be payment in full for the supply of all materials and for performing all operations required to complete the work as specified.

E12. BOLLARD COVERS

DESCRIPTION

- E12.1 This specification covers the supply and installation of BollardGard™ bollard covers

MATERIALS

- E12.2 Acceptable bollard cover product is:
- (a) BollardGard™ Bollard Covers – Manufactured by Innoplast
 - (b) Product # BC772
 - (c) Bollard Color: Yellow
 - (d) Reflective Material: 3M #5100 Scotchlite film – Red
 - (e) Gripper Tabs™ for installation

CONSTRUCTION METHODS

- E12.3 Installation of bollard covers as per manufactures directions

MEASUREMENT OF PAYMENT

- E12.4 There shall be no measurement or payment for the item in this Specification. They shall be considered incidental to the installation of bollards.

E13. REMOVAL OF EXISTING BOLLARDS

DESCRIPTION

- E13.1 This specification covers the removal of existing bollards as shown on the Drawings or as directed by the Contract Administrator.

CONSTRUCTION METHODS

- E13.2 Contractor shall dispose of all removed materials.

MEASUREMENT AND PAYMENT

- E13.3 Removal of existing bollards will be measured on a unit basis and paid for at the Contract Unit Price for the "Removal of Existing Bollards". Number of units to be paid for will be the total number of existing bollards removed in accordance with this specification, accepted and measured by the Contract Administrator.

E14. INSTALLATION OF BOLLARDS

DESCRIPTION

- E14.1 This specification covers the installation of bollards.
- E14.2 Concrete shall be supplied and installed in accordance with the City of Winnipeg's Standard Construction Specification CW 2160 – Concrete Underground Structures and Works.

MATERIALS

- E14.3 Galvanized Steel Pipe: 200mm Diameter SCH 40 STD.
- E14.4 Concrete: 20 MPa

CONSTRUCTION METHODS

- E14.5 General
- (a) Set pipe level and plumb into 450 diameter hole as indicated on drawings.
 - (b) Fill pipe with concrete and round over concrete at top of bollard.
 - (c) Install bollard cover as per E12.

MEASUREMENT AND PAYMENT

- E14.6 Installation of Bollards
- (a) The supply and installation of bollards be measured on a unit basis and paid for at the Contract Unit Price for "Install Bollards".
 - (b) The cost of backfilling holes and removing and disposing of concrete rubble shall be included in the payment for "Install Bollards"

E15. REMOVAL, SALVAGING AND INSTALLATION OF FENCING AND GATES

DESCRIPTION

- E15.1 This specification covers the removal, salvaging and installation of chain link fencing and gates.
- E15.2 Fencing shall be supplied and installed in accordance with the City of Winnipeg's Standard Construction Specification CW 3550 – CHAIN LINK FENCING.

MATERIALS

- E15.3 All 3050 mm high fencing shall consist of 3 strands of 12.5 gauge barbed wire spaced 150 mm apart on a 45 degree angle towards the property line.

CONSTRUCTION METHODS

- E15.4 General
- (a) All fencing near the property line is to be a minimum of 0.5 m in from the property line.
 - (b) Fencing shall be stepped if necessary to accommodate uneven ground.
 - (c) Fencing shall be braced as required.
 - (d) Hydro-excavation shall be used for posts within 5.0 m of the Aqueduct and Feedermain and other underground services.
 - (e) Ensure maximum gap of 150mm between terminal posts when butting to an existing fence.
- E15.5 Removal and Salvage of Existing Chain Link Fence

- (a) Existing chain link fencing designated for removal shall be carefully removed and salvaged. All chain link fencing components and all hardware shall be salvaged for reuse and stockpiled at a location designated by the Contractor Administrator and approved by Water and Waste.
- (b) The Contractor shall remove the fence posts and concrete bases. The post holes remaining following the removal of the fencing shall be backfilled and compacted to the satisfaction of the Contract Administrator. All concrete rubble shall be removed and disposed of by the Contractor.
- (c) All chain link fencing materials judged by the Contract Administrator to be in unsatisfactory condition shall be disposed of by the Contractor and replaced with equivalent new materials at the Contractor's cost.
- (d) In the event of damage to any materials by the Contractor, the Contractor shall immediately notify the Contract Administrator and make all repairs or replacements necessary, at his own expense, to the satisfaction of the Contract Administrator.

MEASUREMENT AND PAYMENT

E15.6 Remove and Salvage Chain Link Fence

- (a) The removal and salvaging of existing chain link fences will be measured on a length basis and paid for at the Contract Unit Price for "Remove & Salvage Chain Link Fence". The length to be paid for will be the total number of metres of chain link fence removed and salvaged in accordance with this specification, accepted and measured by the Contract Administrator.
- (b) The cost of backfilling post holes and removing and disposing of old fence posts and concrete rubble shall be included in the payment for "Remove and Salvage Chain Link Fence"

E16. MANUAL CHAINLINK GATES

DESCRIPTION

E16.1 This specification covers the supply and installation of manual chainlink gates.

MATERIALS

E16.2 Manual Chainlink Gate

- (a) Supply and install gate in accordance with the City of Winnipeg's Standard Construction Specification CW 3550 and as shown on Drawing 1-0640A-F0002-001 and 1-0640A-F0003-001.
- (b) Gate shall be 3050 mm high.
- (c) Gate shall include a pad lock protective box.
- (d) Gate shall have 3 strands of vertical barbed wire spaced 150 mm apart.

E16.3 Manual Chainlink Cantilever Gate

- (a) Chainlink Cantilever gate shall include pad lock protective boxes.

CONSTRUCTION METHODS

E16.4 Install gates as per manufacturer's recommendations and CW3550.

MEASUREMENT AND PAYMENT

E16.5 The supply and installation of the manual chainlink gates will be measured on unit basis and paid for at the Contract Unit Price for "Items of Work" listed here below. The amount to be paid for will be the total number of gates supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

- (a) 20' Manual Chainlink Cantilever Gate
- (b) Chainlink 5.1m Gate c/w foundations

E17. PEDESTRIAN PRE-HUNG GATE

DESCRIPTION

- E17.1 This section covers the furnishing and installation of a PMG-03-01-10 Pedestrian Pre-Hung Gate with 50" rough opening (42" clear opening).

QUALITY ASSURANCE

- E17.2 Manufacturer shall be a company specializing in the supply of security gates with a minimum of 10 years of experience.
- E17.3 Installer shall have a minimum of one year of experience installing similar equipment, or shall supply a factory representative during installation of the product.

SUBMITTALS

- E17.4 Submit manufacturer's descriptive literature for specified equipment, including options.
- E17.5 Provide dimensional layout, installation instructions, electrical and communication connections and anchoring instructions.
- E17.6 Provide shop drawings, if required.

MATERIALS

- E17.7 Manufacturer
- (a) Wallace International, 90 Lawson Crescent, Winnipeg, Manitoba R3P 2H8.
- E17.8 Product
- (a) PMG-03-01-10 Pedestrian Pre-Hung Gate, no substitutions. Features of the gate shall include: key lock control with stainless steel pull handle in the entry direction; mechanical push bar exit control; gate to include mesh infill and hydraulic closing mechanism.
- E17.9 Construction
- (a) Gate:
 - (a) The Gate is a fully welded assembly consisting of 2" square vertical and horizontal structure steel tubing.
 - (b) Gate Frame:
 - (a) The Gate Frame is a fully welded assembly consisting of 2" square vertical and horizontal structural steel tubing. The frame includes two welded ½" thick base plates for mounting to a concrete pad (sidewalk).
 - (c) Infill:
 - (a) Omega Secur welded wire infill panels (standard) are fabricated from heavy-duty steel wire (2 x O-Ga. horizontal and 1 x 4-Ga. vertical) welded at each intersection into a solid one-piece mesh. Infill panels are welded to the upper and lower sections at all wire locations vertically and horizontally.
 - (d) Hydraulic Closure:
 - (a) The hydraulic gate closure mechanism is to be outdoor rated, and of a strength to close the weight of the given size of gate.

- E17.10 Equipment

- (a) General: The gate shall have the ability to provide free passage in both directions; free passage in one direction and controlled passage in the opposite direction; or controlled passage in both directions.
- (b) Mechanical Operation:
 - (a) Electric Strike: Power (low voltage 12VDC) is supplied to the lock to release the mechanism, allowing the gate to open. Power is then interrupted to allow the strike to revert to the locked position.

E17.11 Factory Testing

- (a) Product shall be fully tested at the factory prior to shipment.
- (b) Check all mechanical connections.
- (c) Check all electrical connections.
- (d) Inspect product finish. Touch up prior to shipment.

E17.12 Security Equipment

- (a) Reader or Activation Device Integration: Card readers or activation devices are to be installed in the field by installer on the card reader mounting plates provided by the manufacturer.

E17.13 Finish

- (a) Hot Dipped Galvanized: All exterior components are to be hot dipped galvanized to ASTM Standard A 123/A 123M-02.

CONSTRUCTION METHODS

E17.14 Delivery, Storage and Handling

- (a) Deliver materials to the job site in manufacturer's packaging undamaged, complete with installation instructions.
- (b) Store off ground, under cover, protected from weather, construction activities and debris.
- (c) Use forklift and pallet jack equipment as required for moving.

E17.15 Project/Site Conditions

- (a) Install the Pedestrian Pre-Hung Gate on a level concrete pad (sidewalk).

E17.16 Installation

- (a) Provision of concrete foundations as shown on the Drawings.
- (b) Install high-speed security gate to manufacturer's specifications.

MEASUREMENT AND PAYMENT

- E17.17 The supply and installation of the pedestrian pre-hung gates will be measured on unit basis and paid for at the Contract Unit Price for "Install Pedestrian Gate c/w card reader mount". The amount to be paid for will be the total number of pedestrian pre-hung gates supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E18. ALPHA GATE SPECIFICATION

DESCRIPTION

- E18.1 Modular automated cantilevered vehicular access gate for closure of vehicular access routes and regulation of traffic flow. Section includes the following components:

- (a) Aluminum Cantilever sliding gate

- (b) Electric gate operator
- (c) Gate support posts (structural portals) and rolling hardware
- (d) Gate operator accessories including safety and reversing devices.

SUBMITTALS

E18.2 Product Data

- (a) Gates and hardware
- (b) Gate operator including operating instructions, motor nameplate data, ratings, characteristics and mounting arrangement

E18.3 Shop Drawings

- (a) Submit shop drawings.
- (b) Gate Operator: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting and grounding provisions.
- (c) Wiring Diagrams: Power and control wiring (and access controls if applicable). Differentiate between manufacturer-installed and field-installed wiring and between components provided by gate and gate operator manufacturer and those provided by others.
- (d) Provide detailed diagrams of all gate components.

E18.4 Installation Instructions

- (a) Submit two copies of manufacturer's written installation instructions.

E18.5 Test Reports

- (a) If requested, submit affidavits from the manufacturer demonstrating that the gate mechanism has been tested to 200,000 cycles without breakdown.

QUALITY ASSURANCE

E18.6 Manufacturer: A company specializing in the manufacture of gates and electric gate operators of the type specified, with a minimum of ten years of experience.

E18.7 Installer Qualifications: An experienced installer who has completed fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

E18.8 Source Limitations for Gates Operators and Gates: Obtain each color, grade, finish, type and variety of components for fences and gates from one source with resources to provide fences and gates of consistent quality in appearance and physical properties.

E18.9 Electrical components, Devices and Accessories: Listed and labelled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E18.10 UL Standard: Provide gate operators, tested and listed by a nationally recognized testing laboratory to comply with UL 325 5th edition.

E18.11 Emergency Access Requirements: Comply with requirements of local authorities having jurisdiction for automatic gate operators serving as a required means of access.

E18.12 Installer: A minimum of three years of experience installing similar equipment and approved by manufacturer.

MATERIALS

E18.13 Cantilevered Access Gate

- (a) Manufacturer: Wallace International
Model: Alpha Gate with Kinetic gate operator
Contact Wall International:
T.866.300.1110 F.204-284.1868
www.wallaceintl.com
- (b) Electrical components; CSA/UL approved.
- (c) Power Supply: 115 or 240V, 50/60 Hertz, single phase, field selectable.

E18.14 Components

- (a) Cantilevered Gate:
 - (a) Gate:
 - (i) Modular design, featuring field replaceable sections.
 - (ii) Site tensioned backbone comprising an immensely strong 205 mm x 285 mm section, corrosion resistant, aircraft grade hollow aluminum extrusion of unique profile, incorporating high-tensile steel tensioning rods.
 - (iii) Pre-galvanized 1 5/16" steel pickets (OD 30 mm x 1.5 mm) are inserted vertically through the main beam and secured to top and bottom rails with roll pins at each picket.
 - (iv) Galvanized 0.3 inches (8 mm) diameter internal tension rods.
 - (v) Serrated-anti-climb, aluminum top strip 2 3/8" x 15/16" (60 x 30 mm).
 - (vi) 9 Gauge chain link infill.
 - (b) Standard gate widths are:
 - (i) 20' (6100 mm) clear opening, 30' (9144 mm) overall
 - (ii) 24' (7315 mm) clear opening, 36' (10,972 mm) overall
 - (iii) 30' (9144 mm) clear opening, 45' (13,716 mm) overall
 - (iv) 40' (12,192 mm) clear opening, 60' (18,288 mm) overall
 - (c) Standard gate heights are:
 - (i) 6' (1800 mm) plus 1' (304 mm), 3 strands of barbed wire
 - (ii) 8' (2400 mm) plus 1' (304 mm), 3 strands of barbed wire
 - (d) Guides:
 - (i) Welded structural gate posts (portals) with guide wheels and running wheels.
 - (ii) Galvanized after fabrication to ASTM 123M.
 - (iii) 2 3/8" x 3 1/8" x (selected gate height + 20") support posts, connected at the top, form rigid frames to support the gate. Flanged for securing to foundation.
 - (iv) Sealed bearing, nylon polyamide 6 5/16" (160 mm) maintenance free, enclosed roller sets.
 - (v) Catch post (portal) with run-on plate for secure closure.
 - (vi) Gate support posts feature integral mount for gate operator, ensuring correct alignment for the life of the system.
 - (vii) Included standard "reach through guards" per ASTM F2200.
 - (e) Fasteners: Concealed, stainless steel.
- (b) Kinetic Electronic Gate Drive:
 - (i) Electric microprocessor controller unit with many standard logic sequences, provisions for dedicated, labeled accessory inputs and outputs. Alert, Fault, Error logging for simplified troubleshooting and remote diagnostics.
 - (ii) Limit Switches: motor output shaft embedded encoder with 1/32nd resolution to determine gate full open, full close, partial open, acceleration and deceleration points.

- (iii) Variable Speed (field selectable speed +/- .25 fps) rack and pinion drive mechanism with nylon polyamide drive gear/rack hardware. Select 1 or 2 foot per second gate travel speed based on site's UL 325 5th edition classification.
- (iv) Integrated uninterruptible power supply (U.P.S.).
- (v) Field selectable, fail safe or fail secure operation upon AC power loss.
- (vi) Field selectable 110V/240V single phase input power.
- (vii) Super energy efficient design, optimized for solar applications.
- (viii) Adaptive inherent entrapment sensor with "ice breaker mode".
- (ix) Built-in multi-level power surge and lightning strike protection using opti-isolation technology.
- (x) Tested and Listed for all UL 325 usage classes 1-4. Speed greater than 1 foot per second approved only for use on UL325 class 3 and 4 sites.

E18.15 Accessories

- (a) Vehicle obstruction devices
 - (i) Inductive loop vehicle detectors: Micro-processor based, digital type, with sensitivity to detect a wide variety of vehicle sizes. Built-in frequency counter and automatic frequency assignment to prevent any possibility of "cross talk". Inductive vehicle loop: select either "pre-formed" type or "saw cut" field constructed type. Size, location and construction type should be shown on drawing.
- (b) Safety Devices: (Note: The word "Safety" only applies to devices intended to reduce likelihood of a gate striking or injuring a pedestrian. See "obstruction devices" for vehicular reversing options).
 - (i) Through-Beam photo cells
 - (ii) Radio transmitting 5' gate contact edge and radio receiver
- (c) Notification or Instructive Devices
 - (i) Audible beacon
 - (ii) Strobe or flashing light indicating gate in motion or pending motion
 - (iii) Traffic indicator lights (8" Green arrow / Red "X" typical)
- (d) Access control devices
 - (i) Dual height card reader with Stand-along keypad access control system, LiftMaster Model MINIkey
 - (ii) Gate Timer, Rutherford Controls, TD365
 - (iii) MegaCode, Digital gate receiver (MGR/MGR-2) and Linear Access Transmitters (ACT-31B/34B)
- (e) Cold Weather Kit
 - (i) Cold weather kit, as supplied by gate manufacturer, consisting of thermal insulating cover and 50 watt self-regulating silicone rubber strip heater
- (f) Gate panel
 - (i) Substitute 3 strands of non-barbed wire top

E18.16 Finishes

- (a) Visible surface color: Aluminum beam and rails with galvanized steel components

CONSTRUCTION METHODS

E18.17 Installation

- (a) Install cantilevered sliding access gate to manufacturer's recommendations.
- (b) Install structural post (portals) in concrete foundations; completely level both horizontally and vertically.
- (c) Test and adjust complete system for proper function and leave in perfect working order.

- (d) Install vehicle detection loops and lead-in-wires per manufacturer's instructions.
- (e) Supply and install other electrical wiring, conduit junction boxes, transformers, circuit breakers and auxiliary components required for complete installation. Conform to CSA/NEC and local requirements.

E18.18 Field Quality Control

- (a) Test gate operators through ten full cycles and adjust for operation without binding or scraping.
- (b) Owner or Owner's representative shall complete "punch list" with installing contractor prior to final acceptance of the installation and submit completed warranty documentation to manufacturer.

MEASUREMENT AND PAYMENT

E18.19 The supply and installation of the alpha gate will be measured on unit basis and paid for at the Contract Unit Price for "Items of Work" listed here below. The amount to be paid for will be the total number of alpha gates supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

- (a) Install – 16/8 Alpha Gate c/w 2 dual height card reader mounts with digital timer and keypad
- (b) Install – 14/8 Alpha Gate c/w dual height card reader mount with digital timer and keypad
- (c) Install – 14/8 Alpha Gate c/w transmitter system and 6 transmitters

E19. CAST-IN-PLACE CONCRETE PILE FOUNDATIONS

DESCRIPTION

- E19.1** The Work covered under this Item shall include all concreting operations related to construction of cast-in-place concrete pile foundations in accordance with this Specification and as shown on the Drawings.
- E19.2** The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E19.3 General

- E19.3.1** The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

E19.4 Handling and Storage of Materials

- E19.4.1** All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator. Storage of materials shall be in accordance with CAN/CSA A23.1-09.

E19.5 Testing and Approval

- E19.5.1** All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to the City of any materials taken by the Contract Administrator for testing purposes.
- E19.5.2** All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials in whole or in part, do not conform to the Specifications detailed herein or are

found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such materials shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

E19.6 Patching Mortar

E19.6.1 The patching mortar shall be made of the same cementitious material and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2 parts sand by damp loose volume. White Portland Cement shall be substituted for a part of the grey Portland Cement on exposed concrete in order to produce a colour matching the colour of the surrounding concrete, as determined by a trial patch. The quantity of mixing water shall be no more than necessary for handling and placing.

E19.7 Cement

E19.7.1 Cement shall be Type HS or HSb, high-sulphate-resistant hydraulic cement, conforming to the requirements of CAN/CSA A23.1-09.

E19.8 Concrete

E19.8.1 General

(a) Concrete repair material shall be compatible with the concrete substrate.

E19.8.2 The Contractor shall be responsible for the design and performance of all concrete mixes supplied under this Specification. Either ready mix concrete or proprietary repair mortars, where applicable, may be used having the following minimum properties in accordance with CAN/CSA A23.1-09.

(a) Class of Exposure: S-1

(b) Compressive strength @ 56 days = 35 MPa

(c) Water / Cementing Materials Ratio = 0.4

(d) Air Content: Category 2 per Table 4 of CAN/CSA A23.1-04 (4-7%)

(e) Cement – shall be as specified in E16.7

E19.8.3 Mix design for ready mix concrete shall be submitted to the Contract Administrator at least two (2) weeks prior to concrete placing operations.

E19.8.4 The workability of each concrete mix shall be consistent with the Contractor's placement operations. Self-compacting concrete may be used for pile foundations.

E19.8.5 Any proposed proprietary repair mortar shall be subject to the approval of the Contract Administrator and must meet or exceed the properties of the ready mix concrete.

E19.8.6 The temperature of all types of concrete shall be between 15°C and 25°C at discharge. Temperature requirements for concrete containing silica fume shall be between 10°C and 18°C at discharge unless otherwise approved by the Contract Administrator.

E19.8.7 Concrete materials susceptible to frost damage shall be protected from freezing.

E19.9 Aggregate

E19.9.1 The Contractor shall be responsible for testing the fine and coarse aggregates to establish conformance to these Specifications, and the results of these tests shall be provided to the Contract Administrator if requested. All aggregates shall comply with CAN/CSA A23.1.

E19.9.2 Coarse Aggregate

(a) The maximum nominal size of coarse aggregate shall be sized to suit the Contractor's mix design. Gradation shall be in accordance with CAN/CSA A23.1, Table 11, Group 1. The coarse aggregate shall satisfy the Standard Requirements specified in CAN/CSA A23.1, Table 12, "Concrete Exposed to Freezing and Thawing".

- (b) Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongation, dust, shale, earth, vegetable matter or other injurious substances. Coarse aggregate shall be clean and free from alkali, organic or other deleterious matter; and shall have an absorption not exceeding 2.25%.
- (c) The aggregate retained on the 5 mm sieve shall consist of clean, hard, tough, durable, angular particles with a rough surface texture, and shall be free from organic material, adherent coatings of clay, clay balls, and excess of thin particles or any other extraneous material.
- (d) Coarse aggregate when tested for abrasion in accordance with ASTM C131 shall not have a loss greater than 30%.
- (e) Tests of the coarse aggregate shall not exceed the limits for standard for requirements prescribed in CAN/CSA A23.1, Table 12, for concrete exposed to freezing and thawing.

E19.9.3 Fine Aggregate

- (a) Fine aggregate shall meet the grading requirements of CAN/CSA A23.1, Table 10, Gradation FA1.
- (b) Fine aggregate shall consist of sand, stone, screenings, other inert materials with similar characteristics or a combination thereof, having clean, hard, strong, durable, uncoated grains free from injurious amounts of dust, lumps, shale, alkali, organic matter, loam, or other deleterious substances.
- (c) Tests of the fine aggregate shall not exceed the limits for standard requirements prescribed in CAN/CSA A23.1, Table 12.

E19.10 Cementing Materials

E19.10.1 Cementing materials shall conform to the requirements of CAN/CSA A3001.

E19.10.2 Silica Fume

- (a) Should the Contractor choose to include silica fume in the concrete mix design, it shall not exceed 8% by mass of cement.

E19.10.3 Fly Ash

- (a) Fly ash shall be Type C1 or Type F and shall not exceed 25% by mass of cement.

E19.10.4 Cementitious materials shall be stored in a suitable weather-tight building that shall protect these materials from dampness and other destructive agents. Cementitious materials that have been stored for a length of time resulting in the hardening or formation of lumps shall not be used in the Work.

E19.11 Admixtures

E19.11.1 Air entraining admixtures shall conform to the requirements of ASTM C260.

E19.11.2 Chemical admixtures shall conform to the requirements of ASTM C494 or C1017 for flowing concrete.

E19.11.3 All admixtures shall be compatible with all other constituents. The addition of calcium chloride, accelerators, and air-reducing agents will not be permitted, unless otherwise approved by the Contract Administrator.

E19.11.4 Appropriate low range water reducing and/or superplasticizing admixtures shall be used in concrete containing silica fume. Approved retarders or set controlling admixtures may be used for concrete containing silica fume.

E19.11.5 An aminocarboxylate based migrating corrosion inhibitor admixture shall be used in concrete that will be used as a repair material that will either be in contact with or adjacent to reinforcing steel in existing concrete. Proposed admixtures shall be subject to the approval of the Contract Administrator.

E19.12 Water

E19.12.1 Water used for mixing concrete shall be clean and free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances. It shall be equal to potable water in physical and chemical properties.

E19.13 Concrete Supply

E19.13.1 Concrete shall be proportioned, mixed, and delivered in accordance with the requirements of CSA A23.1, except that the transporting of ready mixed concrete in non-agitating equipment will not be permitted unless prior written approval is received from the Contract Administrator.

E19.13.2 Unless otherwise directed by the Contract Administrator, the discharge of ready mixed concrete shall be completed within 90 minutes after the introduction of the mixing water to the cementing materials and aggregates.

E19.13.3 The Contractor shall maintain all equipment used for handling and transporting the concrete in a clean condition and proper working order.

E19.14 Reinforcing Steel

E19.14.1 Reinforcing steel shall be deemed to include all reinforcing bars, tie-bars, and dowels.

E19.14.2 All reinforcing steel shall conform to the requirements of CAN/CSA Standard G30.18, Grade 400 W, Billet-Steel Bars for Concrete Reinforcement. All reinforcing steel shall be new deformed billet steel bars. All bars, including ties, shall be hot-dip galvanized in accordance with ASTM A767 for a minimum net retention of 610 g/m². Reinforcing steel supply and installation will be incidental to construction of concrete pile foundation and no separate payment will be made.

E19.15 Miscellaneous Materials

E19.15.1 Miscellaneous materials shall be of the type specified on the Drawings or approved by the Contract Administrator.

CONSTRUCTION METHODS

E19.16 Location and Alignment of Piles

E19.16.1 Pile construction shall not commence until the Contractor has obtained clearance from the appropriate Utility Authorities including but not limited to Manitoba Hydro, MTS and City of Winnipeg Water and Waste.

E19.16.2 Piles shall be placed in the positions shown on the Drawings and as directed by the Contract Administrator in the field.

E19.16.3 The deviation of the axis of any finished pile shall not differ by more than 1 percent from the vertical.

E19.17 Buried Utilities

E19.17.1 The Contractor shall exercise extreme caution when constructing the pile foundations in the vicinity of existing buried utilities and buildings. The Drawings show the approximate locations of existing buried utilities. The Contractor shall be responsible for obtaining the exact location of the buried utilities from the appropriate Utility Authorities prior to installing the piles.

E19.17.2 The proposed locations of the pile foundations may be changed by the Contract Administrator if they interfere with the buried utilities.

E19.17.3 The Contractor shall be responsible for all costs that may be incurred for repair/rectification of any damage caused to the existing buried utilities as a result of the Contractor's operations in constructing cast-in-place concrete piles, as determined by the Contract Administrator.

E19.18 Excavation

- E19.18.1 Pile excavation shall be accomplished by hydro-jet and/or boring for the full depth of all piles.
- E19.18.2 It may be necessary to hydro-jet excavate utilities adjacent to a pile location to adequately ascertain the location or provide enough "slack" in conduits to move them slightly to avoid interference with the pile locations. The Contract Administrator may elect to alter the location of a pile if hydro-jet excavation shows that utilities cannot be avoided.
- E19.18.3 Upon reaching the required elevation, the bottom of the excavation shall be cleaned as directed by the Contract Administrator in the field.
- E19.18.4 All excavated material from the piles shall be promptly hauled away from the Site to an approved disposal area as located by the Contractor.
- E19.18.5 Upon completion of the leaning out of the bottom to the satisfaction of the Contract Administrator, the reinforcement shall be set in place and the concrete poured immediately. Under no circumstances shall a hole be left to stand open after excavation has been completed.

E19.19 Sleeving

- E19.19.1 Steel or corrugated metal pipe sleeving shall be used to temporarily line the excavation to prevent bulging or caving of the walls and to protect men at work in the excavation.
- E19.19.2 The sleeving shall be designed by the Contractor and constructed to resist all forces that may tend to distort it.
- E19.19.3 The sleeving shall be withdrawn as the concrete is placed in the excavation. The sleeving shall extend at least 1 m below the top of the freshly deposited concrete at all times.
- E19.19.4 The clearance between the face of the excavation and the sleeving shall not exceed 75 mm.
- E19.19.5 The sleeving may remain cast-in-place if required to protect nearby utilities at the direction of the Contract Administrator. The top of sleeving shall be 300 mm below the top of sidewalk.

E19.20 Inspection of Excavations

- E19.20.1 Concrete shall not be placed in an excavation until the excavation has been inspected and approved by the Contract Administrator.
- E19.20.2 The Contractor shall have available suitable light for the inspection of each excavation throughout its entire length.
- E19.20.3 Any improperly set sleeving or improperly prepared excavation shall be corrected to the satisfaction of the Contract Administrator.

E19.21 Placing Reinforcing Steel

- E19.21.1 Reinforcement shall be:
- (a) Placed in accordance with the details shown on the Drawings;
 - (b) Rigidly fastened together, and,
 - (c) Lowered into the excavation intact before concrete is placed.
- E19.21.2 Spacers shall be utilized to properly locate the reinforcing steel cage in the excavation.

E19.22 Forms

- E19.22.1 For hydro-jet excavated piles, the top of the piles shall be formed with tubular forms (Sonotube) to a minimum depth of 1500 mm below final grade.

- E19.22.2 For bored piles, the top of the piles shall be formed with tubular forms (Sonotube) to a minimum depth of 1000 mm below final grade.
- E19.22.3 In locations of caving, the tubular form (Sonotube) should extend a minimum of 500 mm below where the shaft becomes uniform.
- E19.22.4 The forms shall be sufficiently rigid to prevent lateral or vertical distortions from the loading environment to which they shall be subjected. Forms shall be set to the design grades, lines, and dimensions, as shown on the Drawings.
- E19.23 Placing Concrete
- E19.23.1 Concrete shall not have a free fall of more than 2.0 m and shall be placed so that the aggregates will not separate or segregate. The slump of the concrete shall not exceed 110 mm. The concrete shall be vibrated throughout the entire length of the pile.
- E19.23.2 Concrete shall be placed to the elevations as shown on the Drawings. The top surface of the pile shall be finished smooth and even with a hand float.
- E19.23.3 The shaft shall be free of water prior to placing of concrete. Concrete shall not be placed in or through water unless authorized by the Contract Administrator. In the event that tremie concrete is allowed by the Contract Administrator, the concrete shall be placed as specified herein.
- E19.23.4 All concrete, during and immediately after deposition, shall be consolidated by mechanical vibrations so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into the corners of forms; eliminating all air or stone pockets that may cause honeycombing, pitting, or planes of weakness.
- E19.24 Tremie Concrete
- E19.24.1 The shaft of the pile shall be pumped clear of water so that the bottom can be cleaned. Pumping shall then be stopped and water shall be allowed to come into the excavation until a state of equilibrium is reached. Concrete shall then be placed by means of a tremie pipe. The tremie pipe shall have a suitable gate in the bottom to prevent water from entering the pipe. The bottom of the pipe shall be maintained below the surface of the freshly placed concrete. The pipe shall be capable of being raised or lowered quickly in order to control the flow of concrete.
- E19.24.2 Tremie concrete shall be poured up to a depth of 600 mm or as the Contract Administrator directs. Pumps shall then be lowered into the excavation and the excess water pumped out. The laitance that forms on top of the tremie shall then be removed and the remainder of the concrete shall be placed in the dry excavation.
- E19.25 Protection of Newly Placed Concrete
- E19.25.1 Newly laid concrete threatened with damage by rain, snow, fog, or mist shall be protected with a tarpaulin or other approved means.
- E19.26 Curing Concrete
- E19.26.1 The top of the freshly finished concrete piles shall be covered and kept moist by means of wet polyester blankets immediately following finishing operations and shall be maintained at above 10°C for at least seven (7) consecutive days thereafter.
- E19.26.2 After the finishing is completed, the surface shall be promptly covered with a minimum of a single layer of clean, damp polyester blanket.
- E19.26.3 Concrete shall be protected from the harmful effects of sunshine, drying winds, surface dripping or running water, vibration, and mechanical shock. Concrete shall be protected from freezing until at least twenty-four (24) hours after the end of the curing period.
- E19.26.4 Changes in temperature of the concrete shall be uniform and gradual and shall not exceed 3° in one (1) hour or 20° in twenty-four (24) hours.

E19.27 Form Removal

- E19.27.1 Forms shall not be removed for a period of at least twenty-four (24) hours after the concrete has been placed. Removal of forms shall be done in a manner to avoid damage to, or spalling of, the concrete.
- E19.27.2 The minimum strength of concrete in place for safe removal of forms shall be 20 MPa.
- E19.27.3 Field-cured test specimens, representative of the in-place concrete being stripped, will be tested to verify the concrete strength.

E19.28 Patching of Formed Surfaces

- E19.28.1 Immediately after forms around top of pile have been removed, but before any repairing or surface finishing is started, the concrete surface shall be inspected by the Contract Administrator. Any repair of surface finishing started before this inspection may be rejected and required to be removed.
- E19.28.2 All formed concrete surfaces shall have bolts, ties, struts, and all other timber or metal parts not specifically required for construction purposes cut back fifty (50) mm from the surface before patching.
- E19.28.3 Minor surface defects caused by honeycomb, air pockets greater than 5 mm in diameter, and voids left by strutting, and tie holes shall be repaired by removing the defective concrete to sound concrete, dampening the area to be patched and then applying patching mortar. A slurry grout consisting of water and cement shall be well-brushed onto the area to be patched. When the slurry grout begins to lose the water sheen, the patching mortar shall be applied. It shall be struck-off slightly higher than the surface and left for one (1) hour before final finishing to permit initial shrinkage of the patching mortar and it shall be touched up until it is satisfactory to the Contract Administrator. The patch shall be cured as specified in this Specification, and the final colour shall match the surrounding concrete.

E19.29 Cold Weather Concreting

- E19.29.1 Protection of concrete shall be considered incidental to its placement. The temperature of the concrete shall be maintained at or above 10°C for a minimum of three (3) days or until the concrete has reached a minimum compressive strength of 20 MPa, by whatever means are necessary. Concrete damaged as a result of inadequate protection against weather conditions shall be removed and replaced by the Contractor at his own expense. Also, concrete allowed to freeze prior to the three (3) days will not be accepted for payment.

E19.30 Removal and Restoration of Adjacent Surface Treatments

- E19.30.1 If the new pile being constructed is located in a concrete sidewalk/median slab, the existing slab shall be removed to the nearest existing joints. If the nearest existing joint is more than 600 mm beyond the perimeter of the pile, the Contractor shall remove a square section of the existing slab that is 300 mm beyond the pile perimeter. The surface of the slab shall be saw-cut to a depth of 50 mm around the perimeter of the square section. Care shall be taken to ensure that the saw-cut edge of the section is not chipped or broken during the removal of the concrete. Concrete slabs damaged beyond the specified limits shall be replaced at the Contractor's cost to the satisfaction of the Contract Administrator. After the pile has been constructed, the concrete sidewalk/median slab shall be restored flush with the adjacent surface level.
- E19.30.2 If the pile being constructed is located in grass boulevard/median, following pile construction disturbed areas shall be backfilled and restored with sod around the new pile as directed by the Contract Administrator.
- E19.30.3 If the pile being constructed is located in a paving stone surface, the paving stones shall be temporarily removed to the extent required for new pile construction and appropriately stored by the Contractor. Following pile construction, the Contractor shall cut as required and re-set the salvaged paving stones around the new pile flush with the adjacent surface level, as directed by the Contract Administrator.

- E19.30.4 The removal and restoration of surface treatments will be considered incidental to pile construction works at each Site and no separate payment will be made.

QUALITY CONTROL

- E19.31 All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator, including all operations from the selection and production of materials, through to final acceptance of the Work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any materials or Works that are not in accordance with the requirements of this Specification.
- E19.32 The Contractor shall be responsible for making a thorough inspection of materials to be supplied under this Contract. All material shall be free of surface imperfections and other defects.

MEASUREMENT AND PAYMENT

- E19.33 Cast-in-place concrete piles will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Cast-in-Place Concrete Pile Foundations", which price shall be paid in full for supplying all materials for performing all operations herein described and all other items incidental to the Work, included in this Specification and accepted by the Contract Administrator.

E20. ELECTRICAL WORK

DESCRIPTION

- E20.1 This Specification covers the supply and installation of electrical work.

CONSTRUCTION METHODS

- E20.2 All electrical work shall be done in accordance with the Drawings and to the manufactures specifications.

MEASUREMENT AND PAYMENT

- E20.3 The supply and installation of light posts and LED lights will be measured on a unit basis. The number to be paid for shall be the total number of light posts and LED lights supplied and installed in accordance to this Specification. Supply and installation of light posts and LED lights will be paid for at the Contract Unit Price for "Supply and Install Light Post & LED Light", which price shall be payment in full for the supply of all materials and for performing all operations required to complete the work as specified.
- E20.4 Electrical/communication conduit installation at gates will not be measured and will be paid for at the Lump Sum Price for "Supply and Installation of Electrical/Communication Conduit at Gates", which price shall be payment in full for the supply of all materials and for performing all operations required to complete the work as specified.
- E20.5 Trenchless electrical/communication conduit installation to gates and light post will not be measured and will be paid for at the Lump Sum Price for "Supply and Installation of Trenchless Electrical/Communication Conduit to Gates and Light Post", which price shall be payment in full for the supply of all materials and for performing all operations required to complete the work as specified.