THE CITY OF WINNIPEG

TENDER

TENDER NO. 177-2024

CONWAY LIFT STATION 2024 UPGRADES

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 CONWAY LIFT STATION 2024 UPGRADES

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, April 25, 2024.

B2.2 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site at the two dates below to provide Bidders access to the Site. The site is located at 2200 Portage Avenue, just south of the intersection of Portage Avenue and Conway Street, Winnipeg, MB, and north of the Assiniboine River. Attendance of at least one of these events is mandatory, and the Bid of any Bidder not having attended will be rejected on the basis that it is non-responsive.

(a) 9:00 am to 10:00 am on April 5, 2024

(b) 1:00 pm to 2:00 pm on April 8, 2024

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

B3.3 The Bidder is responsible for inspecting the Site, the nature of the Work to be done and all conditions that might affect their Bid or their performance of the Work, and shall assume all risk for conditions existing or arising in the course of the Work which have been or could have been determined through such inspection.

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D6.1.

B4.2 If the Bidder finds errors, discrepancies or omissions in the Tender, 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 Tender 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 Tender 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.

B4.6 Any enquiries concerning submitting through MERX should be addressed to:
MERX Customer Support
Phone: 1-800-964-6379
Email: merx@merx.com

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 Tender 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 Tender, 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.

B6.3 Addenda will be available on the MERX website at www.merx.com.

B6.4 The Bidder is responsible for ensuring that they have received all addenda and is advised to check the MERX website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B6.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D6.

B7. SUBSTITUTES

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

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 their 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 they wish 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 their 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 B18.

B7.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B8. BID COMPONENTS

B8.1 The Bid shall consist of the following components:

(a) Form A: Bid/Proposal;

(b) Form B: Prices;

(c) Form G1: Bid Bond and Agreement to Bond.

B8.2 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.

B8.3 The Bid shall be submitted electronically through MERX at www.merx.com.

B8.3.1 Bids will **only** be accepted electronically through MERX.

B8.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B18.1(a).

B9. BID

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

B9.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in their own name, their 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 their 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/Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B9.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in their 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 their duly authorized officer or officers;

(d) if the Bidder is carrying on business under a name other than their 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/Proposal should be entered 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.

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

B10.1.2 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined in D42. Any such costs shall be determined in accordance with D42.

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).

B10.5 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.

B10.5.1 Bidders are advised that the calculation indicated in B18.5 will prevail over the Total Bid Price entered in MERX.

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) TREK Geotechnical

(b) Pinchin Ltd

B11.3 Additional Material:

(a) Geotechnical Investigation Report provided by TREK Engineering in Appendix B.

(b) Hazardous Materials Assessment Report by Pinchin Ltd in Appendix C.

B12. CONFLICT OF INTEREST AND GOOD FAITH

B12.1 Further to C3.2, Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.

B12.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:

(a) other commitments;

(b) relationships;

(c) financial interests; or

(d) involvement in ongoing litigation;

that could or would be seen to:

(i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or

(ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;

(e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of their participation in the Tender process or the Work; or

(f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.

B12.3 In connection with their Bid, each entity identified in B12.2 shall:

(a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;

(b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and

(c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.

B12.4 Without limiting B12.3, the City may, in their sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in their sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in their sole discretion, to avoid or mitigate the impact of such Conflict of Interest.

B12.5 Without limiting B12.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in their sole discretion:

(a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of their employees proposed for the Work;

(b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in their sole discretion, determines cannot be avoided or mitigated;

(c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B12.4 to avoid or mitigate a Conflict of Interest; and

(d) disqualify a Bidder if the Bidder, or one of their employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.

B12.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in their sole discretion.

B13. QUALIFICATION

B13.1 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.

(d) submit a completed Social Procurement Plan.

B13.2 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 https://www.winnipeg.ca/matmgt/Templates/files/debar.pdf

B13.3 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);

(d) have completed the Accessible Customer Service online training required by the Accessibility for Manitobans Act (AMA) (see B13.6 and D8).

(e) upon request of the Contract Administrator, provide the Security Clearances in accordance with PART F - Security Clearance;

B13.4 Further to B13.3(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) Written confirmation of a safety and health certification meeting SAFE Work Manitoba's SAFE Work Certified Standard (e.g., COR™ and SECOR™) in the form of:

(i) 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

(ii) 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

(b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/.

B13.5 Further to B13.1(d), the Bidder shall within five (5) Business Days of a request by the Contract Administrator, provide a completed Social Procurement Plan.

B13.6 Further to B13.3(d), the Bidder acknowledges they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at http://www.accessibilitymb.ca/training.html for anyone that may have any interaction with the public on behalf of the City of Winnipeg.

B13.7 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.

B13.8 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.

B14. BID SECURITY

B14.1 The Bidder shall include in their Bid Submission bid security in the form of a digital 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 Form G1: Bid Bond and Agreement to Bond, available on The City of Winnipeg, Corporate Finance, Materials Management Division website at

https://legacy.winnipeg.ca/MatMgt/templates/files/Bidsecurity.pdf

Bid security shall be submitted in a digital format meeting the following criteria:

(a) The version submitted by the Bidder must have valid digital signatures and seals;

(b) The version submitted by the Bidder must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.

(c) The version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.

(d) The verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.

(e) The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding B14.1(b).

B14.2 Bonds failing the verification process will not be considered to be valid and the bid shall be determined to be non-responsive in accordance with B18.1(a).

B14.3 Bonds passing the verification process will be treated as original and authentic.

B14.3.1 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.

B14.4 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 formed with the successful Bidder and the contract securities are furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B14.5 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 Tender.

B15. OPENING OF BIDS AND RELEASE OF INFORMATION

B15.1 Bids will not be opened publicly.

B15.2 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 MERX website at www.merx.com.

B15.3 After award of Contract, the name(s) of the successful Bidder(s) and their Contract amount(s) will be available on the MERX website at www.merx.com.

B15.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).

B15.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

B16. IRREVOCABLE BID

B16.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B16.2 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 formed and the contract securities have been 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/Proposal.

B17. WITHDRAWAL OF BIDS

B17.1 A Bidder may withdraw their Bid without penalty at any time prior to the Submission Deadline.

B18. EVALUATION OF BIDS

B18.1 Award of the Contract shall be based on the following bid evaluation criteria:

(a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation there from (pass/fail);

(b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B13 (pass/fail);

(c) the Bidder representative attended at least one (1) site investigation (pass/fail);

(d) Total Bid Price;

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

B18.2 Further to B18.1(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.

B18.3 Further to B18.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in their Bid or in other information required to be submitted, that they are qualified.

B18.4 Further to B18.1(c), the Award Authority shall reject any Bid submitted by a Bidder who has not attended a mandatory site investigation.

B18.5 Further to B18.1(d), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

B18.5.1 Further to B18.5, in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B18.5.2 Bidders are advised that the calculation indicated in B18.5 will prevail over the Total Bid Price entered in MERX.

B19. AWARD OF CONTRACT

B19.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B19.2 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 qualified, and the Bids are determined to be responsive.

B19.2.1 Without limiting the generality of B19.2, 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 their 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.

B19.3 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of D42 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.

B19.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B18.

B19.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of their Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

C0.1 The *General Conditions for Construction* (Revision 2020 01 31) 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 Tender 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. FORM OF CONTRACT DOCUMENTS

D2.1 Notwithstanding C4.1(c) and C4.4, the Contract Documents will be provided to the Contractor electronically and there will be no requirement for execution and return to the City by the Contractor. Accordingly, the provisions under C4.4(a) and C4.4(b) are no longer applicable.

D3. SCOPE OF WORK

D3.1 The Work to be done under the Contract shall consist of building and site improvements of Conway Pumping Station.

D3.2 The major components of the Work are as follows:

(a) Structural and architectural upgrades;

(b) Superstructure demolition and new construction;

(c) Mechanical process and building services upgrades;

(d) Electrical upgrades;

(e) Automation and instrumentation upgrades;

(f) Civil and municipal services (outside of the station) upgrades;

(g) Temporary bypass pumping and vault manhole;

(h) Groundwater Management;

(i) Excavation, Shoring and Backfilling as required;

(j) Sodding and landscaping;

(k) Site restoration and clean up; and

(l) As per drawings and technical specifications.

D3.3 The following shall apply to the Services:

(a) City of Winnipeg Green Building Policy: New City-Owned Buildings and major additions;
http://clkapps.winnipeg.ca/DMIS/DocExt/ViewDoc.asp?DocumentTypeId=2&DocId=5989

(b) Universal Design Policy
http://clkapps.winnipeg.ca/DMIS/DocExt/ViewDoc.asp?DocumentTypeId=2&DocId=3604

D4. SITE INVESTIGATION DUE DILIGENCE AND RISK

D4.1 Notwithstanding C3.1, the Contractor acknowledges that the site investigation reports and other site information included in this Tender have been provided to it and may be relied upon by the Contractor to the extent that the Contractor uses Good Industry Practice in interpreting such report(s) and site information and carries out the Work in accordance with Good Industry Practice based upon such report(s) and the information contained in them and such other site information. In the event that a site condition related to:

(a) the location of any utility which can be determined from the records or other information available at the offices of any public authority or person, including a municipal corporation and any board or commission thereof, having jurisdiction or control over the utility;

(b) the Site conditions, including but not limited to subsurface hazardous materials or other concealed physical conditions;

(c) the location, nature, quality or quantity of the materials to be removed or to be employed in the performance of the Work;

(d) the nature, quality or quantity of the Plant needed to perform the Work;

(e) all matters concerning access to the Site, power supplies, location of existing services, utilities or materials necessary for the completion of the Work; and

(f) all other matters which could in any way affect the performance of the Work;

that could not have been "properly inferable", "readily apparent" and readily discoverable" using Good Industry Practice by the Contractor, results in additional Work which is a direct result of this newly discovered site condition, such additional Work will be considered by the City under Changes in Work.

D5. DEFINITIONS

D5.1 When used in this Tender:

(a) **"Authority Having Jurisdiction"** or **"AHJ"** means an organization, office, or individual responsible for enforcing the requirements of a code, standard, or by-law, or for approving equipment, materials, and installation or a procedure, which is typically in reference to the local inspection authority;

(b) **"As-Built"** means an accurate and complete record of the construction Work undertaken by the Contractor, resulting in adjustments and markups made to the construction set of documents;

(c) **"Certificate of Final Inspection"** means the certificate of final inspections, obtained from the City of Winnipeg inspections department;

(d) **"Code"** or "code" means the latest local code applicable at the project location

(e) **"C.P.M.**" means critical path method

(f) **"Conflict of Interest"** is as defined in B12;

(g) **"CSA"** means Canadian Standards Association;

(h) **"HVAC"** means Heating, Ventilation and Air Conditioning;

(i) **"Licenced Electrical Contractor"** means an individual meeting the requirements of the Manitoba Electricians' Licence Act (C.C.S.M. c E50) and the Manitoba Electricians' Licensing Regulation (186-87 R);

(j) **"Licenced Mechanical Contractor"** means a M-Prime contractor licensed by the City. M-Prime contractors may obtain permits for any work on HVAC systems, hazardous process systems, or fire protection systems where the work is to be performed by a M1 licenced contractor and/or a M2 licenced contractor;

(k) **"PDF"** means Portable Document Format;

(l) **"provide"** means to supply, install, and leave in working order all materials and necessary equipment, wiring, supports, access panels, etc., as necessary for item or system indicated;

(m) **"Record Drawing"** means an accurate and complete record of the construction Work undertaken by the Contractor, and prepared by the reviewing professional after verifying in detail the actual conditions of the completed project as a result of adjustments and markups made to the construction set of documents. The drawings shall bear the seal of the responsible professional;

(n) **"Standard"** or "standard" means the latest standard that is in effect at the project location;

(o) **"Standardized Goods"** or **"Standardised Equipment"** means the respective goods that have been standardized by the City.

(p) **"Standardized Vendors"** means a Contractor or Supplier of Standardized Goods.

(q) "**Supply Chain Disruption**" means an inability by the Contractor to obtain goods or services from third parties necessary to perform the Work of the Contract within the schedule specified therein, despite the Contractor making all reasonable commercial efforts to procure same. Contractors are advised that increased costs do not, in and of themselves, amount to a Supply Chain Disruption;

(r) **"Total Bid Price"** means the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

D6. CONTRACT ADMINISTRATOR

D6.1 The Contract Administrator is MPE, a division of Englobe, represented by:

Mark Baker, P.Eng.
Winnipeg Region Manager

Telephone No. 204 334-3621
Email Address mbaker@mpe.ca

D6.2 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.

D7. CONTRACTOR'S SUPERVISOR

D7.1 At the pre-construction meeting, the Contractor shall identify their designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D8. ACCESSIBLE CUSTOMER SERVICE REQUIREMENTS

D8.1 The Accessibility for Manitobans Act (AMA) imposes obligations on The City of Winnipeg to provide accessible customer service to all persons in accordance with the Customer Service Standard Regulation ("CSSR") to ensure inclusive access and participation for all people who live, work or visit Winnipeg regardless of their abilities.

D8.1.1 The Contractor agrees to comply with the accessible customer service obligations under the CSSR and further agrees that when providing the Goods or Services or otherwise acting on the City of Winnipeg's behalf, shall comply with all obligations under the AMA applicable to public sector bodies.

D8.1.2 The accessible customer service obligations include, but are not limited to:

(a) providing barrier-free access to goods and services;

(b) providing reasonable accommodations;

(c) reasonably accommodating assistive devices, support persons, and support animals;

(d) providing accessibility features e.g. ramps, wide aisles, accessible washrooms, power doors and elevators;

(e) inform the public when accessibility features are not available;

(f) providing a mechanism or process for receiving and responding to public feedback on the accessibility of all goods and services; and

(g) providing adequate training of staff and documentation of same.

D9. UNFAIR LABOUR PRACTICES

D9.1 Further to C3.2, the Contractor declares that in bidding for the Work and in entering into this Contract, the Contractor and any proposed Subcontractor(s) conduct their respective business in accordance with established international codes embodied in United Nations Universal Declaration of Human Rights (UDHR) https://www.un.org/en/about-us/universal-declaration-of-

human-rights International Labour Organization (ILO) https://www.ilo.org/global/lang--en/index.htm conventions as ratified by Canada.

D9.2 The City of Winnipeg is committed and requires its Contractors and their Subcontractors, to be committed to upholding and promoting international human and labour rights, including fundamental principles and rights at work covered by ILO eight (8) fundamental conventions and the United Nations Universal Declaration of Human Rights which includes child and forced labour.

D9.3 Upon request from the Contract Administrator, the Contractor shall provide disclosure of the sources (by company and country) of the raw materials used in the Work and a description of the manufacturing environment or processes (labour unions, minimum wages, safety, etc.).

D9.4 Failure to provide the evidence required under D9.3, may be determined to be an event of default in accordance with C18.

D9.5 In the event that the City, in its sole discretion, determines the Contractor to have violated the requirements of this section, it will be considered a fundamental breach of the Contract and the Contractor shall pay to the City a sum specified by the Contract Administrator in writing ("Unfair Labour Practice Penalty"). Such a violation shall also be considered an Event of Default, and shall entitle the City to pursue all other remedies it is entitled to in connection with same pursuant to the Contract.

D9.5.1 The Unfair Labour Practice Penalty shall be such a sum as determined appropriate by the City, having due regard to the gravity of the Contractor's violation of the above requirements, any cost of obtaining replacement goods/ services or rectification of the breach, and the impact upon the City's reputation in the eyes of the public as a result of same.

D9.5.2 The Contractor shall pay the Unfair Labour Practice Penalty to the City within thirty (30) Calendar Days of receiving a demand for same in accordance with D9.5. The City may also hold back the amount of the Unfair Labour Practice Penalty from payment for any amount it owes the Contractor.

D9.5.3 The obligations and rights conveyed by this clause survive the expiry or termination of this Contract, and may be exercised by the City following the performance of the Work, should the City determine, that a violation by the Contractor of the above clauses has occurred following same. In no instance shall the Unfair Labour Practice Penalty exceed the total of twice the Contract value.

D10. SOCIAL PROCUREMENT

D10.1 The Contractor shall commit to providing employment opportunities for Equity Groups. Equity Groups are groups that have historically been denied equal access to employment, education, and other opportunities and includes but is not limited to: Indigenous Peoples, Racialized peoples, newcomers (less than 5 years in Canada); Persons with Disabilities; Women; people facing poverty; Veterans, and 2SLGBTQQIA+ (Two-spirit, Lesbian, Gay, Bisexual, Trans, Queer, Questioning, Intersex, Asexual plus) Peoples.

D10.2 This commitment is inclusive of subcontractor employment hours and the Contractor will be required to report on their subcontractors employment hours if the subcontractor contract is greater than $100,000.

D10.3 The Contractor shall commit to providing employment hours with Equity Groups on the delivery of this Contract.

$$X\% = \frac{\text{\# of employment hours by Equity Groups on this Contract}}{\text{Total \# of employment hours on this Contract}}$$

D10.4 The Contractor shall keep detailed records of the total number of full-time and part-time employees that identify as Equity Groups. The Contractor shall report the total number of employee hours that are delivered by Equity Groups during this Contract.

(a) The Social Value Reporting Template has been included as a resource see Form O: Social Value Clause Reporting Template

D10.5 Employees includes all company employees who are working on this Contract. (Administration, Finance, Project Manager, Safety Officer, Trades, etc.)

D10.6 The Contractor shall provide the Contract Administrator a progress report midway through the Contract period and upon completion of the Contract period.

D10.7 The Employee Voluntary Self Identification Survey has been included as a resource see Form N: Employee Voluntary Self Identification Survey.

D11. FURNISHING OF DOCUMENTS

D11.1 Upon award of the Contract, the Contractor will be provided with 'issued for construction' Contract Documents electronically, including Drawings in PDF formal only.

SUBMISSIONS

D12. AUTHORITY TO CARRY ON BUSINESS

D12.1 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.

D13. SAFE WORK PLAN

D13.1 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 Documents, if applicable.

D13.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/Safety/default.stm

D13.3 Notwithstanding B13.4 at any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D14. INSURANCE

D14.1 The Contractor shall provide and maintain the following insurance coverage:

(a) commercial general liability insurance, in the amount of at least five million dollars ($5,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

(b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance

of the Work. The Limit of Liability shall not be less than $2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.

(c) all risks course of construction insurance, including testing and commissioning, in the amount of one hundred percent (100%) of the total Contract Price, written in the name of the Contractor and The City of Winnipeg, at all times during the performance of the Work and until the date of Total Performance.

D14.2 Deductibles shall be borne by the Contractor.

D14.3 All policies shall be taken out with insurers licensed to carry on business in the Province of Manitoba

D14.4 The Contractor shall ensure that any subcontractors hired in connection with the work provide evidence of comparable insurance as outlined in section D14.1(a) and D14.1(b). In addition, all subcontractors must provide evidence of acceptable workers compensation.

D14.5 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 C4.1 for the return of the executed Contract Documents, as applicable.

D14.6 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.

D15. CONTRACT SECURITY

D15.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond 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; and

(b) a labour and material payment bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H2: Labour and Material Payment Bond), in an amount equal to fifty percent (50%) of the Contract Price.

D15.1.1 Where the contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the contract security must meet the following criteria:

(a) the version submitted by the Contractor must have valid digital signatures and seals;

(b) the version submitted by the Contractor must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.

(c) the version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.

(d) the verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.

(e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D15.1(b).

D15.1.2 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or

digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in their discretion, exercised reasonably, allows.

D15.1.3 Digital bonds passing the verification process will be treated as original and authentic.

D15.2 The Contractor shall provide the Contract Administrator identified in D6 with the required performance and labour and material payment bonds within seven (7) Calendar Days of notification of the award of the Contract by way of an award letter and 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 Documents, if applicable.

D15.3 The Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:

(a) give the Subcontractor written notice of the existence of the labour and material payment bond in D15.1(b); and

(b) post a notice of the bond and/or a copy of that bond in a conspicuous location at the Site of the Work.

D16. SUBCONTRACTOR LIST

D16.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D17. EQUIPMENT LIST

D17.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D18. DETAILED WORK SCHEDULE

D18.1 The Contractor shall provide the Contract Administrator with a detailed work schedule (Form L: Detailed Work Schedule) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents if applicable.

D18.2 The detailed work schedule shall consist of the following:

(a) a critical path method (C.P.M.) schedule for the Work;

(b) a Gantt chart for the Work based on the C.P.M. schedule;

(c) a daily manpower schedule for the Work;

(d) all acceptable to the Contract Administrator.

D18.3 Further to D18.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:

(a) Mobilization and demobilization;

(b) Mechanical work;

(c) Electrical and Instrumentation work;

(d) Municipal/ civil site work, bypass pumping;

(e) Temporary bypass pumping

(f) Wet well cleaning, inspection and rehabilitation;

(g) Structural and architectural work;

(h) Equipment start-up;

(i) Commissioning;

(j) Substantial Performance;

(k) Total Performance;

(l) Training;

(m) Submission of operation and maintenance manuals and As-Built drawings.

D18.4 Further to D18.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

D18.5 Further to D18.2(c), the daily manpower schedule shall list the daily number of individuals on the Site for each trade.

D19. REQUIREMENT FOR SITE ACCESSIBILITY PLAN

D19.1 The Contractor shall provide the Contract Administrator with an Accessibility 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 Documents, if applicable.

D19.2 The Accessibility Plan shall demonstrate how the Contractor will accommodate the safe passage of pedestrians and cyclists in accordance with the Manual of Temporary Traffic Control, the Contract Drawings, Staging Plans, and Streets By-Law No. 1481/77 at all times for the duration of the Construction. Unless noted in the Contract, the Accessibility Plan must include a written plan for the following:

(a) How the Contractor will maintain at least one crossing in each direction for each intersection (one north/south crosswalk and one east/west crosswalk).

(b) How the Contractor will maintain access to bus stops within the site.

(c) How the Contractor will maintain access to pedestrian corridors and half signals.

(d) How the Contractor will maintain cycling facilities.

(e) How the Contractor will maintain access to residents and businesses unless otherwise noted in the Contract.

(f) Any required detour signage at adjacent crossings to facilitate sidewalk or active transportation pathway closures.

D19.3 The Accessibility Plan may also include figures, sketches, or drawings to demonstrate the proposed plan.

D19.4 The Accessibility Plan shall include written details on how the Contractor intends to review, maintain, and document all items related to the Accessibility Plan on-site during Construction, including, but not limited to:

(a) Signage

(b) Temporary Ramping

(c) Transit Stops

(d) Detour Signage

D19.5 At minimum, the Contractor shall review the site conditions on a daily basis to ensure that all features related to the Accessibility Plan are in place. The site review is intended to correct deficiencies as a result of unforeseen events such as wind, traffic, or the general public. Deficiencies that are direct result of the Contractors actions must be corrected immediately.

D19.6 Any changes to the Accessibility Plan must be approved by the Contract Administrator.

D19.7 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

D19.8 Deficiencies as a direct result of actions by the Contractor that are not immediately corrected and/or failure to produce records that demonstrate that the site was maintained in compliance with the Accessibility Plan may result in a pay adjustment via the monthly Progress Payment. The rate of pay adjustment will be as per the following schedule:

(a) First Offence – A warning will be issued and documented in the weekly or bi-weekly site meeting.

(b) Second Offence - A field instruction to immediately correct the site will be issued by the Contract Administrator.

(c) Third and subsequent Offences – A pay reduction will be issued in the amount of $250.00 per instance and per day.

D20. SOCIAL PROCUREMENT PLAN TEMPLATE

D20.1 The Contractor shall provide the Contract Administrator with a Social Procurement Plan Template (Form M: Social Procurement Plan Template) within five (5) Business Days of a request by the Contract Administrator as per B13.1(d).

SCHEDULE OF WORK

D21. COMMENCEMENT

D21.1 The Contractor shall not commence any Work until they are in receipt of an award letter from the Award Authority authorizing the commencement of the Work.

D21.2 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 D12;
  (ii) evidence of the workers compensation coverage specified in C6.15;
  (iii) the Safe Work Plan specified in D13;
  (iv) evidence of the insurance specified in D14;
  (v) the contract security specified in D15;
  (vi) the Subcontractor list specified in D16;
  (vii) the equipment list specified in D17;
  (viii) the detailed work schedule specified in D18;
  (ix) the Requirements for Site Accessibility Plan in D19;
  (x) the Social Procurement Plan in D20; and
  (xi) the direct deposit application form specified in D37

(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.

D21.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the award letter.

D21.4 The City intends to award this Contract by May 24, 2024.

D21.4.1 If the actual date of award is later than the intended date, the dates specified for Commencement, Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D21.5 Once the temporary by-pass pumping system is in place the first items initiated as part of the Work shall be:

(a) excavation and removal of the wet well access vault.

(b) the wet well cleaning and inspection.

D21.6 Work on this project requiring the installation and use of temporary by-pass pumping is limited to the period between May 1 to February 29 of any given year, or as authorized by Contract Administrator. Under no condition shall temporary bypass pumping be utilized during March 1 – April 30.

D22. WORK BY OTHERS

D22.1 Further to C6.25, the Contractor's attention is directed to the fact that other Contractors, the p ersonnel of Utilities and the staff of the City may be working within the project limit, approach roadway, adjacent roadways or right-of-way. The activities of these agencies may coincide with the Contractors execution of Work and it will be the Contractor's responsibility to cooperate to the fullest extent with other personnel working in the area, and such cooperation is an obligation of the Contractor under the terms of Contract.

D22.2 Further to D22.1 the Contractor shall cooperate and coordinate all activities with all parties performing required Work by Others identified in D22.1 and accommodate the necessary area on Site required for the Work by Others to complete the Work

D23. WORKING DAYS

D23.1 Further to C1.1(tt), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.

D23.2 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.

D23.3 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.

D23.4 The Contract Administrator will furnish the Contractor with a daily record for each major type of work showing various information concerning the equipment, the time it worked, could have worked and Working Days charged. This report is to be signed each day by an authorized representative of the Contractor.

D24. CRITICAL STAGES

D24.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

(a) Installation of the new bypass pumping valve chamber to be completed early in the project to permit bypass pumping of the station.

(b) Excavation and removal of the wet well access vault and wet well cleaning and inspection work shall be undertaken immediately following instatement of temporary by-pass pumping. Bypass pumping to the new bypass valve chamber to be required along with temporary pumps, and must be provided to allow for the inspection of the wet well and to make any necessary repairs.

(c) **Critical Stage 1**: The new lift pumps are required to be in service and operating on the new controls by July 30, 2025.

(d) Substantial Performance as listed in D25.

(e) Total Performance as listed in D26.

(f) As-built Markups received no later than one (1) month after Total Performance has been achieved.

D25. SUBSTANTIAL PERFORMANCE

D25.1 The Contractor shall achieve Substantial Performance by September 30, 2025.

D25.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D25.3 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.

D25.4 Substantial Performance requires commissioning forms to be completed with the Contract Administrator approval provided. The following items are required to qualify for Substantial Performance:

(a) New lift pumps in service (including automation seal water operation) along with new controls and starters functioning;

(b) HVAC system (including duct work, fans, dampers) are installed and operational;

(c) HVAC controllers are functional;

(d) PLC Control Panel installed with PLC & HMI screen programmed;

(e) SCADA can read and control PLC signals; and

(f) Indoor (including emergency) and outdoor lighting installed and working.

D26. TOTAL PERFORMANCE

D26.1 The Contractor shall achieve Total Performance by October 30, 2025.

D26.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D26.3 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.

D26.4 Total Performance requires all commissioning forms to be completed with the Contract Administrator approval provided. The following items are required to qualify for Total Performance:

(a) All construction work has been completed including any deficiencies addressed;

(b) Contractor has removed trailer(s) along with equipment from site;

(c) All temporary fencing has been removed; and

(d) Site has been restored to original condition and made safe for the public.

D27. LIQUIDATED DAMAGES

D27.1 If the Contractor fails to achieve Critical Stages, 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) Critical Stage 1 (new lift pumps in service as per D24.1(c) – two thousand dollars ($2,000);

(b) Substantial Performance – one thousand dollars ($1,000);

(c) Total Performance – five hundred dollars ($500).

D27.2 The amounts specified for liquidated damages in D27.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.

D27.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D28. SUPPLY CHAIN DISRUPTION SCHEDULE DELAYS

D28.1 The City acknowledges that the schedule for this Contract may be impacted by Supply Chain Disruption. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the delivery requirements and schedule identified in the Contract, in close consultation with the Contract Administrator.

D28.2 If the Contractor is delayed in the performance of the Work by reason of Supply Chain Disruption, the Work schedule may be adjusted by a period of time equal to the time lost due to such delay and costs related to such delay will be determined as identified herein.

D28.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether a Supply Chain Disruption will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to a Supply Chain Disruption, including but not limited to evidence related to availability ordering of Material or Goods, production and/or manufacturing schedules or availability of staff as appropriate.

D28.4 For any delay related to supply chain disruption and identified after Work has commenced, the Contractor shall within seven (7) Calendar Days of becoming aware of the anticipated delay declare the additional delay and shall provide sufficient evidence as indicated in D28.3. Failure to provide this notice will result in no additional time delays being considered by the City.

D28.5 The Work schedule, including the durations identified in D24 to D26 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator. No additional payment will be made for adjustment of schedules except where seasonal work, not previously identified in the Contract, is carried over to the following construction season.

D28.6 Where Work not previously identified is being carried over solely as a result of delays related to Supply Chain Disruption, as confirmed by the Contract Administrator, the cost of temporary works to maintain the Work in a safe manner until Work recommences, will be considered by the Contract Administrator. Where the Work is carried over only partially due to Supply Chain Disruption, a partial consideration of the cost of temporary works will be considered by the Contract Administrator.

D28.7 Any time or cost implications as a result of Supply Chain Disruption and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

D29. SCHEDULED MAINTENANCE

D29.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) Landscaping maintenance as specified in CW3510;

D29.2 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

D30. JOB MEETINGS

D30.1 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.

D30.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever they deem it necessary.

D31. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D31.1 Further to C6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

D32. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

D32.1 Further to B13.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require updated proof of compliance, as set out in B13.4.

STANDARDIZATION

D33. STANDARDIZED GOODS

D33.1 The following goods have been standardized by the City and will be supplied by the Contractor:

(a) Standardized PLC Control System Equipment and Motor Control Equipment as per E14.

(b) Standardized Instrumentation as per E15.

(c) Standardized Gas Detection System as per E16 and 25 30 02.

D34. CONTRACTUAL ARRANGEMENT

D34.1 Each Standardization Vendor shall be a Subcontractor of the Contractor.

D34.2 The City's contract with each of the Standardization Vendors defines the prices and general terms of supply to the Contractor. Each Standardization Vendor is obligated to enter into a contract with the Contractor, based upon such prices and general terms of supply.

D34.2.1 The City is not a party to any contract between a Standardization Vendor and the Contractor, or any Subcontractor.

D34.3 In the event that a potential dispute arises between the Contractor and a Standardization Vendor, the Contract Administrator shall be notified.

D35. PAYMENT OF STANDARDIZATION VENDORS

D35.1 The Contractor is obligated to pay the Standardization Vendors in accordance with general terms of supply applicable to such Standardization Vendor.

D35.2 The Contractor's payment terms to the Standardization Vendor, in respect of Standardized Control System and Motor Control Equipment identified in E14, include the following:

D35.2.1 Except as indicated in D35.2.2, payment shall be in Canadian funds net thirty (30) Calendar Days after shipment.

D35.2.2 Payment for motor control centres shall be in Canadian funds net thirty (30) Calendar Days and initiated based upon the following schedule:

(a) Upon approval of the shop drawings or forty (40) Calendar days after the last comprehensive submittal, in the event that a response is not made to the submittal: 25% of the total value.

(b) Upon delivery of the complete MCC along with all associated as-manufactured documentation: 60% of the total value; or

(c) In the event that the delivery is intentionally delayed, upon request by the Contractor, the following payment schedule would replace the 60% payment:

(i) Upon completion of the FAT and delivery of all as-manufactured documentation to the Contractor – 30% of the total value.

(ii) Forty (40) Calendar days after delivery of the as-manufactured documentation to the Contractor, or upon delivery, whichever comes sooner – 30% of the total value.

(d) Upon successful commissioning and delivery of documentation or six (6) months after delivery, whichever comes first: 15% of the total value.

D35.3 The Contractor's payment terms to the Standardization Vendor, in respect of Standardized Instrumentation identified in E15, include the following:

D35.3.1 Payment shall be in Canadian funds net thirty (30) Calendar Days after receipt and approval of the Standardization Vendor's invoice.

MEASUREMENT AND PAYMENT

D36. INVOICES

D36.1 Further to C12, the Contractor shall submit an invoice for each portion of Work performed. The invoice shall be submitted to the Contract Administrator listed in D6.1.

D36.2 Invoices must clearly indicate, as a minimum:

(a) the City's purchase order number;

(b) the City's project number and title: 'S-1267 – Conway Lift Station Upgrades';

(c) the City project representative's name;

(d) date of delivery;

(e) delivery address;

(f) type and quantity of work performed;

(g) the amount payable with GST and MRST shown as separate amounts; and

(h) the Contractor's GST registration number.

D36.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.

D37. PAYMENT

D37.1 Further to C12, the City shall make payments to the Contractor by direct deposit to the Contractor's banking institution, and by no other means. Payments will not be made until the Contractor has made satisfactory direct deposit arrangements with the City. Direct deposit application forms are at https://winnipeg.ca/finance/files/Direct_Deposit_Form.pdf.

D37.2 Further to **E5.7**(a), no payment will be made for Cash Allowances other than as set out in **E6.4**.

D38. PAYMENT SCHEDULE

D38.1 Further to C12, payment shall be in accordance with the following payment schedule:

(a) Monthly invoices for Work performed during the previous calendar month

WARRANTY

D39. WARRANTY

D39.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D39.1.1 For the purpose of contract security, the warranty period shall be one (1) year.

D39.2 Notwithstanding C13.2, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.

D39.2.1 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.

D39.2.2 The Contractor will be required to attend a warranty inspection site visit approximately ten (10) months after the date of Total Performance. Any deficiencies found during the site visit along with prior to completion of the warranty period, the Contractor will be provided with a deficiency list and will be required to correct all deficiencies.

DISPUTE RESOLUTION

D40. DISPUTE RESOLUTION

D40.1 If the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator, the Contractor shall act in accordance with the Contract Administrator's opinion, determination, or decision unless and until same is modified by the process followed by the parties pursuant to D40.

D40.2 The entire text of C21.4 is deleted, and amended to read: "Intentionally Deleted"

D40.3 The entire text of C21.5 is deleted, and amended to read:

(a) If Legal Services has determined that the Disputed Matter may proceed in the Appeal Process, the Contractor must, within ten (10) Business Days of the date of the Legal Services Response Letter, submit their written Appeal Form, in the manner and format set out on the City's Materials Management Website, to the Chief Administrative Officer, and to the Contract Administrator. The Contractor may not raise any other disputes other than the Disputed Matter in their Appeal Form.

D40.4 Further to C21, prior to the Contract Administrator's issuance of a Final Determination, the following informal dispute resolution process shall be followed where the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator ("Dispute"):

(a) In the event of a Dispute, attempts shall be made by the Contract Administrator and the Contractor's equivalent representative to resolve Disputes within the normal course of project dealings between the Contract Administrator and the Contractor's equivalent representative.

(b) Disputes which in the reasonable opinion of the Contract Administrator or the Contractor's equivalent representative cannot be resolved within the normal course of project dealings as described above shall be referred to a without prejudice escalating negotiation process consisting of, at a minimum, the position levels as shown below and the equivalent Contractor representative levels:

(i) The Contract Administrator;

(ii) Supervisory level between the Contract Administrator and applicable Department Head;

(iii) Department Head.

D40.5 Names and positions of Contractor representatives equivalent to the above City position levels shall be determined by the Contractor and communicated to the City at the pre-commencement or kick off meeting.

D40.6 As these negotiations are not an adjudicative hearing, neither party may have legal counsel present during the negotiations.

D40.7 Both the City and the Contractor agree to make all reasonable efforts to conduct the above escalating negotiation process within twenty (20) Business Days, unless both parties agree, in writing, to extend that period of time.

D40.8 If the Dispute is not resolved to the City and Contractor's mutual satisfaction after discussions have occurred at the final escalated level as described above, or the time period set out in D40.7, as extended if applicable, has elapsed, the Contract Administrator will issue a Final Determination as defined in C1.1(v), at which point the parties will be governed by the Dispute Resolution process set out in C21.

INDEMNITY

D41. INDEMNITY

D41.1 Indemnity shall be as stated in C17.

D41.2 Notwithstanding C17.1, the Contractor shall save harmless and indemnify the City in the amount of twice the Contract Price or five million dollars ($5,000,000), whichever is greater, against all costs, damages or expenses arising from actions, claims, demands and proceedings, by whomsoever brought, made or taken as a result of negligent acts or negligent omissions of the Contractor, their Subcontractors, employees or agents in the performance or purported performance of the Work, and more particularly from:

(a) accidental injury to or death of any person whether retained by or in the employ of the contractor or not, arising directly or indirectly by reason of the performance of the Work, or by reason of any trespass on or damage to property;

(b) damage to any property owned in whole or in part by the City, or which the City by duty or custom is obliged, directly or indirectly, in any way or to any degree, to construct, repair or maintain;

(c) damage to, or trespass or encroachment upon, property owned by persons other than the City;

(d) any claim for lien or trust claim served upon the City pursuant to The Builders' Liens Act;

(e) failure to pay a Workers Compensation assessment, or Federal or Provincial taxes;

(f) unauthorized use of any design, device, material or process covered by letters patent, copyright, trademark or trade name in connection with the Work;

(g) inaccuracies in any information provided to the City by the Contractor.

D41.3 Further to C17, The City shall save harmless and indemnify the Contractor in the amount of twice the Contract Price or five million dollars ($5,000,000), whichever is greater, against all costs, damages or expenses arising from actions, claims, demands and proceedings, by whomsoever brought, made or taken as a result of negligent acts or negligent omissions of the City, their employees or agents in the performance of its obligation under the Contract.

THIRD PARTY AGREEMENTS

D42. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D42.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.

D42.2 Further to D42.1, in the event that the obligations in D42 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.

D42.3 For the purposes of D42:

(a) **"Government of Canada"** includes the authorized officials, auditors, and representatives of the Government of Canada; and

(b) **"Government of Manitoba"** includes the authorized officials, auditors, and representatives of the Government of Manitoba.

D42.4 Modified Insurance Requirements

D42.4.1 If not already required under the insurance requirements identified in D14, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars ($2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all sub-contractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and their Ministers, officers, employees, and agents shall be added as additional insureds.

D42.4.2 If not already required under the insurance requirements identified in D14, the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.

D42.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars ($2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.

D42.4.4 Further to D14.5, insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.

D42.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

D42.5 Indemnification By Contractor

D42.5.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.

D42.5.2 The Contractor agrees that in no event will Canada or Manitoba, their respective officers, servants, employees or agents be held liable for any damages in contract, tort (including negligence) or otherwise, for:

(a) any injury to any person, including, but not limited to, death, economic loss or infringement of rights;

(b) any damage to or loss or destruction of property of any person; or

(c) any obligation of any person, including, but not limited to, any obligation arising from a loan, capital lease or other long term obligation; in relation to this Contract or the Work.

D42.6 Records Retention and Audits

D42.6.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D42.6.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D42.6.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

D42.7 Other Obligations

D42.7.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.

D42.7.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.

D42.7.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.

D42.7.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of

Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

D42.7.5 The Contractor represents and warrants that no current or former public servant or public office holder, to whom the Value and Ethics Code for the Public Sector, the Policy on Conflict of Interest and Post Employment, or the Conflict of Interest Act applies, shall derive direct benefit from this Contract, including any employment, payments, or gifts, unless the provision or receipt of such benefits is in compliance with such codes and the legislation.

D42.7.6 The Contractor represents and warrants that no member of the House of Commons or of the Senate of Canada or of the Legislative Assembly of Manitoba is a shareholder, director or officer of the Contractor or of a Subcontractor, and that no such member is entitled to any benefits arising from this Contract or from a contract with the Contractor or a Subcontractor concerning the Work.

FORM H1: PERFORMANCE BOND
(See D15)

KNOW EVERYONE 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

TENDER NO. 177-2024

CONWAY PUMPING STATION 2024 UPGRADES

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: LABOUR AND MATERIAL PAYMENT BOND
(See D15)

KNOW EVERYONE BY THESE PRESENTS THAT

_____
his/its heirs, executors, administrators, successors or assigns (hereinafter called the "Principal"), and

_____ ,
his/its heirs, executors, administrators, successors or assigns (hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), for the use and benefit of claimants as herein below defined, in the amount of

_____

_____ dollars ($_____.____)

of lawful money of Canada, for the payment whereof we, the Principal and the Surety jointly and severally bind ourselves firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee for

TENDER NO. 177-2024

CONWAY LIFT STATION 2024 UPGRADES

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 promptly make payment to all claimants as hereinafter defined, for all labour, service and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void, otherwise it shall remain in full force and effect subject, however, to the following conditions:

(a) A claimant is defined as one having a direct contract with the Principal for labour, service and material, or any of them, used or reasonably required for use in the performance of the contract, labour, service and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rent of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract;

(b) The above-named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant’s work, labour or service was done or performed, or materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon;

(c) No suit or action shall be commenced hereunder by any claimant

    (i) unless claimant shall have given written notice to the Principal and the Surety above-named, within one hundred and twenty (120) days after such claimant did or performed the last of the work, labour or service, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work, labour or service was done or performed. Such notice shall be served by mailing the same by registered mail to the Principal, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the Province of Manitoba;

(ii) after the expiration of one (1) year following the date on which Principal ceased work on said Contract; including work performed under the guarantees provided in the Contract;

(iii) other than in a court of competent jurisdiction in the Province of Manitoba.

(d) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

(e) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

The Principal and Surety hereby agree that The Guarantors' Liability Act (Manitoba) shall apply to this Bond.

IN TESTIMONY WHEREOF, the Principal has hereunto set its hand affixed its seal, and the Surety has caused these presents to be sealed and with its corporate seal duly attested by the authorized signature of its signing authority this

_____ 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 J: SUBCONTRACTOR LIST
(See D16)

CONWAY LIFT STATION 2024 UPGRADES

Name	Address

FORM K: EQUIPMENT
(See D17)

CONWAY LIFT STATION 2024 UPGRADES

1. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

2. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

3. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

FORM K: EQUIPMENT
(See D17)

CONWAY LIFT STATION 2024 UPGRADES

4. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

5. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

6. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

FORM L: DETAILED WORK SCHEDULE
(See D18)

CONWAY LIFT STATION 2024 UPGRADES

For each item of Work, indicate the cumulative percentage proposed to be completed by the end of each time period until 100% completion is achieved.

Items of Work	Time Period in Working Days					
	0	10	20	30	40	50

FORM L: DETAILED WORK SCHEDULE
(See D18)

CONWAY LIFT STATION 2024 UPGRADES

For each item of Work, indicate the proposed date that each cumulative percentage to be completed will be achieved.					
Items of Work	Percentage of Work Completed				
	Start	25%	50%	75%	100%

FORM M: SOCIAL PROCUREMENT PLAN

Every purchase has an economic, social, environmental, and cultural impact. Sustainable Procurement is about capturing the economic, social, environmental, and cultural impacts of purchasing decisions to foster healthy and vibrant communities.

Historically, procurement has been about choosing the supplier offering the lowest price while still meeting technical requirements of providing high quality products or services with minimal risk. By expanding the premise of 'best value' in procurement, to include the generation of positive societal benefits, alongside high quality and competitive bids, the City of Winnipeg is working to maximize community benefits and deliver improved socio-economic returns for stakeholders, within the existing spend.

The Contractor shall provide the Contract Administrator with a Social Procurement Plan Template (Form M: Social Procurement Plan Template) within five (5) Business Days of a request by the Contract Administrator as per B13.5.

Both Question 1 and 2 must be filled out responding to all criteria. Question 2 must explain the commitment to Question 1 within the context of the Contract.

1. The Contractor commits to _____ % of employment hours with Equity Groups on the delivery of this Contract.

X% = # of employment hours by Equity Groups on this Contract
Total # of employment hours on this Contract

Please reconfirm your commitment here:

2. Provide a detailed strategy for how the Contractor's current and planned efforts to employ Equity Groups will ensure the Contractor meets the commitment on the Contract.

Employment responses could include: We partner with Equity Group employment organizations to recruit Indigenous Rightsholders and other Equity Groups. When employees are onboarded, they are asked if they identify as an Indigenous Rightsholder or Equity Group. We track this and report on aggregate employment levels across our business each year per our Diversity and Inclusion Policy.

Please describe your strategy and/or plans to meet the above requirement:

FORM N: EMPLOYEE VOLUNTARY SELF-IDENTIFICATION SURVEY

The City of Winnipeg is committed to supporting a workforce that is representative of the community the City serves. The City is focused on human rights and ensuring full and equitable representation, success, and advancement of all people, and in particular, the equity groups that are under-represented.

Our company is in support of the goals above and are asking employees to participate in this survey to collect data on the demographics of our workforce.

Employee identity data collected by this survey will be shared with the City of Winnipeg in aggregate. All employee identity data will only be shared with our designated HR or management staff.

This data will be submitted to the City of Winnipeg as part of our Reporting requirements under City of Winnipeg Contracts.

Your response to the self-declaration questions is voluntary.

Thank you for participating in this **self-identified** and **voluntary** survey to help assess and measure the inclusion of equity groups in the workforce.

Company Name_____

Employee Name _____

1. Do you wish to participate in this survey?

   ☐ Yes ☐ No

2. Do you identify as an Indigenous person?

   ☐ Yes ☐ No

3. Do you identify as any of the following Equity Groups, also known as under-represented groups? Check all that apply.

   ☐ Racialized peoples;
   ☐ Newcomers;
   ☐ Persons with disabilities;
   ☐ Women;
   ☐ Peoples facing poverty;
   ☐ Veterans;
   ☐ 2SLGBTQQIA+ (Two-Spirit, Lesbian, Gay, Bisexual, Transgender, Queer, Questioning, Intersex, Asexual, plus) Peoples;

Indigenous refers to "Aboriginal Peoples of Canada" as defined in Section 35(2) of the Constitution Act, 1982 to include the First Nations, Inuit and Métis Peoples of Canada. (Source: Our Winnipeg 2045)

Racialized peoples refers to a group of people who have identifiable characteristics that differ from those of the majority or dominant population. Previously known as Visible Minority and although the term "visible minority" is used in legal (e.g. *Employment Equity Act*) and statistical (e.g. Census) contexts, it is considered outdated and no longer recommended because the word "visible" suggests being white is the standard, and the word "minority" limits the concept to numbers. The term is increasingly being replaced by "racialized" individuals or groups. (Source: Immigration, Refugees and Citizenship Canada)

Newcomers refers to new residents including people arriving from countries outside Canada, such as recent immigrants (less than five years in Canada), refugees, refugee claimants or asylum seekers, and temporary residents. (Source: Our Winnipeg 2045)

Persons with disabilities refers to individuals who have a long-term or recurring physical, mental, psychiatric, sensory, or learning impairment which may limit certain kinds of activity or could be perceived as a limitation. These include visible and non-visible disabilities. (Source: City of Winnipeg)

Women refers to all people who identify as women, whether they are cisgender or transgender women. (Source: Department of Justice, Government of Canada)

People facing poverty refers to people, given the size and region of residents, that do not have enough income to buy a set of goods and services considered to represent a modest, basic standard of living (Source: Market Basket Measure, Stats Canada)

Veterans refers to any former member of the Canadian Armed Forces who successfully underwent basic training and is honorably discharged. (Source: Veteran Affairs Canada)

2SLGBTQQIA+ peoples refer to Two-Spirit, Lesbian, Gay, Bisexual, Trans, Queer, Questioning, Intersex, Asexual, Plus peoples. (Source: Government of Canada)

FORM O: SOCIAL VALUE REPORTING TEMPLATE

Every purchase has an economic, social, environmental, and cultural impact. Sustainable Procurement is about capturing the economic, social, environmental, and cultural impacts of purchasing decisions to foster healthy and vibrant communities.

The data reported here is a contractual requirement to encourage and measure social, Indigenous, and environmental outcomes from the City's procurement. The City reserves the right to verify the information reported.

Company Name _____

Contract Number _____

Reporting Period Start Date _____

Reporting Period End Date _____

1. Employment of Equity Groups (# of employee hours)

The Contractor shall list the percentage (%) of employment hours they plan to commit with Equity Groups on the delivery of this Contract.

A. Total number of employment hours for **all employees** working on the project during the reporting period	_____hours
B. Total number of employment hours for **Equity Group** employees working on the project during the reporting period	_____hours
C. Percentage for the reporting period (B/A) (C = B / A)	_____%

Please describe any successes or challenges related to your commitment for the reporting period.

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 their 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 Tender shall govern over *The City of Winnipeg Standard Construction Specifications*.

E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B7. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B7.

E1.4 The following are applicable to the Work:

NMS SPECIFICATIONS		
DIVISION 01	**–**	**GENERAL REQUIREMENTS**
013300		Submittal Procedures
013529.06		Health and Safety Requirements
014500		Quality Control
015200		Construction Facilities
015600		Temporary Barriers and Enclosures
017300		Execution
017400		Cleaning
017419		Waste Management and Disposal
017800		Closeout Submittals
019113		General Commissioning Requirements
019113.13		Commissioning Plan
019113.16		Commissioning Forms
019113.18		Commissioning Training
DIVISION 04	**–**	**MASONRY**
040500		Common Work Results for Masonry
040513		Masonry Mortaring and Grouting
040519		Masonry Anchorage and Reinforcing
040523		Masonry Accessories
042113		Brick Masonry
042200		Concrete Unit Masonry
DIVISION 05	**–**	**METALS**
051223		Structural Steel for Building
051410		Structural Aluminum
055000		Metal Fabrication

DIVISION 06 – CARPENTRY

061053 Miscellaneous Rough Carpentry
061753 Shop Fabricated Wood Trusses
066000 Plastic Fabrications

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

071600 Cementitious and Reactive Waterproofing
072113 Board Insulation
072116 Blanket Insulation
072129.03 Sprayed Foam Insulation
072600 Air and Vapour Retarders
072700.01 Air Barriers – Descriptive or Proprietary
076100 Metal Roofing System
076200 Sheet Metal Flashing and Trim
079200 Joint Sealant

DIVISION 08 – DOORS

081100 Metal Doors and Frames
087100 Door Hardware

DIVISION 09 – FINISHES

090190.63 Interior Painting
096723 Resinous Epoxy Flooring
099650 Graffiti – Resistant Coatings

DIVISION 10 – SPECIALTIES

104400 Fire Protection Specialties

DIVISION 20 – MECHANICAL

200543 Mechanical Identification
202030 Piping and Equipment Insulation

DIVISION 22 – PLUMBING

220500 Common Work Results for Plumbing
220503 Hangers and Support
220504 Hydrostatic and Pressure Testing
220515 Plumbing Specialties and Accessories
221010 Plumbing Pumps
221116 Domestic Water Piping
221316.16 Sanitary Waste and Vent Piping - Plastic

DIVISION 23 – HEATING, VENTILATING AND AIR-CONDITIONING

230513 Common Motor Requirements for HVAC Equipment
230529 Hangers and Supports for HVAC Piping and Equipment
230553 Identification for HVAC Piping and Equipment
230593 Testing, Adjusting and Balancing for HVAC
230713 Ductwork and Breeching Insulation
230813 Performance Verification HVAC System
230816 Cleaning and Start-up of Mechanical Piping Systems
233113 Ductwork
233130 Ductwork Accessories

233315	Dampers - Operating
233400	HVAC Fans
233720	Louvres, Intakes and Vents
238123	Air Conditioning
238239.23	Unit Heaters - Electric

DIVISION 25 – INSTRUMENTATION AND CONTROLS

250501	Controls General Requirements
250554	Control Identification
253002	Controls Instrumentation

DIVISION 26 – ELECTRICAL

260501	Common Work results - Electrical
260521	Wires and Cables (0-1000 V)
260528	Grounding – Secondary
260529	Hangers and Supports for Electrical System
260531	Splitters, Junctions, Pull Box and Cabinets
260532	Outlet Boxes, Conduit Boxes, and Fittings
260534	Conduits, Conduit Fastenings and Fittings
260544	Installation of Cables in Ducts in Trenches
260805	Acceptance Testing
261217	Dry Type Transformers up to 600V Primary
261841	Interlock Systems
262417	Panel Boards Breaker Type
262419	Motor Control Centers
262716	Cabinets and Enclosures
262726	Wiring Devices
262821	Moulded Case Circuit Breaker
262823	Disconnect Switches – Fused and Non-Fused
262901	Contactors
262903	Control Devices
262910	Motor Starters to 600 V
262923	Variable Frequency Drives
265000	Lighting
265201	Emergency Lighting
269190	Instrumentation

DIVISION 33 – UTILITIES

333123	Sanitary Sewer Force Main Piping

DIVISION 40 – PROCESS INTEGRATION

400501	Control Work Results - Automation
408008	Factory Acceptance Tests
408011	Automation Commissioning
409001	Automation – Field Push Buttons, Switches, and Indicators
409200	Automation Primary Control Devices
409443	Programmable Logic Control (Plc)
409513	Control Panels
409901	Training
409990	Maintenance and Support

GENERAL

GENERAL

1-0131L-D0001	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	COVER SHEET		
1-0131L-D0002	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOCATION PLAN		
1-0131L-D0003	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	DRAWING INDEX		

AUTOMATION

1-0131L-A0001	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	AUTOMATION PLAN	PLANS AND SECTIONS	DEMOLITION
1-0131L-A0002	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	AUTOMATION PLAN	PLANS AND SECTIONS	MAIN FLOOR AND DRY WELL PLAN
1-0131L-A0003	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PANEL LAYOUT AND BILL OF MATERIALS	PLC CONTROL PANEL CP-L81	
1-0131L-A0004	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	NETWORK BLOCK DIAGRAM	PLC CONTROL PANEL CP-L81	
1-0131L-A0005	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	POWER DISTRIBUTION WIRING SCHEMATIC	PLC CONTROL PANEL CP-L81	
1-0131L-A0006	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PLC I/O WIRING	PLC CONTROL PANEL CP-L81	DISCRETE INPUT - RACK 0, MODULE 4
1-0131L-A0007	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PLC I/O WIRING	PLC CONTROL PANEL CP-L81	DISCRETE INPUT - RACK 0, MODULE 5
1-0131L-A0008	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PLC I/O WIRING	PLC CONTROL PANEL CP-L81	DISCRETE OUTPUT - RACK 0, MODULE 6
1-0131L-A0009	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PLC I/O WIRING	PLC CONTROL PANEL CP-L81	ANALOG INPUT - RACK 0, MODULE 7
1-0131L-A0010	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PLC I/O WIRING	PLC CONTROL PANEL CP-L81	ANALOG INPUT - RACK 0, MODULE 8
1-0131L-A0011	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PLC I/O WIRING	PLC CONTROL PANEL CP-L81	ANALOG INPUT - RACK 0, MODULE 9
1-0131L-A0012	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PLC I/O WIRING	PLC CONTROL PANEL CP-L81	ANALOG INPUT - RACK 0, MODULE 10
1-0131L-A0013	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PLC I/O WIRING	PLC CONTROL PANEL CP-L81	ANALOG OUTPUT - RACK 0, MODULE 11 & RACK 1, MODULE 2
1-0131L-A0014	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	AUTOMATIC PUMP CONTROL WIRING SCHEMATIC	PLC CONTROL PANEL CP-L81	LOCAL MODE AND PLC MODE OF OPERATION
1-0131L-A0015	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PANEL LAYOUT AND BILL OF MATERIALS	HVAC VENTILATION CONTROL PANEL	JBA-L83
1-0131L-A0016	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	POWER DISTRIBUTION WIRING SCHEMATIC	HVAC VENTILATION CONTROL PANEL	JBA-L83
1-0131L-A0017	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PANEL LAYOUT AND BILL OF MATERIALS	INTRINSICALLY SAFE JUNCTION BOX	JBA-L82

1-0131L-A0018	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	WET WELL LEVEL CONTROLLER	LIT-L100-1, LIC-L100-1
1-0131L-A0019	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	WET WELL LEVEL CONTROLLER	LIT-L100-2, LIC-L100-2
1-0131L-A0020	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	LIFT PUMP P-L01 DISCHARGE FLOW TRANSMITTER	FE-L012, FIT-L012
1-0131L-A0021	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	LIFT PUMP P-L02 DISCHARGE FLOW TRANSMITTER	FE-L022, FIT-L022
1-0131L-A0022	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	H2S GAS MONITORING DETECTOR	AE-L550-1, AE-L550-2, AIT-L550
1-0131L-A0023	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	WET WELL HIGH HIGH LEVEL FLOAT	LSHH-L101
1-0131L-A0024	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	PUMP ROOM LEVEL FLOOD FLOAT	LSH-L501
1-0131L-A0025	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	COMMINUTOR CHAMBER LEVEL FLOOD FLOAT	LSH-L502
1-0131L-A0026	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	MAIN FLOOR AIR FILTER DIFFERENTIAL PRESSURE & FLOW SWITCHES	PDSH-L661, FSL-L613, FSL-L652
1-0131L-A0027	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	MAIN FLOOR HVAC VENTILATION AIR DAMPERS	FV-L601, FV-L602, FV-L603
1-0131L-A0028	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	MAIN FLOOR DUCT HEATER TEMPERATURE AND CONTROL	TE-L600-1, HCE-L67, TIC-L600
1-0131L-A0029	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	MAIN FLOOR OCCUPANCY AND TEMPERATURE SWITCHES	HS-L604, TSH-L600, TSL-L600, TIC-L600
1-0131L-A0030	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	LIFT PUMP P-L01 SEAL WATER FLOW SWITCH	FSL-L011
1-0131L-A0031	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	PUMP P-L01 MOTOR HIGH TEMPERATURE SWITCH	TSH-L011
1-0131L-A0032	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	PUMP P-L01 SHAFT BEARING TEMPERATURE TRANSMITTERS	TE-L010-1, TE-L010-2, TT-L010-1, TT-L010-2
1-0131L-A0033	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	PUMP P-L01 SHAFT BEARING VIBRATION SENSORS	VIC-L010-1, VIC-L010-2, VT-L010-1, VT-L010-2
1-0131L-A0034	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	LIFT PUMP P-L02 SEAL WATER FLOW SWITCH	FSL-L021

1-0131L-A0035	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	PUMP P-L02 MOTOR HIGH TEMPERATURE SWITCH	TSH-L021
1-0131L-A0036	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	PUMP P-L02 SHAFT BEARING TEMPERATURE TRANSMITTERS	TE-L020-1, TE-L020-2, TT-L020-1, TT-L020-2
1-0131L-A0037	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	PUMP P-L02 SHAFT BEARING VIBRATION SENSORS	VIC-L020-1, VIC-L020-2, VT-L020-1, VT-L020-2
1-0131L-A0038	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	PUMP ROOMTEMPERATURE TRANSMITTER	TT-L681
1-0131L-A0039	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	MAIN ROOM TEMPERATURE TRANSMITTER	TT-L691
1-0131L-A0040	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	MOTOR ROOM TEMPERATURE TRANSMITTER	TT-L671
1-0131L-A0041	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	POTABLE WATER SUPPLY LOW PRESSURE	PSL-L526
1-0131L-A0042	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	600V POWER FAIL ALARM RELAY	ESL-L711
1-0131L-A0043	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	MCC-L71 TVSS STATUS ALARM	XS-L712
1-0131L-A0044	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	CSO WEIR OVERFLOW LEVEL FLOAT SWITCH	LSH-S663
1-0131L-A0045	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	CSO PANEL	LT-S661 (CON-S-661-LIT), LT-S662 (CON-S-662-LIT)
1-0131L-A0046	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	LOOP DIAGRAM	CSO PANEL	LT-S951. ZT-S851

BUILDING

1-0131L-B0001	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	GENERAL NOTES AND CODE REVIEW PLAN		
1-0131L-B0002	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	PLANS AND SECTIONS	BASEMENT & MAIN FLOOR DEMOLITION PLAN
1-0131L-B0003	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	PLANS AND SECTIONS	MOTOR ROOM & PUMP ROOM DEMOLITION PLAN
1-0131L-B0004	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	SECTIONS	DEMOLITION SECTION VIEW 1
1-0131L-B0005	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	PLANS AND SECTIONS	MAIN FLOOR & ROOF PLAN

1-0131L-B0006	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	PLANS AND SECTIONS	BASEMENT & MOTOR ROOM PLAN
1-0131L-B0007	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	PLANS AND SECTIONS	PUMP ROOM & COMMINUTOR CHAMBER PLAN
1-0131L-B0008	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	PLANS AND SECTIONS	BUILDING ELEVATIONS
1-0131L-B0009	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	PLANS AND SECTIONS	BUILDING SECTIONS
1-0131L-B0010	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	PLANS AND SECTIONS	SUBSTRUCTURE SECTION 1
1-0131L-B0011	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	ARCHITECTURAL DETAILS	
1-0131L-B0012	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	BUILDING / ARCHITECTURAL	ARCHITECTURAL SCHEDULES	

CIVIL

1-0131L-C0001	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	CIVIL	SITE SERVICES PLAN & BYPASS DETAILS	
1-0131L-C0002	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	CIVIL	LOT GRADING PLAN AND SITE DRAINAGE	

ELECTRICAL

1-0131L-E0001	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	ELECTRICAL LEGEND		
1-0131L-E0002	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	ELECTRICAL SITE PLAN	PLANS AND SECTIONS	DEMOLITION
1-0131L-E0003	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	ELECTRICAL BUILDING PLAN	DEMOLITION	
1-0131L-E0004	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	ELECTRICAL SINGLE LINE DIAGRAM		
1-0131L-E0005	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	ELECTRICAL SITE PLAN	PLANS AND SECTIONS	
1-0131L-E0006	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	ELECTRICAL BUILDING PLAN	PLANS AND SECTIONS	
1-0131L-E0007	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	ELECTRICAL HAZARDOUS LOCATION PLAN	PLANS AND SECTIONS	
1-0131L-E0008	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MCC ELEVATIONS AND DETAILS	MCC-L71	
1-0131L-E0009	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	ELECTRICAL GROUNDING DETAILS		
1-0131L-E0010	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	ELECTRICAL SCHEDULES	PNL-L74 AND LUMINAIRES	
1-0131L-E0011	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MOTOR STARTER SCHEMATIC	P-L01 LIFT PUMP	

1-0131L-E0012	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MOTOR STARTER CONNECTION DIAGRAM	P-L01 LIFT PUMP	
1-0131L-E0013	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MOTOR STARTER SCHEMATIC	P-L02 LIFT PUMP	
1-0131L-E0014	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MOTOR STARTER CONNECTION DIAGRAM	P-L02 LIFT PUMP	
1-0131L-E0015	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MOTOR STARTER SCHEMATIC & CONNECTIONS	SF-L61 HVAC SUPPLY FAN AND	EF-L62 HVAC EXHAUST FAN

MECHANICAL

1-0131L-M0002	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL PLAN	PLANS AND SECTIONS	MOTOR ROOM & PUMP ROOM DEMOLITION PLAN
1-0131L-M0003	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL PLAN	PLANS AND SECTIONS	BASEMENT & MAIN FLOOR DEMOLITION PLAN
1-0131L-M0004	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL PLAN	PLANS AND SECTIONS	DEMOLITION SECTION VIEWS
1-0131L-M0005	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL PLAN	PLANS AND SECTIONS	MOTOR & PUMP ROOM PROCESS PIPING PLAN
1-0131L-M0006	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL PLAN	PLANS AND SECTIONS	MOTOR & PUMP ROOM HVAC & PLUMBING PLAN
1-0131L-M0007	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL PLAN	PLANS AND SECTIONS	BASEMENT & MAIN FLOOR HVAC & PLUMBING PLAN
1-0131L-M0008	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL PLAN	PLANS AND SECTIONS	PROCESS & MECHANICAL SECTION 1
1-0131L-M0009	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL PLAN	PLANS AND SECTIONS	PROCESS & MECHANICAL SECTION 2
1-0131L-M0010	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL DETAILS	LIFT PUMPS & LEVEL GAUGE DETAILS	
1-0131L-M0011	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL DETAILS	TYPICAL MECHANICAL DETAILS, PIPE SUPPORTS, SEAL WATER	
1-0131L-M0012	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANCAL DETAILS	TYPICAL MECHANICAL DETAILS	
1-0131L-M0013	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	MECHANICAL SCHEDULES	PROCESS & HVAC EQUIPMENT	

PROCESS

1-0131L-P0001	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PROCESS AND INSTRUMENTATION LEGEND		
1-0131L-P0002	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)	WET WELL, SUMP, AND LEVEL TRANSMITTERS	
1-0131L-P0003	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)	WASTEWATER LIFT PUMPING	
1-0131L-P0004	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)	HVAC VENTILATION AND MISCELLANEOUS	

STRUCTURAL

1-0131L-S0001	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	STRUCTURAL	PLANS AND SECTIONS	MAIN FLOOR & ROOF PLAN
1-0131L-S0002	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	STRUCTURAL	PLANS AND SECTIONS	BASEMENT AND MOTOR ROOM PLAN
1-0131L-S0003	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	STRUCTURAL	PLANS AND SECTIONS	PUMP ROOM, WET WELL, AND COMMINUTOR CHAMBER PLAN
1-0131L-S0004	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	STRUCTURAL	PLANS AND SECTIONS	MASONRY ELEVATIONS & CORE FILL PLAN
1-0131L-S0005	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	STRUCTURAL	SECTIONS AND DETAILS	WET WELL CONSTRUCTION AND REHABILITATION
1-0131L-S0006	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	STRUCTURAL	SECTIONS AND DETAILS	LADDERS, HATCHES, FRAMES, STAIRS, GUARDRAILS
1-0131L-S0007	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	STRUCTURAL	SECTIONS AND DETAILS	MISCELLANEOUS DETAILS
1-0131L-S0008	001	CONWAY LIFT PUMPING STATION	2024 UPGRADES	SPECIFICATION NOTES		

Appendix A: Historical Record Drawings
Appendix B: Geotechnical Investigation Report
Appendix C: Hazardous Materials Assessment Report
Appendix D: Shop Drawing Submittal List
Appendix E: Instrument List
Appendix F: VFD Setting Letters
Appendix G: Commissioning Forms
Appendix H: Wet Well Surface Refinishing Product Information

E2. SOILS INVESTIGATION REPORT

E2.1 A limited geotechnical investigation report is included as Appendix B.

GENERAL REQUIREMENTS

E3. OFFICE FACILITIES

E3.1 The Contractor shall supply office facilities meeting the following requirements:

(a) A Geotechnical test hole has been drilled in the vicinity of the proposed Works at the Conway Lift Station Upgrades site to determine the character of subsurface soil to facilitate the design of the Work. The information listed is considered accurate at the location indicated in the Site Plan and at the time of the investigation. However, considerable variations in the soil conditions may exist between the test hole and fluctuations in ground water levels can be expected seasonally. The test hole log and associated Geotechnical Report is included in Appendix B.

(b) Bidders are responsible for any interpretation they place on the supplied information and are expected to make such additional investigation of the soil at the Site as they feel necessary to satisfy themselves.

(c) Any test borings made by the Bidder shall be done in accordance with the requirements of the appropriate authority of the City of Winnipeg. Bidders shall notify the Contract Administrator prior to starting any soil boring operation.

E4. HAZARDOUS MATERIALS

E4.1 The Hazardous Materials Assessment is included in Appendix C of this tender.

E4.2 The Contractor shall note the presence of lead in paints used in existing construction and handle elements with lead containing paint in strict compliance with provincial regulations such as “Managing Demolition Debris Containing Hazardous Materials” by Environmental Compliance and Enforcement, The Dangerous Goods Handling and Transportation Act, Hazardous Waste Regulation etc.

E4.3 The Hazardous Materials Assessment does not include construction materials which are hidden from view such as superstructure roof base layers, wall finishes hidden from view or any other materials that were not assessed and which are to be demolished. The Contractor shall treat such materials as containing asbestos and shall handle these materials in strict compliance with any provincial regulations such as “Managing Demolition Debris Containing Hazardous Materials” by Environmental Compliance and Enforcement, The Dangerous Goods Handling and Transportation Act, Hazardous Waste Regulation etc.

(a) As an alternative to handling unassessed materials as hazardous, the Contractor may test them, and in the event that laboratory testing reveals no hazardous contents, the tested materials can be handled as non-hazardous. Cost for such testing shall be responsibility of the Contractor. Provide testing results to Contract Administrator as soon as they become available.

E5. MOBILIZATION AND DEMOBILIZATION PAYMENT

E5.1 Description

(a) This Specification shall govern mobilization and demobilization from site.

(b) 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.

E5.2 The Work under this Specification shall include, but not be limited to:

(a) submission of Site layout plan;

(b) mobilizing and demobilizing on-Site Work facilities;

(c) supplying, setting up, laying out and removing Site office facilities;

(d) install, maintaining and removing any access roadway; and traffic control and traffic management.

E5.3 Mobilization and demolition are in accordance with the most recent Standard Construction Specifications:

(a) CW 1120 – Existing Services, Utilities and Structures; and

(b) CW 1130 – Site Requirements.

E5.4 Submittals

(a) The Contractor shall submit the following to the Contract Administrator fourteen (14) days prior to mobilization on-Site:

(i) a plan highlighting the Site layout plan which includes laydown area location(s), staging areas, office facility location, access road(s), temporary secure fencing limits and gate locations for review and approval.

(b) Contractor shall refer to the Drawings for limits of construction.

E5.5 Materials and Equipment

(a) All Materials supplied under this Specification shall be of a type approved by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.

(b) The Contractor shall be responsible for the supply, safe storage, and handling of all Materials as set forth in this Specification. All Materials shall be handled in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

(c) All equipment shall be of a type acceptable to the Contract Administrator and shall be kept in good working order.

E5.6 Construction Methods

(a) Site Inspection:

(i) inspect the Site with the Contract Administrator to verify existing conditions prior to mobilizing on-Site; and

(ii) inspect the Site with the Contract Administrator soon after demobilizing on-Site, confirming Site has been restored to its original condition prior to initiation of Work;

(b) Layout of On-Site Work Facilities:

(i) the Contractor shall mobilize all on-Site Work and other temporary facilities; and

(ii) upon completion of construction activities, the Contractor shall remove all on-Site Work and other temporary facilities;

(c) Cellular Telephone Communication:

(i) the Contractor's Site supervisor is required to carry, at all times, a cellular telephone, with voicemail;

(d) Access Roadway:

(i) the Contractor shall maintain any access roadway they install;

(ii) the access road shall be maintained on a regular basis to provide continual unrestricted Site access, to the satisfaction of the Contract Administrator; and

(iii) upon completion of the Work, the area shall be restored to its original condition;

(e) Snow and Ice Removal:

(i) if required, snow clearing shall be done by the Contractor on a regular basis; and

(ii) if required, snow cover shall be cleared from the construction Site prior to commencement of the Work. The methodology to clear the snow shall be subject to the approval of the Contract Administrator;

(f) Restoration of Existing Facilities:

(i) upon completion of the Work and demobilization, the Contractor shall restore existing facilities to their original condition, including snow removal, to the approval of the Contract Administrator.

E5.7 Measurement and Payment

(a) Mobilization and demobilization will be measured on a lump sum basis at the Contract Unit Price for "Mobilization and Demobilization" as shown in Form B: Prices, for supplying all Materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

(b) thirty percent (30%) when Contract Administrator is satisfied that construction has commenced;

(c) fifty percent (50%) during construction, percentage distributed equally on a monthly basis at the discretion of the Contract Administrator; and

(d) twenty percent (20%) upon completion of the Work.

E6. CASH ALLOWANCE FOR ADDITIONAL WORK

E6.1 Additional Work may be necessitated due to unforeseen circumstances that may arise during the course of the project due to:

(a) Additions to the scope of Work by the Contract Administrator, beyond that defined herein.

(b) The extra work cash allowance is distinct from the cash allowance in E23.3, which is provided in the Contract for "Temporary Depressurization of Excavation". The Cash Allowance is intended to be used for all work related to Excavation Depressurization including developing and implementing a Groundwater Management Plan, and installing, operating, monitoring, and removing the depressurization system

E6.2 Cash Allowances have been included on Form B: Prices.

E6.3 The City reserves the right to delete any or all of the Cash Allowance from the Contract if the Work intended to be covered by the Cash Allowance is not required, or if the Works intended are found to be more extensive than the provisional Cash Allowance.

E6.4 Cost of additional work shall be evaluated by the methods outlined in C7.4, and a Change Order prepared by the Contract Administrator. Cost of the Change Order will be paid on the Progress Estimate and deducted from the Cash Allowance. If the valuation of the authorized work exceeds the Value of the Cash Allowance, the Contract Value will be adjusted by the shortfall.

E6.5 Additional services and/or Work will not be initiated for:

(a) Reasons of lack of performance or errors in execution.

(b) Scheduling changes initiated by the City, where at least 24 hours' notice is given prior to the Contractors schedule time to be on Site.

E6.6 Should it be determined that additional material or services are required, the Contract Administrator shall approve the Work, prior to commencement of the additional Work.

E6.7 Material Mark-Up Factors in accordance with C7:

(a) The base cost is to be the wholesale cost of the material, regardless of the Contractor or Subcontractor supplying the material.

(b) In general, the party (Contractor or Subcontractor) supplying the material is the party that purchases the material from a supplier who does not perform any work on Site, unless otherwise determined by the Contract Administrator.

(c) Where the Contractor is supplying the material, the mark-up on the material is limited to fifteen percent (15%).

(d) Where the Contractor's immediate Subcontractor is supplying the material the total mark-up on the material including all Subcontractors and the Contractor is limited to twenty-five percent (25%)

(i) The Subcontractor's mark-up on the material is limited to fifteen percent (15%);

(ii) The Contractor's mark-up on the material is limited to ten percent (10%).

(e) A Third-Level Subcontractor is a Subcontractor of a Subcontractor of the Contractor.

(i) No Third-Level Subcontractors on this project are approved for additional mark-up.

E6.8 In the event that a Third-Level Subcontractor is utilized, that is not approved for additional mark-up, the Contractor is responsible for coordinating the split of the maximum approved mark-up between the Contractor and Subcontractors.

E7. TRAFFIC CONTROL

E7.1 In accordance with the Manual of Temporary Traffic Control on City Streets (MTTC), the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place, maintain, and remove all regulatory signs and traffic control devices authorized and/or required by the Traffic Management Branch in the following situations:

(a) Parking restrictions,

(b) Stopping restrictions,

(c) Turn restrictions,

(d) Diamond lane removal,

(e) Full or directional closures on a Regional Street,

(f) Traffic routed across a median,

(g) Full or directional closure of a non-regional street where there is a requirement for regulatory signs (turn restrictions, bus stop relocations, etc.) to implement the closure.

(h) Approved Designated Construction Zones with a temporary posted speed limit reduction. Traffic Services will be responsible for placing all of the advance signs and 'Construction Ends' (TC-4) signs. The Contractor is still responsible for all other temporary traffic control including but not limited to barricades, barrels and tall cones.

E7.2 Further to E7(c), the Contractor shall make arrangement with the Traffic Services Branch of the City of Winnipeg to supply regulatory signs as required.

E7.3 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the Site has been maintained.

E7.4 Further to E7(c) and E7(d) the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to reinstall the permanent regulatory signs after the Contract Work is complete. At this time the Contractor shall make arrangements to drop off the stockpiled materials to Traffic Services at 495 Archibald Street.

E7.5 Any changes to the approved traffic management plan must be submitted to the Contract Administrator a minimum of (five) 5 Working Days prior to the required change for approval.

E7.6 If the Contract Administrator determines that the Contractor is not performing Traffic Control in accordance with this specification, Traffic Services Branch may be engaged to perform the Traffic Control. In this event the Contractor shall bear the costs associated charged to the project by the Traffic Services Branch of the City of Winnipeg in connection with the required Works undertaken by the Contractor.

E7.7 Partial closure of Portage Avenue is expected to be required during the Works. The Contractor shall give the Contract Administrator a minimum of ten (10) Working Days' notice prior to the closure to coordinate with the City of Winnipeg.

E7.8 No stockpiling of material will be permitted on the roadway.

E7.9 Intersecting street and private approach access shall be maintained at all times.

E7.10 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, they shall review the planned disruption with the 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.

E7.11 Pedestrian access and ambulance/emergency vehicle access must be maintained at all times.

E7.12 Pedestrian access shall be restricted by maintaining a security fence around the perimeter of the Work site.

E7.13 Payment

(a) Traffic Management shall be considered incidental to the Works of this Contract and no separate payment will be made for this item.

E8. DANGEROUS WORK CONDITIONS

E8.1 Further to clause C6.24 of the General Conditions, the Contractor shall be aware that underground chambers, lower levels of the lift station, manholes, and sewers are considered a confined space and shall follow the "Guidelines for Confined Entry Work" as published by the Manitoba Workplace Safety and Health Division. The Contractor will be required to have Confined Space Entry Training and complete a permit each time work is to be performed in a Confined Space Area. The following locations are considered Confined Spaces:

(a) Lift Station Wet Well.

(b) Lift Station Lower Levels (including Basement, Motor Room, Pump Room and Comminutor Chamber).

(c) Sewer manholes.

(d) The Gate Chamber south of the Lift Station.

(e) Any other areas labelled as 'Confined Space' at the Site.

E8.2 The Contractor shall be aware of the potential hazards that can be encountered in confined spaces such as toxic gases and oxygen deficiency. The Contractor's Safe Work Plan should address these issues.

E8.3 The air in a confined space must be tested before entry and continuously during the time that personnel are inside the space. Equipment for continuous monitoring of gases must be explosion-proof and equipped with a visible and audible alarm. The principal tests are for oxygen deficiency, explosion range, and toxic gases. Testing equipment must be calibrated in accordance with manufacturer's specifications. The Contractor is responsible for all testing requirements.

E8.4 The Contractor shall ventilate all confined spaces including underground chambers, tunnels, pipes and shafts as required and approved by the Manitoba Workplace Safety and Health Act (the "Act"). If no ventilation is supplied, a Worker must wear a respirator or supplied air to enter the confined space.

E8.5 Workers must wear a respirator or have supplied air at all times when entering a chamber, manhole or sewer where live sewage is present.

E8.6 If products containing volatile organic carbons (VOCs) are used, the Contractor shall provide a photoionization detector (PID) on Site to monitor potential VOCs in the confined spaces. The gas detector and safety equipment conforming to the Act shall be made available to the Contract Administrator for his use during inspections. In addition, the Contract Administrator may collect discrete air samples for laboratory analysis.

E8.7 The Contract Administrator may issue a Stop Work order to the Contractor if the above guidelines are not being followed. The Contractor shall not resume his operations until the Contract Administrator is satisfied the Contractor is following the appropriate procedures. The Contractor shall have no claim for extra time or costs due to the Stop Work order for not following these safety guidelines.

E9. WATERWAY BY-LAW COMPLIANCE

E9.1 The Contractor shall note that all Works associated with this Bid Opportunity falls within approximately 107 meters of a riverbank are within the jurisdiction of the Waterway By-Law, and therefore will require a Waterways Permit. The Contract Administrator will apply and pay for required Waterway Permits for the project. The Contractor will strictly adhere to the conditions imposed by the approved permit and the by-law.

E10. BY-PASS VAULT AND VALVE ASSEMBLY

E10.1 Description

E10.1.1 The Work to be done by the Contractor under this Specification shall include the supply and construction of the By-Pass Vault and Valve Assembly, excavation, bedding, and backfill. Furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for an incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E10.2 Materials

E10.2.1 Fittings and Appurtenances

(a) Acceptable Manufacturers / Products

(i) Robar

(ii) Smith Blair OMNI 441

(iii) Approved equal in accordance with B7.

E10.2.2 Bedding and Backfill

(a) Bedding and initial backfill material to be sand in accordance with CW 2030.

(b) Backfill excavations in boulevard and pavement areas to be Class 2 in accordance with clause 3.8.2 of CW 2030.

(c) Sand bedding and Modified Class 2 backfill material as indicated on the drawings and per CW 2030, modified to have 0.6 m of compacted excavated Site select material as opposed to the detailed 0.3 m of compacted excavated material.

(d) Backfill under the force main connections shall extend past the flexible couplings to the base of the manhole with cement stabilized fill and bear against undisturbed soil.

(e) The Contractor shall provide heating and hoarding of backfill material when the temperature is at or below 5° C or if the temperature will fall below 5° C within 24 hours after placing material.

E10.2.3 By-Pass Vault and Valve Assembly

(a) A by-pass vault and valve assembly shall be installed at the station shown on the drawings to allow by-pass pumping operation to take place when required. This bypass vault assembly shall include the installation of a gate valve on the force main upstream of the by-pass tee in the manhole.

(b) A 250 mm x 250 mm x 250 mm ductile iron tee fitting with a 200 mm gate valve shall be installed on the force main as shown on the Drawings and is to be used for discharging wastewater flows during the by-pass pumping operations.

(c) The following items shall be procured and installed by the Contractor:

(i) Two (2) 250 mm gate valves with one (1) rising and one (1) non-rising stem. Gate valve to conform to current AWWA C590 Standard for Resilient Seated Gate Valves. To be epoxy coated cast iron with a counter clockwise opening rising spindle.

(ii) Ductile iron spool pieces as needed for connection of the new 250mm carbon steel force main exiting the pumping station, on the upstream end of the vault, through the by-pass vault to the existing asbestos cement (AC) force main on the downstream end using an approved flexible Robar coupling or equivalent.

(iii) 1500 mm Precast Concrete Vault installed as per the requirements of City of Winnipeg SD-010.

(d) One (1) by-pass vault assembly shall be installed immediately north of the pumping station in line with the proposed force main to allow by-pass pumping operations to take place when required. This vault assembly shall be a pre-cast box section and shall include the installation of a gate valve upstream of the by-pass tees in the manhole. See the Construction Drawings Civil Series.

(i) precast reinforced one thousand five hundred (1,500) by one thousand five hundred (1,500) mm concrete box section to City of Winnipeg SD-010. Refer to the Construction Drawings Civil Series for the hatch, ladder, pipework, sump, grate, sump drain and check valve, transition couplings, benching, and insulation.

E10.3 Measurement and Payment

E10.3.1 The construction of the By-Pass Vault and Valve Assembly will be paid for at the Contract Lump Sum Price for “Supply & Installation of By-Pass Vault” with valve assembly. Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification, accepted by the Contract Administrator.

E11. WASTEWATER TEMPORARY BYPASS PUMPING

E11.1 Description:

E11.1.1 This section specifies the requirements for the temporary by-pass pumping of wastewater flows during the Work.

E11.1.2 Refer to the contract civil drawings for bypass pumping notes.

E11.1.3 Contractor to provide a Bypass Pumping Plan and OSS to the contract administrator for approval a minimum of two (2) weeks prior to the commencement of any work.

E11.1.4 Bypass pumping past the lift station is convey flows from the sewer upstream of the lift station and CSO gate chamber to a new bypass valve vault on the lift station force main. Therefore, the valve vault must be constructed prior to bypass pumping operations. See E10 for vault details.

(a) The Bypass Valve Vault piping and valves must be installed between the hours of 1:00 a.m. and 5:00 a.m. on any dry weather day outside the months of March or April.

(b) Installation of the bypass pipes and valves will require ceasing lift station pumping operations. Wastewater is to be stored in the wet well for this duration.

(i) Discharge to the River at the CSO gate chamber shall not occur during this storage period. The gates in the chamber will be required to be closed and a sandbag weir is to be constructed downstream of the gates to collect seepage through the gates. Seepage is to be removed by vacuum truck at the Contractors cost.

(ii) Lift Station pumps are to resume pumping operations immediately upon full connection and installation of the bypass vault pipework and valves.

E11.1.5 Bypass pumping is to include two (2) electric pumps (duty and stand-by) installed and ready for duty at any time.

(a) A sump is to be created in the manhole located directly east of the lift station by closing the gate valve in the comminutor chamber and creating a sandbag weir upstream of the CSO gate chamber. The manhole diameter is 900mm and the length from the rim to the base of the 2515x1930 sewer main below is approximately 10.0m.

(b) Each pump is to be sized for any flow between 70 L/s and 80 L/s, at a total dynamic head to be determined by the bypass pumping system designer. Only one pump will be required to run at any given time.

(c) Pumps may be submersible, self-priming, or any combination of the two. For any self-priming pumps used, a platform may be excavated and manhole barrels removed as needed to achieve an acceptable static lift. It is expected than the acceptable static lift from sewer base to pump centerline will be approximately 7.5m. Diesel-powered pumps will not be allowed.

(d) A backup generator capable of powering a single bypass pump, along with temporary RTU Panel and CSO Panel, are required to be on-site at all times during any bypass pumping operations.

(e) Temporary force mains will be required to tie into bypass vault valve. Contractor shall ensure that temporary force mains are protected in order to avoid releasing wastewater to the site.

E11.1.6 Contractor to provide 24-hour availability every day for the duration of the bypass pumping operations to immediately address interruptions in bypass pumping and mitigate the risks of spills, overflows, or basement flooding. Emergency contact information will be provided in the bypass pumping plan & OSS.

E11.1.7 Contractor to review and verify the critical basement elevation in the catchment area.

E11.1.8 Sewers can receive flow of an undetermined amount from watermain breaks, snow melt, rain, and other unforeseen sources. The Contractor will be responsible to monitor the flow in the sewer and adjust work activities accordingly, such as putting the spare standby by-pass pump into operation to handle any excessive flows due to unforeseen flow.

E11.1.9 All instrumentation in the sewer and lift station are to be protected and avoided at all times.

E11.1.10 Reference Information

(a) The expected minimum peak dry weather flow (PDWF) to the station is 57.3 L/s. The current lift station maximum capacity is 68 L/s. Note that these values do not govern the required pumping capacity as given in E11.1.5.

(b) The floor of the sewer manhole immediately upstream of the lift station is at approximate elevation 226.6 metres.

(c) The manhole to which the existing force main discharges (in Portage Avenue) has a base at approximate elevation 233.9 metres. The force main is piped through the manhole such that there is no open sewage. This information is given for reference only. Contractor is to expose and verify the force main elevation at the location of the discharge vault prior to ordering the precast vault.

(d) An existing gate valve in the lift station historic comminutor chamber can be closed to cut off flow to the station wet well.

E11.2 Materials

E11.2.1 Temporary By-Pass Pumping Equipment

(a) Non-clog submersible pumping units, or self-priming skid-mounted units, each sized to meet or exceed the required capacity. Complete with all required piping, fittings,

floats, alarms, back-up generator, pump controls, and related appurtenances suitable for temporary installation in the existing manhole.

(b) Duty pump and stand-by pump(s) to each provide a duty point flow between seventy (70) and eighty (80) L/s.

(c) Provide model and capacity curves to the Contract Administrator for approval.

(d) Surface mount, vertical lift suction pumps are not acceptable.

(e) Power supply to be suitably sized for pumping equipment complete with all required controls. Fuel to be in lockable, tamperproof container, approved by Contract Administrator.

(f) Contractor shall take special precautions and supply noise abatement measures as required to reduce the public exposure to noise to ensure all work is conducted in accordance with the City of Winnipeg Neighbourhood Liveability By-Law, Part 5 – Noise Control. Such measures may include but are not limited to:

(i) Enclosures for noise producing equipment (pumps, generators, etc.)

(g) The Contractor shall provide separate temporary motor starters for each pump and arrange for any temporary power required from Manitoba Hydro. Motor starters shall be installed at an easily accessible and secured location. Motor starters shall include automatic and manual modes of operation along with pilot indicating lights (run, fault, etc.).

E11.2.2 By-Pass Vault and Valve Assembly – see E10.

(a) The bypass pumping discharge piping is to connect to the top flange of the vertical opened gate valve in the bypass pumping vault described in E10. The horizontal gate valve is to be closed to prevent backflow to the upstream force main.

E11.2.3 Pumps Controls

(a) Control system complete with float switches for automatic level control. Pumps shall automatically turn on and off along with include manual operation.

(b) Temporarily connect all pump controls and signals to an RTU control panel provided by the City. The monitoring points shall include all pump controls, auto modes, manual modes, pumps running, pump faults along with monitoring a high level alarm and loss of utility power.

(c) All signals going to/from the RTU control panel shall be hard wired.

E11.2.4 Backup Power

(a) Provide a portable fuel generator during the entire time temporary bypass pumping is in place to provide backup power in the event of a utility failure. Switching to generator and back to utility shall be a manual transfer switch. Contractor shall monitor generator fuel levels and top up as needed.

E11.2.5 Fittings and Appurtenances

(a) Fittings, coupling and appurtenances to be used for repairs to existing force mains and sewers to be approved products for underground use in the City of Winnipeg.

E11.2.6 Inflatable Rubber Sewer Plugs may be used as needed

(a) Except for gates and valves, only inflatable rubber sewer plugs or weir structures shall be used to plug sewers.

(i) Made of rubber, capable of remaining in place when inflated to the pressure required to withstand the expected sewer levels.

(ii) Provided with an inflation/deflation hose, monitoring pressure valve, removal rope or cable and safety chain, all of sufficient length to reach ground elevations for monitoring and removal.

(b) Clean sewer pipe as required to properly install inflatable sewer plug(s) in accordance with the manufacturer`s instructions.

(c) Secure inflatable sewer plugs at or near the ground surface.

(d) Continuously monitor air pressure while sewer plug is in place and have proper inflation equipment available at all times.

E11.3 Construction Methods

E11.3.1 General

(a) Provide a plan for monitoring the temporary by-pass pumping to ensure proper operation at all times. The Contractor shall provide 24 hour personnel to address any issues with the temporary by-pass pumping. A 24 hour contact person shall be specified for the project.

(b) Diversion of wastewater flow directly or indirectly to the environment, Land Drainage Sewers or Storm Relief Sewers will not be allowed. Pumping shall be controlled to show no overflows during by-pass pumping.

(c) Contractor shall include plans for their initial temporary by-pass pumping to facilitate installation of the by-pass vault in their overall temporary by-pass pumping flow control plan.

(d) All instrumentation in lift station and manholes shall be protected and avoided at all times. Any damage to the lift station instrumentation by the Contractor will be repaired or replaced to the satisfaction of the Contract Administrator.

(e) Maintain level of sewage in existing sewers below the critical basement elevation at all times.

(f) Overflow Weir Elevation (combined sewer outfall south of the pumping station) is approximately 227.4 m.

(g) A clear marker shall be installed within the upstream manhole to facilitate on-site monitoring.

(h) The downstream flows of the temporary pumping system can be installed directly into the force main through the gate valve in the new by-pass vault.

(i) Temporary pumping equipment and materials shall remain on-site until station construction is completed as described in these Specifications and to the satisfaction of the Contract Administrator.

(j) Provide a temporary by-pass flow control plan to the Contract Administrator for review and approval prior to starting construction. It shall provide detailed information for pumping equipment to be used including pump capacity and dimensions, depth of submergence, pump controls and installation details. Also include discharge piping details, arrangements to protect manhole openings required to run piping and power to the pumps and power supply details.

(k) Power supply connection to the existing site power supply shall be approved by the Contract Administrator before set-up.

(l) Provide suitable traffic ramps approved by the Contract Administrator if the by-pass pumping discharge pipe and power supply cables are laid across vehicle or pedestrian traffic areas on the force main site.

(m) Cooperation and coordination will always be required with the City to allow full access to the lift station to carry out maintenance and operational duties on the site.

(n) If wastewater gate operations are required, they shall only be operated by the City.

E11.3.2 By-Pass Vault Construction

(a) The Contractor shall be responsible to obtain all necessary permits from the concerned offices/agencies in regard to the construction of the by-pass vault and valve assembly. The Contractor will satisfy all permits and application requirements including any testing (e.g., geotechnical, etc.) if required to obtain the permit at no extra cost.

(b) Survey and locate all existing services and limits of proposed excavation relative to existing structures. The Contractor shall provide all survey and layout Work necessary to accurately layout and position the new construction. The Contract Administrator, at their sole discretion, may undertake a confirmatory survey of the Contractor's Work if considered necessary.

(c) Design, supply, and install shoring system necessary for opening the new excavation to the required depth and dimensions necessary to install the new assembly.

(d) All excavations within 1.5 metres of sewers to be soft dug, either hydro excavated or by hand, as necessary to avoid potentially damaging the existing sewers.

(e) Any service interruption shall conform to E39 & E40.

E11.3.3 Excavation Security Fence

(a) Further to Clause 3.1 of CW 1130, completely cover the excavation and provide a security fence to completely surround the excavation when unattended in accordance with the following:

(i) security fence shall be chain link fence or approved equal, a minimum 1.80 metres high with metal support posts embedded far enough into the ground and spaced close enough together so the fence will not sag or collapse;

(ii) attach fencing securely to posts;

(iii) secure the gate or end of the fencing to a post with chain and a padlock; and

(iv) provide alternate security fence proposal to Contract Administrator for approval.

E11.3.4 Restoration

(a) Restore the disturbed area and surface during construction to match the existing surroundings as per the City requirements and applicable standards.

E11.3.5 Temporary By-Pass Pumping

(a) Temporary by-pass pumping can be installed at the manhole immediately east of the pumping station or the Gate Chamber to the south during:

(i) construction of by-pass vault and valve assembly; and

(ii) lift station upgrades.

(b) Once by-pass vault and valve assembly is in operation, sewage can be pumped from the Gate Chamber to the by-pass tee during pumping station shutdown.

(c) Provide detailed information for pumping equipment to be used including pump capacity and dimensions, depth of submergence, pump controls and installation details to the Contract Administrator for review before construction starts.

(d) Power supply to be approved by the Contract Administrator before set-up. Locate the power supply where it will not adversely affect local residences. Location to be approved by the Contract Administrator before construction starts.

(e) Power supply for the pumps is the responsibility of the Contractor and must be suitably sized for pumping equipment complete with all required automatic controls. Should one pump not perform, an alarm shall be raised to the contractor's representative and the standby pump shall be used.

(f) Provide suitable traffic ramps approved by the Contract Administrator if the by-pass pumping discharge pipe and power supply cables are laid across vehicle or pedestrian traffic areas.

(g) Provide a check valve on the by-pass pumping discharge pipe to prevent cycling when the pumping station is activated.

(h) The Contractor is advised that the pumping station will remain in service while the Work is being completed, except for planned temporary shutdowns as described in to E39 & E40. The Contractor shall cooperate and coordinate with the City to allow full access at all times for City staff to carry out maintenance and operational duties.

(i) If a temporary pump in use fails, it must be replaced immediately.

(j) The Contractor shall ensure temporary by-pass pumping equipment and Materials will be properly insulated and heated, if required, to be protected from freezing and to maintain proper functioning during cold weather.

(k) Under no circumstances shall wastewater levels in the sewer rise above the critical basement elevation indicated.

(l) Temporary by-pass pumping equipment and Materials shall remain on-Site until the pumping station construction is completed as described in these Specifications and to the satisfaction of the Contract Administrator.

E11.3.6 Measurement and Payment

(a) Wastewater Temporary By-Pass Pumping will be paid for at the Contract Lump Sum Price for "Wastewater Temporary By-Pass Pumping". Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification, accepted by the Contract Administrator.

(b) A maximum of ninety-five percent (95%) may be submitted for progress payments prior to the total completion of the associated services, including the provision of As-Built Drawing mark-ups and O&M Manuals.

E12. SHOP DRAWINGS

E12.1 Submit shop drawings in accordance with Section 01 33 00. Refer to Appendix D for shop drawings to be submitted on this contract.

E13. CONTRACTOR SUPPLIED STANDARDIZED EQUIPMENT

E13.1 Comply with the general requirements of E13 for all Standardized Goods supplied by the Contractor.

E13.2 Comply with the following Standardization Goods requirements:

E13.2.1 PLC Control System and Motor Control Equipment in accordance with E14.

E13.2.2 Instrumentation in accordance with E15.

E13.2.3 Gas Detection Systems in accordance with E16.

E13.3 Contact the Contract Administrator regarding any potential uncertainty as to whether a good is covered under a standardization agreement.

E13.4 The Contractor may utilize a Standardization Vendor to provide other goods required under the Contract, in addition to Standardized Goods.

E13.5 The Contractor shall separately track all goods supplied under each standardization agreement.

E13.5.1 In the event that one or more Standardization Vendors are utilized to procure goods not covered under a standardization agreement, the Contractor shall ensure such goods are quoted, ordered, tracked and accounted in a separate manner.

E13.6 Pricing:

E13.6.1 The City has obtained discounted pricing for Standardized Goods. Each Standardization Vendor is obligated to sell Standardized Goods to all prospective Contractors at the discounted price, provided the goods are for the City of Winnipeg.

E13.6.2 The Standardization Vendors may at their option provide lump sum pricing for goods packages. The Standardization Vendor is not required to provide breakout pricing details to the Contractor.

E13.6.3 The Contractor and Subcontractors shall not utilize the City's agreements with the Standardization Vendors for any purpose other than City work.

E13.6.4 The City may audit the goods purchased from the Standardization Vendors under the standardization agreements and may identify to the Standardization Vendors any goods procured that are not associated with the Contract.

E13.7 The Contractor is responsible for ensuring that the Material supplied by the Standardization Vendors meets the requirement of the Contract. The Contractor shall review and confirm quotations supplied by the Standardization Vendors to ensure that all required Material is supplied.

E13.8 Without limiting or otherwise affecting any other term or condition of the Contract, including (non-exhaustive) D34.2.1.

E13.8.1 The supply of goods through a Standardization Vendor shall not relieve the Contractor of their obligations.

E13.8.2 Errors or omissions by a Standardization Vendor shall not be a cause for a Change in Work.

E13.8.3 Delays by a Standardization Vendor shall not be a cause for a Change in Work where the delay could have been avoided through reasonable planning, contingency allocation, or communication by the Contractor.

E13.8.4 The Contractor shall engage directly with the persons listed as the Standardized Vendor contact in sections E14, E15, and E16 unless otherwise directed by the Contract Administrator.

E13.9 Submittals

E13.9.1 Submittals shall be provided for Standardized Goods in accordance with the Specifications and typical industry practice. Submittals shall not be bypassed for Standardized Goods.

E14. STANDARDIZED PLC CONTROL SYSTEM AND MOTOR CONTROL EQUIPMENT

E14.1 The City has standardized on a specific vendor for the supply and delivery of control system and motor control equipment. The Standardization Vendor was selected via RFP 756-2013 and was awarded to Schneider Electric Canada Inc. (Schneider).

(a) Refer to E14.6 for contact information.

(b) Copies of the tender documents are available from City of Winnipeg Material Management's website.

E14.2 Goods to be procured via this standardization agreement and applicable to this Tender includes but is not limited to:

(a) Programmable Controllers (PLCs) including all associated components, hardware and software.

(b) Touchscreen HMI systems such as Magellis HMIs.

(c) Motor Control Centers (MCCs) including all components.

(d) Variable Frequency Drives (VFDs) including all components.

E14.3 For clarity, this standardization agreement does not include:

(a) Computer workstation hardware including operating systems;

(b) Computer server hardware, including operating systems and general terminal server / client software;

(c) Thin client terminals;

(d) Fused and un-fused disconnect switches not incorporated into a MCC or other motor starters;

(e) Control stations and pendants not incorporated into a MCC or other motor starters;

(f) Electrical Transformers not in a MCC or motor starter;

(g) Panelboards not integrated in a MCC;

(h) Switchboards / Switchgear not integrated in a MCC;

(i) System Integration Services (including programming and configuration);

(j) Control Panels to house PLCs;

(k) Instrumentation;

(l) Power supplies not integrated with the PLC / HMI systems; and

(m) Terminal blocks not integrated with the PLC / HMI systems

E14.4 The following model series shall be utilized unless otherwise indicated in the Specifications, Drawings or otherwise approved by the Contract Administrator:

(a) Schneider Electric M580 PLC;

(b) Schneider Electric X80 PLC I/O;

(c) Schneider Electric EcoStructure Control Expert programming software;

(d) Schneider Electric Local HMI – Harmony HMIGTO or HMIGTU series;

(e) Schneider Electric Model 6 MCC – NEMA rated starters;

(f) Schneider Electric Altivar 600 series VFD drives.

E14.5 Commissioning and start-up:

E14.5.1 Except as identified in E14.5.2, commissioning and start-up of all goods purchased under this standardization agreement shall be performed by the Contractor.

E14.5.2 Schneider shall provide MCC start-up services, but not commissioning services. Coordinate with Schneider as required to understand the limitations of Schneider's MCC start-up services and provide all remaining testing, commissioning and start-up services to provide a complete commissioning and start-up.

E14.5.3 City of Winnipeg commissioning forms must be used. Forms are provided in Appendix G. The forms provided are subject to change prior to commissioning.

E14.6 The contact information for all quotations and purchases from Schneider is:
Derrick Cook
Omands Creek Blvd
Winnipeg, MB, R2R 2V2
Telephone: 204-218-1938
E-mail: Derrick.Cook@SE.com

E14.6.1 Goods to be procured via Choice Electric along with Eecol Electric, as Schneider's High Tech Automation Distributor (HTAD):

(a) Further to E14.2, goods to be procured via Eecol includes but is not limited to:

(i) Programmable Controllers (PLCs) including all associated components hardware and software;

(ii) Programmable Controller Programming Software;

(iii) HMI System software;

(iv) Touchscreen HMI systems such as Magellis HMIs;

(v) Touchscreen HMI Programming Software;

(vi) Motor Control Centers including all components;

(vii) Loose VFDs, motor starters, soft starters, and associated components; and

(viii) Industrial Ethernet Switches as per design. Note that some Ethernet switches may be specified to be from other vendors due to application requirements. Refer to drawings and specifications.

(b) The Eecol Electric contact:

Trevor Hambleton
1760 Welllington Avenue
Winnipeg, MB, R3H 0E9
Telephone: 204-774-2800
E-mail: hambletont@eecol.com

(c) The Choice Electric contact:
Ofer Margovski
2130 Notre Dame Ave.
Winnipeg, MB, R3H 0K1
Telephone: 204-783-233
E-mail: oferm@choicesupply.ca

(d) All correspondence related to requests-for-quotations to the Supplier for goods listed under (a) shall be copied to the Schneider contact listed under E14.6.

(e) For whatever reason, if the Supplier is unable to receive or respond to request-for-quotations for goods listed under (a) request-for-quotations may be issued directly to the Schneider contact listed under E14.6.

E14.7 Quotations and orders:

E14.7.1 Reference the following in all quotation requests and purchase orders:

(a) This Bid Opportunity number; and

(b) A statement indicating: “This request / purchase order is subject to the Terms and Conditions of City of Winnipeg Request for Proposal RFP 756-2013.”

E14.8 Measurement and Payment:

E14.8.1 Payment will be based on the item labelled “Standardized PLC Control System and Motor Control Equipment” in Form B.

(a) Indicate base costs for material supply under the standardization agreement. Any material mark-up or installation costs, as applicable, shall be included in other line items of Form B.

E15. STANDARDIZED INSTRUMENTATION

E15.1 The City has standardized on a specific vendor for the supply and delivery of specific instrumentation. The Standardization Vendor was selected via RFP 449-2014 and was awarded to Trans-West Supply Company Inc. (Trans-West).

(a) Copies of the tender documents are available from City of Winnipeg Material Management’s website.

E15.2 Goods to be procured via this standardization agreement and applicable to this Tender include but are not limited to:

(a) Temperature Transmitters including temperature elements and thermowells;

(b) Electromagnetic Flowmeter Transmitters;

(c) Differential Pressure (Level) Transmitters;

(d) Gas Monitoring Equipment; and

(e) Associated accessories.

E15.3 For clarity, this standardization agreement does not include:

(a) Flowmeters - Coriolis;

(b) Flowmeters - Thermal Dispersion;

(c) Flowmeters - Ultrasonic;

(d) Flow switches (i.e. mechanical);

(e) Pressure switches;

(f) Temperature switches;

(g) Radar Level Transmitters; and

(h) Level Switches (non-ultrasonic based).

E15.4 The following model series shall be utilized unless otherwise indicated in the Specifications, Drawings or otherwise approved by the Contract Administrator:

(a) Temperature Transmitters
  (i) Siemens SITRANS TF (Process Applications)
  (ii) Siemens SITRANS TH300 (HVAC applications)

(b) Electromagnetic Flowmeter Transmitters;
  (i) Siemens SITRANS F M MAG 5100W series flow sensor (Process Applications)
    ♦ Model MAG5100W DN 200 c/w MAG6000 Transmitter
  (ii) Siemens SITRANS F M MAG 6000 series transmitter (Process Applications)
  (iii) Siemens Remote Wall Mount Kit FDK:085U1053;
  (iv) Siemens Cable Kit

(c) Differential Pressure (Level) Transmitters
  (i) Siemens SITRANS P DS III (Process Applications)

E15.5 Field setup and commissioning:

E15.5.1 Field setup and commissioning of the instrumentation shall be performed by the Contractor. Some commissioning of the standardized instrumentation may be performed by Trans-West under the standardization agreement for the following:

(a) The first instrument of each type installed on site; and

(b) A minimum of five additional instruments of each type, or 10% of the actuators of that type, whichever is greater.

E15.5.2 The Contractor may provide field setup and commissioning services for the remaining instrumentation via alternate means, provided that this does not result in a reduction of the services or quality of work.

E15.5.3 The services provided are to include at all standard manufacturer recommended start-up and commissioning procedures, as well as the following:

(a) Visual Inspection
  (i) Inspect instrument for signs of damage,
  (ii) Verify mechanical and piping installation per drawings and manufacturer requirements,
  (iii) Verify wiring installation per drawings and manufacturer requirements, and
  (iv) Inspect electrical terminal compartment for foreign objects.

(b) Mechanical Inspection
  (i) Check all connections and bolts for tightness and to the correct torque,
  (ii) Check for alignment, and
  (iii) Ensure appropriate clearances for all connecting bushings and connecting faces.

(c) Electrical Inspection
  (i) Check all power wiring connections for tightness,
  (ii) Check all fuses in the instrument for continuity,
  (iii) Confirm input voltage is correct, and
  (iv) Confirm that the signal / fieldbus connections are correct.

(d) Start-up Services

(i) Coordinate turning on power to the instrument,

(ii) Configure all applicable settings and parameters that could not be configured prior to installation,

(iii) Perform functional tests,

(iv) Coordinate with City personnel and designated representatives to confirm and finalize the application requirements,

(v) Configure and document all settings, as appropriate for the application,

(vi) Coordinate to perform test demonstrations to verify instrument performance,

(vii) Verify that all configuration values are in the correct state, and

(viii) Transfer the configuration settings to on-site personnel.

(e) Documentation

(i) Provide a signed documented commissioning form for each instrument, in a format acceptable to the Contract Administrator.

(ii) City of Winnipeg commissioning forms must be used. Forms are provided in Appendix G. The forms provided are subject to change prior to commissioning.

(f) Travel

(i) Provide all travel and accommodations at no additional cost.

(g) Personnel:

(i) Personnel shall be factory trained in the maintenance, configuration, and service of the proposed instrumentation.

E15.5.4 Responsibility of the Contractor:

(a) It is the responsibility of the Contractor to ensure that the installation of the instrumentation is complete and that the instrument is ready to commission prior to engaging Trans-West to commission any instrumentation.

E15.6 The contact for all quotations and purchases:

Amurthan (Amu) Abimanan Branch Manager
126 Bannister Road
Winnipeg, MB, R3R 0S3
Telephone:204-783-0100
Mobile: 204-782-1864
E-mail: amu@transwest-mb.com

E15.7 Quotations and orders:

E15.7.1 Reference the following in all quotation requests, quotations \ proposals, purchase orders, and invoices:

(a) This Bid Opportunity number; and

(b) A statement indicating: “This request / purchase order is subject to the Terms and Conditions of City of Winnipeg Request for Proposal RFP 449-2014.”

E15.8 Measurement and Payment:

E15.8.1 Payment will be based on the item labelled “Standardized Instrumentation” in Form B.

(a) Indicate base costs for material supply under the standardization agreement. Any material mark-up or installation costs, as applicable, shall be included in other line items of Form B.

E16. STANDARDIZED GAS DETECTION SYSTEMS

E16.1 The City has standardized on a specific vendor for the supply and delivery of gas detection systems. The Standardization Vendor was selected via RFP 123-2014 and was awarded to Mine Safety Appliances Company, LLC (MSA) c/o Tundra Process Solutions Ltd.

(a) Copies of the tender documents are available from City of Winnipeg Material Management's website.

E16.2 Goods to be procured via this standardization agreement include but are not limited to:

(a) Gas detection sensors;

(b) Gas detection transmitters;

(c) Gas detection controllers;

(d) Gas detection sensor consumables; and

(e) Associated accessories.

E16.3 The following model series shall be utilized unless otherwise indicated in the Specifications, Drawings or otherwise approved by the Contract Administrator:

(a) X5000 gas detection systems.

(b) GasGard XL controllers.

E16.4 Field setup and commissioning:

E16.4.1 Field setup and commissioning of the gas detection systems may be performed by MSA under the Standardization Agreement. Coordinate with MSA as required to understand the capabilities and limitations of MSA's field setup and commissioning services and provide all remaining services to provide a complete commissioning and start-up.

E16.4.2 The Contractor may provide field setup and commissioning services for the gas detection system via alternate means, provided that this does not result in a reduction of the services or quality of work.

E16.4.3 City of Winnipeg commissioning forms must be used. Forms are provided in Appendix G. The forms provided are subject to change prior to commissioning.

E16.4.4 Where MSA is utilized to provide field setup and commissioning, their scope of work has been standardized as follows:

(a) Provide the services for a factory-trained instrument technician to setup and commission the gas detection instruments and controllers, as requested by the City. It is expected that setup and commissioning will be required for some, but not all, of the equipment.

(b) Qualification

(i) The personnel provided shall be a factory trained and certified technologist, with a minimum of one year of experience working with the products proposed.

(c) Services

(i) Provide a full eight hours of on-site labour, for each allocated day, to setup and commission the gas detection systems.

(ii) Provide all travel and tools required.

E16.5 Training

E16.5.1 Local Training Session

(a) Overview

(i) Provide instruction to designated City personnel in the operation and maintenance of the gas detection equipment.

(b) Location

(i) The location of the training will be in the City of Winnipeg, in a facility provided by the City.

(c) Travel

(i) Provide all travel, meals and accommodations at no additional cost.

(d) Submittals

(i) Submit the names and qualifications of the proposed instructors.

(ii) Submit training proposal complete with hour by hour schedule including brief overview of content of each training segment a minimum of 30 Working Days prior to the anticipated date of beginning of training.

(e) Quality Assurance

(i) Provide competent instructors thoroughly familiar with all aspects of the gas detection equipment.

(ii) The Contract Administrator may reject instructors it determines to not be qualified.

(iii) In the event that the training provided is not satisfactory, reduction of payment may be applied.

(f) Duration

(i) The training shall be a minimum of eight (8) hours in duration, excluding coffee and lunch breaks.

(ii) Each session shall be assumed to be independent of other training sessions, and not necessarily aligned with other on-site work or training.

(g) Materials

(i) Provide equipment, visual and audio aids, and materials.

(ii) Supply manual for each trainee, describing in detail the information included in each training program.

(h) Attendees

(i) The attendees are expected to include, but not be limited to:

- Electrical and instrumentation maintenance personnel and
- Operations personnel.

(i) Content

(i) Overview of the equipment.

(ii) Equipment maintenance training including:

- Installation,
- Configuration,
- Troubleshooting, and
- Preventative maintenance

(j) Number of Sessions:

(i) Provide a minimum of two (2) sessions.

E16.6 The contact for all quotations and purchases:

Darren Bye
Operations Manager, Measurement & Analytical
11061-269 St
Acheson, AB
T7X 6E1
Telephone: 587-689-2158
Mobile: 780-239-7009
E-mail: dbye@tundrasolutions.ca

E16.7 Quotations and orders:

E16.7.1 Reference the following in all quotation requests, quotations \ proposals, purchase orders, and invoices:

(a) This Bid Opportunity number; and

(b) A statement indicating:

"This request / purchase order is subject to the Terms and Conditions of City of Winnipeg Request for Proposal RFP 123-2014."

E17. PRE-CONSTRUCTION PHOTOGRAPHS

E17.1 The Contractor is responsible for taking photographs and/or video of the surrounding structures, houses and landscaping in order to establish the condition of the area around the pumping station prior to commencement of the Work. The pictures and/or video must be submitted to and approved by the Contract Administrator prior to the commencement of the Work.

E18. WORK AND EQUIPMENT SUPPLIED BY OTHERS

E18.1 Not applicable under this Contract.

E19. SITE DEVELOPMENT AND RESTORATION

E19.1 Description

(a) This Specification shall supplement the requirements of CW1130.

(b) This Specification shall cover all aspects of the Site Development and Restoration Work, including:

(i) Erection, maintenance and removal of safety fencing;
(ii) Snow clearing;
(iii) Water/flow control;
(iv) General access development;
(v) Start-up costs;
(vi) Equipment setup and removal;
(vii) Office facilities;
(viii) Access maintenance; and
(ix) Site restoration.

E19.1.1 Additional Site specific Works included within this Specification are the temporary removal, relocating, and replacing existing site furniture, fencing, and other obstructions within easement right-of-ways or as required for site access.

(a) Works and permits associated with raising and/or relocating overhead power lines and/or light standards as required to facilitate the Works. Contact the local Manitoba Hydro Office to arrange for Manitoba Hydro Staff to lift power lines, temporarily support utilities, and/or relocate utilities as required. Only Manitoba Hydro staff will be permitted to lift power lines.

E19.1.2 This Specification shall amend and supplement Standard Specification CW 3510 and CW 3520.

E19.2 Materials

E19.2.1 Equipment

(a) All equipment, implements, tools and facilities used shall be of a size and type as required to complete the Work in a reasonable time, approved by the Contract Administrator. The Contractor shall keep all equipment in good working order, and have sufficient standby equipment available at all times, as required.

E19.3 Construction Methods

E19.3.1 Site and Construction Access

(a) The Contractor shall be responsible to develop suitable Site access. This includes but is not limited to, temporary bridging over structures, temporary removal and reinstallation of safety fencing, any landscaping and grading repairs, restoration of vegetation, etc. necessary to restore any Site and construction access area to their pre-existing condition.

E19.3.2 Vegetation Removal

(a) Some vegetation removal may be permitted in order to facilitate the work. Existing vegetation shall not be removed without prior approval from the Contract Administrator. The Contractor shall load and haul any removed vegetation, and dispose of the material off Site immediately upon collection. Stockpiling shall not be permitted unless written approval has been obtained from the Contract Administrator. Refer to E20 & E21 for tree removal and protection.

E19.3.3 Site Security

(a) At the end of each Work Day, all excavations and underground structure openings shall be secured to prevent access. Safety fence shall also be closed and secured to prevent public access.

E19.3.4 Environmental Regulations

(a) The Contractor shall adhere to all relevant Federal and Provincial environmental regulations.

(b) The Contractor shall plan to Work in accordance with the current environmental regulations of “Manitoba Stream Crossing Guidelines for Protection of Fish and Fish Habitat”, Fisheries and Oceans, and Manitoba Natural Resources.

(c) The Contractor shall supply, in writing, prior to the commencement of Work on-Site to cleanup minor spills, should they occur. The Contractor shall supply the name, address and phone number of a local supplier, where additional kits are available on short notice.

E19.4 Staging and Laydown Areas

(a) Prior to mobilization to site, the Contractor shall identify and propose to the City for approval, the areas requested for laydown, staging materials, and placement of the site trailer.

E19.5 General Site Cleanup and Restoration

(a) All areas of the construction Site shall be restored to a condition at least equivalent to its original condition prior to initiation of Work. This may include, but is not necessarily limited to the Contractor’s lay down area, and removal of all temporary fencing.

E19.6 Permanent Surface Restorations

(a) If required, permanently restore all existing surface areas disturbed by construction activities including but not limited to areas disturbed by; construction equipment, placement

of equipment trailers and where construction materials were stockpiled, shall be restored as follows:

(i) Boulevards, ditches and grassed areas – sodding using imported topsoil in accordance with CW 3510.

(ii) Asphalt surfaces – match existing base course and asphalt thickness or a minimum of 150 millimetres of base course and 75 millimetres of Type 1A Asphaltic Concrete, whichever is greater, in accordance with CW 3410.

(iii) Miscellaneous concrete slabs, including sidewalk - in accordance with CW 3235.

(iv) Interlocking stones – in accordance with CW3330.

(v) Concrete curb and gutter – in accordance with CW 3240.

E19.7 Topsoil and Seed

(a) The primary means of restoration for existing grassy areas will be topsoil and seeding.

E19.8 Method of Measurement and Payment

E19.8.1 Site Development and Restoration

(a) The site development and restoration shall be measured on a lump sum basis and paid for at the Contract Lump Sum Price for "Site Development and Restoration," which prices shall be payment in fill for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

(i) 50% of the Site Development and Restoration unit price will be paid for on the first progress payment following commencement of the work on the specific Site being developed.

(ii) The remaining 50% of the Site Development and Restoration unit price will be paid subsequent to the completion of the Work and restoration and cleanup of the Site.

E19.8.2 Topsoil, and seeding beyond the quantities listed on Form B, or any site restoration required to restore laydown areas, or similar temporary work areas, shall be considered incidental to Site Development and Restoration. No separate payment shall be made for these areas.

E20. TREE REMOVAL

E20.1 Description

E20.1.1 This specification shall cover the removal of two (2) existing trees located at the northwest corner of the lift station.

E20.1.2 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 Work as hereinafter specified.

E20.2 Materials

E20.2.1 Existing Trees to be Removed:

(a) Trees to be removed are to be indicated by the Contract Administrator. All other trees to be protected according to E21 unless otherwise permitted by the Contract Administrator.

E20.3 Construction Methods

E20.3.1 Prior to commencement of the Work the Contract Administrator shall identify all trees for removal. The Contractor shall cut down only trees designated to be removed, and grub out all stumps and roots greater than 100 mm diameter. In general, the Contractor shall start at the top of the tree and remove branches or trunks not longer than 2 m. Trees are to be

felled so as to land within the limits of the Works. The Contractor shall load and haul all trees, stumps, roots, logs, brush, rubbish and all other surface litter from the Site and dispose of these materials at an approved disposal Site, acceptable to the Contract Administrator.

E20.3.2 All tree pruning and/or removal work shall only be performed by a certified Manitoba Arborist licensed contractor approved by the City of Winnipeg – Urban Forestry Branch. A list of pre-qualified Contractors along with how to submit an application for tree pruning / removal work can be found at link below. No tree pruning / removal work shall begin until an application has been submitted by the Contractor and is approved by the City of Winnipeg – Urban Forestry Branch.

(a) Pre-Qualified Tree Removal Contractors and Application Requirements:

Maintaining City-owned trees - Urban Forestry - Parks and Open Space - Public Works - City of Winnipeg

E20.3.3 The Contractor shall take all precautions to prevent damage to structures, adjacent property and to trees and shrubs. In the event of damage, the Contractor will be held liable, and shall be required to provide appropriate restoration at his cost, to the satisfaction of the Contract Administrator.

E20.3.4 Any trees damaged during construction activities shall be examined by a bonded tree care professional and pruned as required. Damaged trees which are not viable shall be replaced by the Contractor at his own cost.

E20.4 Measurement and Payment

E20.4.1 Tree removal will be paid for in full, on a ‘per tree’ basis, for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

E21. PROTECTION OF EXISTING TREES

E21.1 Removal of some trees will be required. The Contract Administrator will identify which trees will be removed. The Contractor shall take the following precautionary steps to avoid damage from construction activities to any existing trees not marked for removal within the limits of the construction area.

E21.1.1 Do not stockpile materials and soil or park vehicles and equipment within 2 metres of trees.

E21.1.2 Strap mature tree trunks with 25 x 150 x 2400 wood planks. Smaller trees shall be similarly protected using appropriately sized wood planks.

E21.1.3 Excavations shall be carried out in a manner to minimize damage to existing root systems. Where roots must be cut to facilitate an excavation, they shall be neatly pruned at the face of the excavation and coated with an appropriate wound dressing to prevent infection.

E21.1.4 Work on Site shall be carried out in a manner to minimize damage to existing tree branches. Where damage to tree branches does occur, the Contractor shall neatly prune the damaged branch.

E21.1.5 American elm trees shall not be pruned between April 1st and August 1st and Siberian elm trees between April 1st and July 1st of any year under provisions of The Dutch Elm Disease Act.

E21.2 All damage to existing trees due to construction activities shall be repaired to the requirements and satisfaction of the City of Winnipeg, Public Works Department and Forestry Branch at the Contractor’s expense.

E21.3 Payment

(a) Protection of Existing Trees shall be considered incidental to the Works of this Contract and no separate payment will be made for this item.

E22. FORCEMAIN PIPE

E22.1 Description

E22.2 Refer to Section 33 31 23 – Sanitary Sewer Force Main Piping for installation and hydrostatic leak testing of force main piping.

E22.3 Measurement and Payment

E22.3.1 Refer to Section 33 31 23 – "Sanitary Sewer Force Main Piping"

E23. SUPPLY AND INSTALLATION OF TEMPORARY SHORING

E23.1 Description

(a) This Specification shall cover shoring requirements for the Works where required under Manitoba Acts, Regulations, and Guidelines, or as indicated on the Drawings.

E23.2 Construction Methods

E23.2.1 Excavation

(a) Remove excavated material from the Site immediately. Excavated material shall not be stockpiled on-Site or along riverbank.

(b) All Working areas below grade shall be kept adequately and securely supported during and after excavation until the shoring and bracing is in place to prevent loss of ground or injury to any person from falling material.

(c) Any groundwater seepage into the excavation shall be properly managed to protect the bearing surface from disturbance or loss of resistance. Groundwater seepage management may consist of sumps and pumps at the exterior of the bearing surface in the excavation.

(d) Supply and place lean mix concrete, as directed by the Contract Administrator, as backfill for any portions of the excavation, carried beyond the required limits of excavation. The limits of excavation shall be considered to be the inside face of the shoring system and the underside of the working base slab.

(e) All working areas below grade shall be kept adequately and securely supported during and after excavation until the shoring and bracing is in place to prevent loss of ground or injury to any person from falling material.

(f) Backfill to be Class 4 or 5 according to the requirements of CW 2030, unless specified otherwise in other sections of this specification.

E23.2.2 Excavation Depressurization

(a) Construction of the wet well access vault is expected to require the depressurization of the excavation area by a well system to control ground water levels and pressures and protect against excavation basal heave/blowout, piping, seepage and sloughing. Once required, the well system will be required to operate continuously during excavation, construction and backfill activities.

(b) Prior to construction the Contractor shall submit a Groundwater Management Plan designed and sealed by a Professional Engineer or Professional Geologist registered to practice in the Province of Manitoba for review by the Contract Administrator including:

(i) An evaluation of static groundwater conditions and required drawdown elevations for successful completion of the Project excavations.

(ii) Install a test well and perform transmissivity pumping test of the aquifer to examine flow rates, if required.

(iii) Permissible groundwater levels (pressures) at various stages of excavation and backfill to prevent uplift of soil layers and to prevent any other disturbance to the in-situ foundation soils due to any excess groundwater pressures.

(iv) Confirmation of the elevation to which the excavation may proceed before the well system commences operation.

(v) Confirmation of the extent to which chamber construction and backfill must be completed before the well system can cease operation.

(vi) Number of wells, including location, size, pumps and installation details.

(vii) Schedule of monitoring, maintenance, manpower estimates, and interpreting of groundwater levels throughout the duration of the Project.

E23.2.3 Excavation Security Fence

(a) Further to Clause 3.1 of CW 1130, completely cover the excavation and provide a security fence to completely surround the excavation when unattended generally in accordance with the following.

(b) Security fence shall be chain link fence or approved equal, a minimum 1.80 metres high with metal support posts embedded far enough into the ground and spaced close enough together so the fence will not sag or collapse.

(c) Attach fencing securely to posts.

(d) Secure the gate or end of the fencing to a post with chain and a padlock.

(e) Provide alternate security fence proposal to Contract Administrator for approval.

E23.2.4 Shoring

(a) The type, strength, amount of shoring and bracing shall be determined by the Contractor's Professional Engineer/Geoscientists registered in Manitoba. The design should consider the nature of the ground and attendance conditions that may be required, taking into account property lines, existing slopes, utilities, roadways and existing structures.

(b) Shoring and bracing shall be so spaced, embedded, and dimensioned as to prevent the failure of the shoring system, caving, loss of ground, base heave, surface settlement, or squeezing of the soil beyond the neat lines of excavation and to provide control of seepage emanating from the overburden soil layers, including piping through and/or below the shoring system. Shoring structures shall be free from defects that might impair its strength or suitability for the Work. Sheeting/shoring and bracing shall conform to the latest revisions of the "Construction Safety Act" of the Department of Labour of the Government of Manitoba and in accordance with Province of Manitoba "W210 The Workplace Safety and Health Act" and "Guidelines for Excavation Work".

(c) Supporting design information, including soil log information and stratigraphy, and design calculations as required to facilitate review of the submission for conformance with the Contract Documents.

(d) Submit AutoCAD Shop Drawings and design calculations for the shoring/excavation system designed as well as the shop drawings sealed by a Professional Engineer registered and licensed to practice in the Province of Manitoba and experienced in the structural design of shoring systems. The designer of the shoring system shall inspect the system during construction and certify, in writing to the Contract Administrator, that construction is in conformance with the approved design.

(e) Shoring and bracing shall be installed such that the structure size and wall thickness shown on the shop drawings can be obtained subsequent to installation of the shoring system.

(f) Shoring and bracing shall be designed and installed to prevent settlement and damage to existing structures. In the event of damage, the Contractor will be held liable, and shall be required to provide appropriate restoration at his cost, to the satisfaction of the Contract Administrator.

(g) Shoring and bracing shall be designed and installed to ensure that there is adequate space to achieve compaction of bedding and backfill and such that it does not impact compaction of bedding and backfill and/or cause settlement when shoring is removed.

(h) Shoring and bracing shall remain in place until concrete has attained 75% of the design strength.

E23.2.5 Monitoring Movement of Shoring

(a) The Contractor shall submit to the Contract Administrator a plan for monitoring the movement of shoring during construction a minimum of two (2) Working Days prior to the installation of shoring. The monitoring plan shall be performed by approved survey methods for vertical or horizontal movement of the shoring, acceptable to the Contract Administrator. Costs for monitoring shall be incidental to the installation of the temporary shoring.

E23.3 Measurement and Payment

(a) Shoring will be paid for at the Contract Lump Sum Price for "Excavation and Shoring". Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

(b) A Cash Allowance is provided in the Contract for "Temporary Depressurization". The Cash Allowance is intended to be used for all work related to Excavation Depressurization including developing and implementing a Groundwater Management Plan, and installing, operating, monitoring, and removing the depressurization system.

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

E24. WET WELL CLEANING

E24.1 Description

(a) Work under this section shall include cleaning and dewatering of the existing wet well and access riser vault located next to the pumping station.

(b) This Specification shall amend and supplement Standard Specifications CW 2140.

E24.1.1 Construction Methods

(a) Cleaning to start only after the inflow and outflow wet well outlets are fully blocked and the temporary by-pass pumping system is in place.

(b) Cleaning shall include washing the surfaces with high pressurized water. Ceiling and walls shall be cleaned first and then finish with cleaning the floor. Surfaces shall be cleaned to a point where there is no residue covering the concrete surfaces of the wet well or as accepted by the Contract Administrator.

(c) Remove all residue from the wet well including any solids, debris, grit etc. Remove any standing water – wet well floor shall be dry.

(d) Provide photos of cleaned wet well to Contract Administrator for review and approval.

(e) Maintain the wet well clean until the completion of the inspection by the Contract Administrator.

(f) Advise the Contract Administrator immediately when backfill material or large cracks are observed during the cleaning of a sewer and/or chamber. The Contract Administrator will direct one of the following operations be performed:

(i) Complete or attempt to complete cleaning of the wet well.

(ii) Suspend cleaning operations for inspection of the wet well.

(iii) Simultaneously clean and inspect the wet well.

E24.2 Measurement and Payment

E24.2.1 Amend Section 4.1 of Specification CW 2140 to read:

(a) Wet Well Cleaning will be measured on an area basis and paid for at the Contract Price for "Wet Well Cleaning & Inspection". Area to be paid for will be the total area of cleaning and inspection, accepted and measured by the Contract Administrator.

(b) Sewer Cleaning shall include all water supply costs, permits (access or otherwise), cleaning, reverse set-up cleaning, dumping, travel time, tipping fees, units, flow control and whatever may be required for the cleaning of the wet well chamber and surge tank.

E24.2.2 Delete sections 4.3, 4.7 and 4.8 of specification CW 2140.

E25. WET WELL INSPECTION

E25.1 Description

E25.1.1 This Specification covers the scope of work associated with the inspection of the wet well chamber for the purposes of assessing thoroughness of cleaning, observing and recording structural and service defects and construction features and to verify new concrete repair construction prior to acceptance.

E25.1.2 Further to E25.1.1, this Specification covers supply of Confined Space Entry equipment, standby rescue team, supplied air, lighting and services required for the purposes of accessing and inspection of the wet well structural condition by the Contract Administrator.

E25.2 Construction Methods

E25.2.1 Wet Well Chamber Inspection

(a) The Contractor shall provide Confined Space Entry Equipment and Emergency Rescue Services in accordance with current Manitoba Safety Laws & Regulations to allow the Contract Administrator to complete a one (1) day visual inspection of the wet well chamber following completion of cleaning works, quality control inspections during construction, and one (1) inspection at completion of internal concrete repairs (if any) prior to project acceptance. Confined Space Entry Equipment and Services shall at a minimum include but not be limited to the following:

(i) Air Supply
(ii) Ventilation
(iii) Calibrated Air Monitor
(iv) Fall Arrest Equipment (Uni-Hoist w/ Winch)
(v) Lighting (as required) (vi) Ladder (inside the wet well)
(vi) Emergency Rescue Services and Equipment

E25.3 Measurement and Payment

E25.3.1 Wet Well Inspection will be measured on an area basis and paid for at the Contract Price for "Wet Well Cleaning & Inspection" which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E26. WET WELL SURFACE REFINISHING, CRACK REPAIRS & CONCRETE SPALL REPAIRS

E26.1 Description

(a) This specification shall cover the demolition and repair work related to refinishing of Wet Well interior surfaces, concrete crack repairs and concrete spot repairs.

(b) The locations and extent of repairs shall be as determined by the Contract Administrator upon completion of wet well inspection.

E26.2 Materials

(a) Materials shall be as indicated in the Construction Methods section E26.3 and in project drawings. Equivalent products and/or alternative construction methods shall be approved by the Contract Administrator prior to repairs in accordance with B7. The Contractor shall supply to the Contract Administrator, Material Data Sheets and Product Information for approval prior to commencing repairs for review and approval.

E26.3 Construction Methods

E26.3.1 Wet well surface refinishing:

(a) Following inspection, perform crack and spall repair in accordance with the methods below as directed by the Contract Administrator. Prepare surface to CSP-3 prior to surface refinishing.

(b) Wet well surface preparation and refinishing shall be completed as per instructions shown on the project structural drawings;

(c) Approved Product:

(i) Gemite Products Inc. Cem-Cote Flex CR – System 2

- 1st Coat: Cem-Kote Barrier Cote 100
- 2nd Coat: Cem-Kote Flex CR

(ii) Please note that this product is required to be applied by an approved applicator. Please contact W. R. Meadows for a list of approved applicators. Phone: 905-878-4122

(d) Refer to Specification 07 16 00 and Appendix H

E26.3.2 Concrete crack repairs:

(a) Identify all cracks scheduled for repair as identified by the Contract Administrator after the completion of wet well inspection.

(b) Remove any loose material from the concrete surface adjacent to cracks by wire brushing a 50 to 75 mm wide strip along the cracks, and vacuuming all dust from the surface.

(c) Install surface ports for injection along the cracks at spacing ranging from 100 to 300 mm depending on the width of the crack. The base plate of each entry port shall be adhered onto the concrete surface using Kemko 022 or Sikadur 33. The ports shall be coated with the same material over the top of the base plate to assure a good seal and stability of the port during the injection process.

(d) Surface seal material with paste adhesive Kemko 022 or Sikadur 33. Paste shall be applied to the face of the crack between injection ports to build a confinement area for the liquid epoxy resin.

(e) After curing of the surface seal, a two-component epoxy resin/hardener suitable for the structural repair of cracks and delaminations in concrete; Kemko 038 or Sikadur 52 shall be injected into the crack starting at the lowest injection port. The injection will continue at the same port until there is an appearance of epoxy resin at the next port adjacent to the entry port being pumped. The injection epoxy resin shall be selected based on the thickness of the crack (for hairline cracks Kemko 068 or Sikadur 55 will be used).

(f) When epoxy adhesive travel is indicated by appearance at the next adjacent port, injection can be discontinued on the entry port being pumped and epoxy injection shall be transferred to the next adjacent port where epoxy adhesive has appeared. The first entry port must be plugged. The epoxy injection on any intermediate entry port being pumped shall not be discontinued unless the injection pressure reaches 150-160 psi or directed by the Contract Administrator. The above steps will be repeated until cracks are completely filled along their length.

(g) As soon as the crack is full and all injection ports are blocked, the pump shall be run for several seconds to create a pressure of 100 psi in the crack that will be maintained for one (1) minute. Once the epoxy adhesive in the crack is pressurized and no leaks

are observed, the pump shall be disconnected from the port and the injection port shall be plugged.

(h) The above steps shall be repeated for all cracks or set of cracks that are connected, until all cracks are injected.

(i) For every day that injection work is performed, an Injection Report shall be completed to document type of injection equipment, location, quantity of materials, and amount of crack length injected each day.

(j) After all injection work is completed and cured, the crack seal shall be removed (after 12 hours) by grinding to obtain a smooth concrete surface.

(k) Cleanup work area and demobilize.

E26.3.3 Concrete Spall Repairs:

(a) Identify all spalled areas scheduled for repair as identified by the Contract Administrator after the completion of wet well inspection.

(b) Saw cut the perimeter of the patch to a minimum of 13 mm outside the limits of the spalled/deteriorated area designated for repair.

(c) Chip and remove the delaminated concrete until sound concrete is encountered to provide a solid bond.

(d) Remove any coatings that may reduce bond between the existing concrete and repair mortar/grout.

(e) Remove a minimum of 25 mm of concrete from around all encountered rebar to provide a solid bonding area.

(f) Prepare demolished concrete surface to CSP-3 profile.

(g) Surface prepare reinforcement to SSPC-SP3 (power tool cleaning).

(h) Repair overhead and sidewall patches using a Sikatop 123 Plus repair mortar. The product shall be prepared and installed according to the manufacturer's instructions.

E26.4 Measurement and Payment

(a) Wet Well Surface Refinishing will be measured on area basis and will be paid for at the Contract Unit Price for "Wet Well Repair Works / Resurfacing" which us to include crack and full depth spall repair in addition to the final refinishing work. Area to be paid for will be the total area of refinishing inspected, accepted and measured by the Contract Administrator.

E27. DEMOLITION OF STRUCTURES

E27.1 Description of Work

The Work required under this section shall include, but is not limited to, the following:

(a) Partial depth demolition of the wet well interior concrete surfaces to be determined during the wet well inspection.

(b) Demolition of the precast concrete wet well access vaults as shown on the contract drawings.

(c) Demolition of the existing superstructure.

(i) Note that only selective sections of the superstructure concrete curb are to be demolished.

(d) Partial selective concrete demolition in the sub-levels of the pump station.

(e) Sandblasting of subgrade concrete surfaces in preparation for new finishes.

(f) Demolition and removal of segments of the asbestos cement force main necessary for the installation of the bypass manhole and other segments of force main.

(g) Demolition and removal of the existing water service to the pump station.

(h) Removal and disposal of debris found within the wet well.

(i) Removal and disposal of construction debris.

E27.1.1 The Work required under this section shall include, but is not limited to, the following:

(a) Removal of existing superstructure including all electrical, mechanical architectural and structural components as indicated in project drawings; concrete and brick masonry demolition; performing saw cutting; demolition and disposal of existing concrete and brick masonry; and clean-up of work site in anticipation of new work for those demolition areas indicated on the drawings.

E27.1.2 The work to be done by the Contractor under this section 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 described hereinafter.

E27.2 References

E27.2.1 CSA S350-M1980, Code of Practice for Safety in Demolition of Structures.

E27.2.2 Manitoba Workplace Safety and Health Act, and all applicable National, Provincial and Municipal regulations.

E27.2.3 Hazardous Materials Assessment Report, Pinchin Ltd.

E27.3 Protection

E27.3.1 Prevent damage of existing structure to remain. Make good any damage caused by the demolition Work.

E27.3.2 Take precautions to support adjacent and affected structures and, if safety of structure being demolished or adjacent structures appears to be endangered, cease operations and notify the Contract Administrator.

E27.3.3 The Contractor shall take precautions during demolition works to prevent damage to existing structures and adjacent property. In the event of damage, the Contractor will be held liable and shall be required to provide appropriate restoration at his cost, to the satisfaction of the Contract Administrator.

E27.4 Execution

E27.4.1 Commencement

(a) Demolition shall commence after certification of the shoring system has been received and approved by the Contract Administrator.

E27.4.2 Inspection

(a) Inspect Site with Contract Administrator and verify extent of items for removal, disposal, salvage and items to remain.

(b) Notify and obtain approval of Contract Administrator before starting demolition.

E27.4.3 Safety Code and Requirements

(a) Unless otherwise specified, carry out demolition in accordance with the City of Winnipeg Safety Directives and Guidelines.

E27.4.4 Demolition

(a) Demolish structures to permit construction of new work as required.

(b) The work shall be done in accordance with E4– Hazardous Materials and the recommendations of the Hazardous Materials Assessment Report.

(c) Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as Work progresses.

(i) Exception: The CSO panel will not be removed or taken offline. See E39 & E40.

(d) At end of each day's Work, leave Work in safe condition so that no part is in danger of toppling or falling.

(e) Do not sell or burn materials on Site.

(f) Damage to concrete that is to remain shall be minimized. Concrete shall be demolished by saw cutting and subsequent jackhammering using hand-held breakers or jack hammers (maximum 10 kgs/20 lbs unless noted otherwise on drawings). Other methods of performing concrete demolition may be submitted for review and approval to the Contract Administrator. The Contractor shall take measures to ensure that the concrete beyond the limits of demolition is not fractured or shattered. The Contractor shall remove concrete using acceptable methods and replace any concrete which is deemed to be fractured as a result of demolition methods employed by the Contractor. This repair Work shall be performed at no additional cost to the City of Winnipeg.

E27.4.5 Demolition Tolerances

(a) All demolition shall be done using equipment and procedure to prevent over-breakage of the existing structure.

(b) Final demolition surfaces must remain locally within (25 mm) of the demolition lines, alignments, or limits shown on the drawings. Demolition beyond the limits shown shall be reviewed by the Contract Administrator. The Contractor shall repair excess demolition to the satisfaction of the Contract Administrator, and at no cost to the City where required.

(c) All protrusions into the defined limits of demolition shall be removed if they interfere with the placement and alignment of embedded components or reinforcing steel.

E27.4.6 Abrasive Wiresaw and Sawcutting

(a) Areas of demolition shall be delineated from existing concrete that is to remain using either abrasive disc sawcutting, or abrasive wire sawing.

(b) All sawcuts shall be performed straight and normal to the surface being cut, following the locations shown on the drawings, or as directed by the Contract Administrator.

(c) Overruns at the junctions of sawcuts, and mis-starts shall be cleaned and filled with dry patching mortar of matching colour, as directed by the Contract Administrator.

(d) Overruns at the junctions of sawcuts, and mis-starts shall be cleaned and filled with dry patching mortar of matching colour, as directed by the Contract Administrator.

E27.4.7 Disposal of Demolished Material

(a) The Contractor shall be responsible for removal of debris and waste from the Work area to the location to an appropriate solid waste disposal area approved by the contract administrator.

(b) Metal debris, which may include reinforcing steel, shall be removed from Site and disposed of by the Contractor.

E27.5 Measurement and Payment

E27.5.1 Demolition

(a) Demolition will be measured on a lump sum basis and paid for at the Contract Lump Sum Price for "Demolition."

(b) No payment shall be made for demolition beyond the limits specified, or those otherwise approved by the Contract Administrator. The separation, as necessary of embedded and structural steel shall be considered incidental to the Work. The installation of temporary supports, shoring or hangers shall also be considered incidental to the Work. Saw cutting of concrete and removal of construction debris shall be considered incidental to the Work.

E28. SALVAGE

E28.1 Contractor to coordinate with Contract Administrator to arrange for City of Winnipeg Staff to visit site and mark equipment and material for salvage prior to commencement of demolition. Salvaged materials are expected to include, but not necessarily be limited to:

(a) SCADAPack

(b) Undervoltage relay.

(c) PSTN module.

E28.2 All salvaged equipment and materials as determined under E28.1 shall remain property of the City unless specifically noted otherwise. The Contractor shall deliver salvaged equipment and materials to the City of Winnipeg's "Y Yard" outdoor storage compound located at the Northeast corner of the intersection of Dugald Road and Van Bellegham Avenue, Winnipeg, Manitoba.

E28.3 The Contractor shall notify the Contract Administrator at least 48 hours prior to delivery of salvaged equipment to allow for arrangements to be made to receive the salvaged equipment. All deliveries shall be made between 8:00 am and 3:30 pm on Business days.

E28.4 The Contactor shall remove and haul all rejected salvage from the site and legally dispose of it.

E28.5 Removal and delivery of salvageable and non-salvageable equipment and material shall be considered incidental to the Contract Work and no additional payment will be made for such Work.

E28.6 Exceptions:

(a) The Combined Sewer Outfall (CSO) panel for the gate chamber south of the pumping station is to be salvaged but not removed from the site. This panel is to remain powered, online, and functional throughout the project and is to be installed in the final superstructure as per the Construction Drawings. See E39 & E40.

E29. CAST-IN-PLACE CONCRETE

E29.1 Description

E29.1.1 This specification will cover construction of cast-in-place concrete gate chamber and shall supplement, revise and amend CW 2160.

E29.2 Materials

(a) Concrete Mix Design

The Contractor shall be responsible for the design and performance of all concrete mixes supplied under this Specification. Concrete shall be supplied in accordance with the requirements of CSA A23.1-14, with the minimum properties as provided below:

(i) Cast-In-Place Concrete Wet Well Access Vault & Precast By-Pass Vault

Class of Exposure	S-1
Maximum Size of Aggregate	20 mm
Cement Type	HS
Maximum Water/Cementing Materials Ratio	0.40
Compressive Strength at 7 Days	20 MPa
Compressive Strength at 28 Days	35 MPa
Slump/Flow	80 mm +/- 20 mm
Air Content	5.0% to 8.0%

(ii) Lean Mix Concrete

Cement Type	Type HS
Maximum Water/Cementing Materials Ratio	0.49

Compressive Strength at 28 Days	15 MPa
Slump/Flow	80 mm
Air Content	nil

(iii) Concrete Curbs, Pads, and Aprons

Class of Exposure	C-1
Maximum Size of Aggregate	20 mm
Cement Type	GU
Maximum Water/Cementing Materials Ratio	0.40
Compressive Strength at 7 Days	20 MPa
Compressive Strength at 28 Days	35 MPa
Slump/Flow	80 mm +/- 20 mm
Air Content	5.0% to 8.0%

(b) Provide a "Mix Design Statement" for each type of concrete to be used certifying constituent materials and mixing proportions to the Contract Administrator at least 2 weeks prior to delivery of Concrete to the Site. Supply reasonable evidence to the Contract Administrator that the mix proportions selected will produce concrete meeting the specified strength, workability and yield.

(c) Admixtures

(i) All admixtures shall be compatible and meet the following standards:

- Air entraining agent shall meet ASTM C260.
- Chemical water reducing admixtures shall meet ASTM C494.
- Type F high-range water reducing (super-plasticizing) admixture shall be used when a slump of more than 110 mm is desired.

(d) Grout

(i) Grout shall be Sika Grout 212 SR or approved equivalent in accordance with B7.

(ii) Floor surface in lower pump room to be prepared according to product manufacturer's requirements prior to application of grout.

(iii) Grout to be applied as per manufacturer's requirements and sloped towards sump.

(iv) Hydraulic cement for form hole patching shall be Xypex Patch-n-Plug or approved equivalent in accordance with B7.

(e) Reinforcing Steel

(i) New deformed billet steel bars conforming to CSA G30.18 (latest). Grade to be 400.

(ii) Bar accessories:

- To be made of a non-corroding material
- Shall not stain, blemish or spall the concrete surface for the life of the concrete
- Shall be approved by the Contract Administrator
- Bar chairs shall be PVC.

(f) Bonding Agent shall be Sika Latex R or approved equivalent in accordance with B7.

(g) Reinforcing steel shall be clean, free of rust, dirt, loose scale, oil, grease or any material that could reduce bond with the concrete.

(h) Waterproofing

(i) Provide two coats bitumen waterproofing emulsion to all below grade exterior concrete surfaces.

(ii) Approved product: Mapai Plastimul or approved equal in accordance with B7.

(i) Waterstop

(i) Waterstop shall be 150 mm wide by 10 mm thick vinyles ribbed-center bulb or approved equal in accordance with B7 or

(ii) Waterstop shall be Cetco Volclay Waterstop - RX 101 or approved equal, continuous around perimeter of each pour break. Installed as per manufacturer's instructions.

(j) Miscellaneous Metals and Accessories

(i) As shown on the Drawings.

(k) Shop Drawings:

(i) Provide shop drawings in accordance with E12 of this specification.

(ii) Submit shop drawings for reinforcing steel a minimum of two (2) weeks prior to the fabrication of any reinforcing steel.

(l) Backfill

(i) In accordance with CW 2030.

E29.3 Construction Methods

E29.3.1 Construction Method Submission

(a) No Work shall commence on construction of cast-in-place concrete until after the Contract Administrator's review of the Contractor's Construction Method submission.

(b) The Contractor shall prepare for the Contract Administrator's review a Construction Method submission detailing:

(i) Construction sequence to be followed including all methods to be employed.

(ii) Shoring system(s) to be used.

(iii) Proposed method of structure construction.

(iv) Specialized equipment to be used.

(v) Any design revisions proposed to accommodate the Contractor's proposed construction method.

(vi) Water control consideration including details on the Contractor's proposed method of groundwater and surface runoff control.

(c) The Contractor shall respond to any concerns that may be raised by the Contract Administrator after review of Construction Method submission.

E29.3.2 Pump Station Upgrades

(a) Construct cast in place concrete in accordance with CW 2160 and CSA A23.1, except as supplemented, revised or amended in this specification and as indicated in the construction notes on the Drawings.

(b) Adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.

(c) Do not use welded splices for reinforcing steel.

(d) Remove all form tie plastic cones and patch with hydraulic cement compound.

(e) Order all wall reinforcement steel in lengths to best suit the spacing of walers so that reinforcing bars will not be bent or misformed in order to remove the walers.

(f) Reinforcing steel shall be clean, free of rust, dirt, loose scale, oil, grease or any other material which would reduce bond with concrete.

(g) Tie, support, and space all reinforcing steel with proper approved devices designed for use in reinforced concrete, to prevent displacement of reinforcing and ensure specified concrete cover.

(h) Provide minimum concrete cover for reinforcing steel as follows:

(i) Slab faces exposed to soil: 75 mm

(ii) Slab faces not exposed to soil: 50 mm

(iii) Subgrade Walls (exterior face): 75 mm
(iv) Subgrade Walls (interior face): 50 mm
(v) Chamber To Slab (top and bottom): 50 mm
(vi) Interior Walls: 50 mm

E29.3.3 Backfill

(a) Place and compact backfill material in accordance with CW 2030.

(b) Do not place backfill material on frozen ground.

(c) Do not place backfill material in a frozen state.

(d) Supply heating and hoarding in accordance with CW 2160 if required to ensure material does not freeze before compaction is complete.

(e) Notify the Contract Administrator at least one (1) full Working Day in advance of any backfilling operation. No Backfill shall be placed against concrete until approved by the Contract Administrator and in no case before field cured test cylinders show the concrete strength to be 75% of that specified.

E29.3.4 Grout & Patching Cement

(a) Mix and apply grout and patching cement in accordance with the manufacturer's instructions. Consistency is to be suitable for the intended application.

E29.3.5 Measurement and Payment

(a) Construction of the cast-in-place concrete will be measured per cubic meter and paid for at the Contract unit price for "Cast-in-Place Concrete." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification, accepted and measured by the Contract Administrator.

E30. COLD WEATHER REQUIREMENTS

E30.1 Should any concrete Work be required to be carried out when the daily mean temperature is below 5°C or anticipated to be below 5°C within the 24 hour cure period, cold weather requirements will be specified herein.

E30.2 All freshly placed concrete shall be protected from the elements and from defacements due to construction operations.

E30.3 The following are minimum requirements for protecting concrete during and after placement during freezing weather, but mere adherence to these requirements will not relieve the Contractor of the necessity for producing concrete which has not been weakened or injured by frost or freezing, or replacing such damaged Work at no additional cost to the City;

(a) Before any concrete is placed, all ice, snow, and frost shall be completely removed from all formwork, and other surfaces against which concrete temperatures of such surfaces raised above 7°C for twenty-four (24) hours minimum prior to concreting. Where concrete Work is to come in contact with the earth, the surface of the earth shall be completely free of frost when concrete is placed thereon.

(b) Concrete aggregates and water shall be heated to not over 80°C. Concrete shall be not less than 20°C or more than 30°C in temperature when deposited. Concrete when placed during freezing weather, or if freezing is anticipated during curing period, shall be fully enclosed and the temperature of same maintained at not less than 20°C for five (5) days nor less than 5°C for an additional five (5) days.

(c) Heating enclosures shall be strong and wind-proof, well ventilated with heating units so located as to prevent local overheating or drying of the concrete or damage from combustion gases. Only indirect fired heaters will be accepted. Units must be vented outside the enclosure. No direct fired units will be accepted.

(d) The Contractor shall inform the Contract Administrator well in advance as to the methods of enclosure and frost protection he proposes to employ.

E30.4 Measurement and Payment

(a) Cold weather requirements shall be considered incidental to the construction of Cast-in-Place concrete and no payment will be made for this item.

E31. METAL FABRICATIONS

E31.1 Refer to Section 05 14 10 – Structural Aluminum

E31.2 Refer to Section 05 50 00 – Metal Fabrication

E31.3 Measurement and Payment

(a) Supply, fabrication, transportation, handling, delivery and placement of metal fabrications will be paid for at the Contract Lump Sum Price for "Miscellaneous Metals." Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.

E32. PUMPS COMPLETE WITH MOTORS, DRIVE SHAFTS, GUARDS, AND ACCESSORIES

E32.1 General:

(a) This Specification shall cover the supply and delivery of pumping equipment, motors, and accessories.

(b) Both of the two existing pumps at the Conway Lift Station are to be replaced with larger pumps. A third spare pump will also be included, with some parts excluded. Refer to E35

(c) City of Winnipeg records indicate that the existing pumps currently in use are:

(i) 15HP Aurora 6330071-1 Split-Coupled Non-Clog Pumps

(ii) One of the two pumps has been replaced with a close-coupled pump since original construction.

(d) The pumps will be used to pump raw sewage having a temperature range of 0ºC to 30ºC with solids up to 125mm.

(e) Each pump shall be a single stage, non-clogging, centrifugal flow, vertical mounted, pump coupled with a drive shaft to an electric motor suitable for dry pit installation. Pump assemblies that are considered a submersible style pump where the motor is directly coupled to the pump will not be acceptable.

(f) Submit torsional natural frequency analysis including the pump, motor, and vertical U-joint drive shaft in accordance with ANSI/HI 9.6.8 level 2 analysis or higher with minimum frequency separation margin of +/- 15%. If resonate conditions are found in the required speed range of the pump a forced response stress analysis is required to determine if the stress is below the fatigue limitations. Submit the analysis as a separate submittal prior to pump shop testing. Analysis shall be completed over the full operating range of the pump. Analysis to include a Campbell/interference diagram. Submission shall be in accordance with E12.

(g) Durable metal nameplates shall be securely attached to each pumping unit supplied. Pump nameplates shall indicate the serial number, capacity, head, rpm, and other pertinent data. Impeller information nameplate shall also be included and attached to each pump. Motor nameplates shall indicate the serial number, voltage, phase, hertz, rpm, horsepower, service factor, NEMA Design, insulation class and any other pertinent data.

(h) Pumping units shall generally comply with the requirements of the Hydraulic Institute Standards and shall be CSA approved. Have equipment comply with the latest edition of the applicable codes and regulations including, but not limited to, the following

(i) American Society of Mechanical Engineers (ASME); .

(ii) Canadian Standards Association (CSA);

(iii) Canadian Electrical Manufacturers Association (CEMA);
(iv) National Electrical Manufacturer's Association (NEMA);
(v) American Society for Testing and Materials (ASTM);
(vi) American National Standard Institute (ANSI);
(vii) Electrical Electronics Manufacturing Association of Canada (EEMAC); and
(viii) Electrical Safety Association (ESA)
(ix) National Electric Code (NEC)
(x) American Iron and Steel Institute (AISI)
(xi) American Gear Manufacturer's Association (AGMA)
(xii) American Institute of Steel Construction (AISC)
(xiii) American Welding Society (AWS)

(i) ANSI Standards:
(i) B-16.5 Pipe Flanges and Flanged Fittings
(ii) ANSI/HI 9.6.4-2009 American National Standard for Rotodynamic Pumps for Vibration Measurements and Allowable Values
(iii) ANSI/HI 9.6.5-2009 American National Standard for Rotodynamic (Centrifugal and Vertical) Pumps – Guideline for Condition Monitoring
(iv) ANSI/HI 9.8-2012 American National Standard for Rotodynamic Pumps for Pump Intake Design
(v) ANSI/HI 9.6.8-2014 Rotodynamic Pumps – Guideline for Dynamics of Pumping Machinery

(j) Have all electrical equipment comply in every respect with the rules and regulations of Manitoba Hydro and be acceptable to their local inspector.

(k) In cases of any conflict between these Specifications and any of the above standards, the most stringent standard will have precedence.

E32.2 Products & Construction Methods:

E32.2.1 General Pump Performance Requirements

(a) The head-capacity curve shall have a single flow rate for each pumping head value and have a continuously rising head characteristic to shut-off to ensure stability.

(b) At no point on the power demand curve between shut-in and the minimum operating head shall the pump power demand, as determined from the shop performance tests, exceed the "Rated Power" of the motor.

(c) The maximum speed specified for each pump shall not exceed the maximum specific speed recommended in the Hydraulic Institute Standards, for the specified total dynamic head and the suction head at design minimum suction head conditions. Notwithstanding this requirement, the pump shall be free from cavitation, as described in the Hydraulic Institute Standards, throughout the specified operating ranges listed in E32.3.1.

(d) The pumps and motors shall be capable of being run in reverse rotation (via the variable frequency drive) in an attempt to de-rag the pump. When a de-ragging function is run, the pump will be run in reverse for approximately 5 to 10 seconds at approximately 20% to 40% speed. Approximately four to six attempts will be made, with a 20 to 30 second wait period between each attempt.

E32.3 Pump Requirements:

E32.3.1 Pump General Requirements:

(a) Required range of continuous stable flow: from Duty Point 3 to Duty Point 1 in (c) and (b) below, respectively. The best efficiency point of these pumps must fall within this flow range.

(b) Rated Speed (1200 RPM)
  (i) Duty Point 1 (Typical Operation): 110 L/s @ 13m TDH (8.3m Static Head)
  (ii) Duty Point 2 (Shut-off): 0 L/s @ 27m Head
  (iii) NPHSa: 10.1m

(c) Reduced Speed:
  (i) Duty Point 3 (Design Flow at Reduced Speed): 70 L/s @ 10m TDH
  (ii) NPHSa: 9.7m

(d) Minimum Efficiency at all duty points 1-4 listed above, regardless of speed: 70%

(e) Rotation (viewed from above): Clockwise

(f) Type of Impeller: Non-Clog

(g) Size of sphere impeller shall pass: 75mm

(h) The power corresponding to the miximum impeller diameter allowed in the volute is to remain under 35 horsepower at the maximum design speed from shut-off to run-out.

(i) The ratio of the trimmed impeller diameter to the maximum impeller diameter allowable in the pump volute will not be less than 0.95.

(j) Diameter of Pump Suction: 150-200mm

(k) Diameter of Pump Discharge: 150mm

(l) Suction Elbow to be sized to connect to 250mm suction piping directly or by means of an eccentric reducer as shown in the construction drawings.

E32.3.2 The following pumps were used as the basis of design. Compliant alternatives to be approved during tender.

(a) Flowserve 6MF14A FR5T – 344mm Impeller

(b) Cornell 6NHT– 344mm Impeller

(c) Approved Equal in accordance with B7.

E32.3.3 Unspecified Materials

(a) All unspecified materials shall be selected specifically for their suitability considering their duty. Unless otherwise specified herein, all materials and equipment shall conform to the appropriate Standard Specifications of the American Society for Testing Materials, referred to as the ASTM Standards except where a higher standard is specifically called herein. Where alternate materials are being offered the bidder shall refer to the material by ASTM standard number.

(b) The various materials used in the construction of the equipment shall be of the best quality and particularly suited to the requirements. Materials shall conform in general to the composition, physical characteristics and methods of treatment required by the specifications of the American Society for Testing Materials in so far as they apply and as specified herein.

E32.3.4 General Requirements:

(a) Castings to be free from flaws and imperfections and machined surfaces finished true.

(b) Round off inside and outside corners and edges of all castings.

(c) Provide means to prevent nuts and bolts from becoming loose (pins, spring or friction washered fasteners).

(d) Obtain written permission of the Contract Administrator to patch, plug, shim or employ other means of overcoming defects, discrepancies or errors in manufacturing.

(e) Statically and dynamically balance all rotating components as an assembled unit in accordance with ISO 1940 G6.3.

E32.3.5 Casing:

(a) Cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal in accordance with B7.

(b) Casing shall be rated for 1.5 times working pressure.

(c) Eyebolts or hooks shall be provided for lifting.

(d) Centrifugal volute type design of ample thickness and rigidity to withstand stresses due to hydraulic forces, weight of piping, erection loads, operating and testing.

(e) Inside water passages shall be smooth and free from any significant projections that would hinder the flow of any solid waste.

(f) Proportion casings so change in energy of the sewage from the kinetic form, as it leaves the impeller, to the pressure form as it leaves the casing will take place gradually with minimum eddy formation or shock.

(g) Front head to permit equal distribution of sewage to all parts of the impeller without the use of stationary guides or vanes on the suction side of the impeller.

(h) Design to permit the removal of the rotating assembly without disturbing the suction and discharge piping.

(i) Provide a hand hole with bolted cover on the volute to permit access to the inside for cleaning and unclogging of the volute.

(j) Provide a tapped 10 millimetre (3/8") NPT hole on the top of the volute with a suitable length of brass pipe and a shut off ball valve to allow trapped air within the volute to be bled off.

(k) Shop test and provide certification that the fully assembled casing is successfully able withstand a hydrostatic test pressure of not less than 1.5 times the shut-off head of the largest impeller size as shown by the characteristic curve.

E32.3.6 Impeller:

(a) Impeller: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal in accordance with Section B7 of the Tender. The cast iron shall contain not less than three (3) percent nickel.

(b) The impeller to be of the non-clog enclosed channel type.

(c) Design impeller to ensure smooth operation without cavitation in the operating range and with minimum vibration.

(d) Cast impeller in one piece and balance both statically and dynamically to ISO 1940 G6.3.

(e) Trim impeller over its full height if the impeller supplied has been trimmed from a larger impeller leaving no lip or protrusion around the bottom edge.

(f) Balance trimmed impeller after trimming.

(g) Cast impeller surface to be free from casting blemishes and finished to 250 RMS or better.

(h) Securely key the impeller to the tapered shaft and hold in place with an impeller nut.

(i) The impeller nut shall be dome shaped with a smooth face and blend into the hub so as not to allow any stringy material to accumulate around the nut. Hex shaped nuts shall not be used.

(j) Design the impeller and retaining nut so that the impeller cannot loosen on the shaft due to torque resulting from rotation.

E32.3.7 Backhead & Stuffing Box:

(a) Cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal in accordance with B7.

(b) Backhead shall be a separate piece from the volute casing.

(c) Backhead shall be designed to rigidly support the bearing frame and be a self centering and self-indexing fit with the volute casing to ensure proper alignment.

(d) Provide a minimum of two large openings opposite each other adjacent to the stuffing box to allow access for maintenance.

(e) Provide for external axial adjustment of the rotating element to maintain proper clearance between the impeller and front head wearing rings.

(f) Provide tapped 10 millimetre NPT inlet and vent holes complete with suitable lengths of brass pipe and full port shut-off ball valves on opposite sides of the stuffing box for seal water inlet and outlet.

(g) Provide a tapped drain hole on the stuffing box complete with pipe plug.

(h) Stuffing box shall be integral with the backhead and suitable for the use of a double mechanical cartridge seal.

E32.3.8 Clean Out Port:

(a) Clean out port to be located at center of pump.

(b) One hundred fifty (150) millimetres (six (6) inches) diameter, two (2) bolt pattern.

E32.3.9 Wear Rings:

(a) Provide removable wear rings of the axial or radial type for the front head and impeller.

(b) Wear Rings: fabricated from stainless steel conforming to ASTM Standard A296, for Corrosion-Resistant Iron Chromium, Iron-Chromium-Nickel, and Nickel-Base Alloy Castings for General Application, Grade CA-15 or approved equal in accordance with B7.

(c) Impeller ring hardness to be at least 300 Brinell (RC 32.1).

(d) Casing wear ring to exceed impeller wear ring by at least 50 Brinell.

(e) Machine the rings for a close fit to minimize the leakage of sewage from the discharge to the suction.

(f) Attach the rings in such a way as to allow for ready adjustment or replacement and to prevent loosening under normal operation or under reverse pump rotation.

E32.3.10 Impeller Shaft Assembly

(a) Shaft Assembly: fabricated from steel conforming to ASTM A108, Grade 1045 or approved equal in accordance with B7.

(b) Shaft assembly to be of sufficient diameter to assure rigid support of the impeller and to transmit loads without slip, vibration or undue deflection at all operating speeds and loads.

(c) Accurately machine the shaft along its entire length and provide keyways at both ends.

E32.3.11 Bearings:

(a) Bearings: shall be of the heavy duty anti-friction type suitable for oil or grease lubrication. Radial bearings shall be of the self-aligning plain roller or ball type and thrust bearings shall be of the tapered roller or angular contact type.

(b) Design bearings for a B-10 life of not less than 100,000 hours in accordance with AFBMA.

(c) Rigidly support bearings to counteract any possible tendency towards vibration.

(d) Grind and match duplex bearings, if used.

(e) Adapt lubrication of the bearings to the operation of the units without full-time attendance.

E32.3.12 Mechanical Seals:

(a) Mechanical Seals: double mechanical seals.

(i) Cartridge type.

(ii) Primary sealing mating faces to be silicon carbide to silicon carbide and secondary sealing mating faces to be carbon to silicon carbide or silicon carbide to silicon carbide.

(iii) As manufactured by John Crane, Durametallic, Burgmann, or approved equal in accordance with B7.

E32.3.13 Paint:

(a) Apply one prime coat of a rust inhibitive primer, a second adhesive prime coat and one finish coat of manufacturer's standard enamel to all exterior metal surfaces, except machined surfaces.

(b) Do not paint over nameplates.

E32.3.14 Drive Shaft Assembly

(a) Vertical hollow steel drive shaft with flexible coupling(s) to transmit power from the motor to the pump.

(b) Drive shaft and coupling(s) shall have a service factor of 2.5 to ensure ample capacity to transmit power continuously for all operating conditions with up to one (1) degrees of misalignment which may occur during or develop after installation and should accommodate any thermal expansion based on a temperature differential of one hundred (100) degrees Fahrenheit (37.8^{o} C).

(c) The shaft shall be of ample diameter to limit the deflection of shaft and impeller when installed in the pump casing to a minimum and to prevent vibration during acceleration, deceleration and running speeds.

(d) Shaft shall be machined with radiused re-entrant corners at changes of diameters and at keyways to minimize stress concentration and other causes of metal fatigue.

(e) The drive shaft assembly coupling arrangement shall permit easy removal of either the pump or motor without disturbing the other. Only one length of shaft shall be used between the pump and motor.

(f) Statically and dynamically balance the drive shaft to obtain vibration free operation. Design shaft to ensure a separation of 50% between the operating speed and the first harmonic frequency of the system (motor, couplings, shaft and pump).

(g) The approximate elevations of the pump room floor, suction centre line, and motor room floor for the pumping station is shown in E32.6. The Bidder shall use this to approximate the drive shaft length for bidding purposes. Contractor shall confirm distances prior to manufacture.

(h) After award of this Contract, the Contractor shall be responsible to take exact measurements for final sizing of the drive shaft lengths.

E32.3.15 Drive Shaft Guard:

(a) Drive shaft guards, as supplied, shall be meet OSHA standards upon installation without requiring any modification. Installation by others.

(b) The drive shaft guards shall extend to the ceiling above the pumps.

E32.3.16 Shaft and Sleeve:

(a) Shaft sleeve where shaft passes through stuffing box: fabricated from 316L stainless steel conforming to ASTM A240 or approved equal in accordance with B7.

(b) Fit and securely fasten the shaft sleeve in place after shaft grinding.

(c) Seal shaft sleeve to prevent leakage between the sleeve and shaft.

(d) Extend shaft sleeve at least 2 millimetres above the top of the gland cover.

E32.3.17 Suction and Discharge

(a) Suction and discharge shall be flanged, faced and drilled to conform to ASME Specification B 16.1 Class 125.

(b) Provide a cast or fabricated 90º suction elbow with hand hole and cover plate fastened with bolts, to permit access to the suction side of the impeller for cleaning and inspection.

(c) Provide gauge connections tapped for 10 millimetre (3/8") NPT threaded pipe on each suction and discharge nozzle. Locate tapped connection close to flange ends. Provide pipe plugs in tapped holes.

E32.3.18 Bearing Frame

(a) Bearing Frame: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30.

(b) The station includes existing shaft openings through floors and posts supporting bearings on the valve floor.

(c) Bearing frame shall rigidly support the motor adapter frame with a self-centering and self-indexing fit with the backhead to ensure proper alignment.

(d) Machine bearing frame for accurate and permanent bearing alignment.

(e) Completely enclose the shaft between the bearings.

(f) Provide lip type seals in contact with the shaft.

(g) Include grease fittings in the bearing frame for bearing lubrication.

E32.3.19 Pump Support

(a) Provide one (1) rigid fabricated steel four (4) legged stand, rigid support plate, or a cast suction elbow/cast stand combination for each pump. Pump support shall firmly support the entire weight of the pump and withstand the full motor torque. Submit pump support in accordance with E12 to be approved by contract Administrator prior to shipment.

(i) The pump support shall provide clear access to the cleanout ports on the suction elbow and the pump volute.

(b) The pump support should be suitable for mounting onto a concrete base using anchor bolts.

(i) The installation contractor will have the capability to modify the existing concrete base to suite the pump and pump support.

E32.4 Motor requirements:

(a) Motor General Requirements:

(i)	Enclosure:	Totally Enclosed Fan Cooled (TEFC)
(ii)	Power Supply:	600 VAC, 3-Phase, 60 Hz.
(iii)	Power Rating:	35 HP
(iv)	Power Factor:	0.80 PF Minimum
(v)	Efficiency:	Premium - 0.90 Minimum
(vi)	Winding Insulation:	Class F or Higher
(vii)	Nominal Speed:	1200 RPM
(viii)	Windings:	Copper
(ix)	Motor Service Factor:	1.15
(x)	Approvals:	CSA, NEMA MG1
(xi)	Starts per Hour Capability:	10

(xii) Inverter Duty Rated for Variable Frequency Drive (VFD) Compatibility.

(xiii) All motors shall be equipped with motor shaft grounding ring, suitable for VFD (inverter) application:

- AEGIS SGR Bearing Protection Ring;

- Or approved equal in accordance with B7.

(b) Power Cabling General Requirements:

(i) Include lugs for the connection of power cabling for #8 AWG or larger.

(ii) Include a power cable enclosure for terminating incoming field power cabling to motor cabling.

(c) Provide motor mount standoff with access to motor shaft;

E32.5 Instruments General Requirements:

(a) All instrument signals shall be capable of connecting directly to the PLC. Shaft bearing vibration sensors shall be wired to precision digital PD6000 process meters mounted on the motor starter sections of the MCC.

(b) All upper bearing instruments (vibration and temperature) shall be brought to a low voltage control enclosure located on the motor (separate from the power enclosure). The control enclosure shall not include any 600 VAC power connections within.

(c) Vibration Monitoring:

(i) Vibration monitoring to include sensors for XY directions for a total of 2 analog vibration instruments per pump and motor assembly.

(ii) 4-20mA loop powered.

(iii) Frequency range three (3) hertz to one thousand (1,000) hertz.

(iv) Sensor one hundred (100) mV/g.

(v) Cast aluminum NEMA 4 conduit elbow termination housing.

(vi) Terminal blocks for connection to field wiring.

(vii) Threaded bolted connection to machined flat spot on bearing housing.

(viii) Manufacturer: IMI Sensors (PCM Piezotronics).

(ix) Locations:

- Pump 1 Lower Bearing Vibration
- Pump 1 Upper Bearing Vibration
- Pump 2 Lower Bearing Vibration
- Pump 2 Upper Bearing Vibration

(d) Temperature Monitoring:

(i) One hundred (100) ohm platinum 4-wire RTD.

(ii) NEMA 4X connection head.

(iii) Terminal blocks for connection to field wiring.

(iv) Provide high temperature detection on the motor exterior.

(v) Provide RTD temperature sensors at the following locations:

- Pump 1 Lower Bearing Temperature
- Pump 1 Upper Bearing Temperature
- Pump 2 Lower Bearing Temperature
- Pump 2 Upper Bearing Temperature

E32.6 Relevant Elevations

Detail	Elevation
Motor Room	227.45 m
Pump Room	224.48 m

E33. GATE VALVES

E33.1 Reference Standards

(a) American Water Works Association (AWWA), American National Standards Institute (ANSI)/American society of Mechanical Engineers (ASME).

(b) ANSI/ASME Bl.20.1, Pipe Threads, General Purpose (Inch).

E33.2 Resilient Seated Gate Valves:

E33.2.1 Description

(a) Two (2) two hundred fifty (250) millimetre gate valves – Manually actuated [HV-L011, HV-L021], Rising Stem;

(b) Two (2) two hundred (200) millimetre gate valves – manually actuated [HV-L013, HV-L023], Rising Stem;

(c) Two (2) two hundred fifty (250) millimetre gate valves – manually actuated, to be installed within the bypass vault in accordance with contract drawings. One (1) rising stem and one (1) non-rising stem.

E33.2.2 Specification

(a) Metal seated solid wedge gate valve, ductile iron body with flanged ends; bronze trimmed, ductile iron wedge; 316 stainless steel stem, double O-ring stem seals, 316 stainless steel fasteners, internal and external fusion-bonded epoxy coating on body and wedge.

(b) The valves shall conform to AWWA C500.

(c) Gate valves to be equipped with outside rising stems, screws and yokes and complete with handwheels. Direction of opening shall be counter clockwise and shall be clearly stamped or indicated with raised letters and arrow.

(d) Body material: Ductile Iron to ASTM-525 or 526.

(e) Stem: Non-Rising stem and Rising stem as specified in Clause 1.1, one (1) piece stainless steel.

(f) Disc: Bronze trimmed, ductile iron wedge.

(g) End connections: flanged to ANSI B16.1, Class 125 with holes straddling centreline.

(h) Packing and gaskets: non-asbestos.

(i) Fusion bonded epoxy coating to AWWA C-550 shall be applied to the ferrous surfaces in contact with water.

(j) All fasteners, nuts and bolts shall be stainless steel.

(k) Manufacturer’s nameplate shall be attached to the valve body with stainless steel Fasteners.

(l) Knife gate valves are not acceptable.

(m) Acceptable manufacturers – one (1) of the following:

(i) Mueller Canada; or

(ii) Approved equal in accordance with Section B7.

E33.3 Valve Operators

(a) Supply valve operators or actuators for all types of valves specified as follows:

(b) Supply removable manually operated hand wheels for all valves;

(c) Ensure that each valve and operator is of suitable construction and rating for the long term service with the fluid or product being conveyed and at the pressure and operating frequencies required by the relevant service;

(d) The allowable pull on a manual operator to open or close the valve shall be less than or equal to two hundred seventy (270) N (sixty (60) pound force). Manual operators shall operate in a clockwise motion to close the valve. For valves with greater than two hundred seventy (270) N (sixty (60) pound force), install spur gear actuators;

(e) Supply cast iron hand wheels clearly marked with a flow directional arrow and the word "open" cast in relief on the rim. Provide hand wheels greater than three hundred (300) millimetres (twelve (12) inches) in diameter for all valves greater than two hundred (200) millimetres (eight (8) inches) and four hundred fifty (450) millimetres (eighteen (18) inches) in diameter for larger valves as required to allow for manual operation. In confined areas, furnish smaller hand wheels with higher ratio gearing of the valve to compensate; and

(f) Supply steel pipe Tee wrenches with socket to suit nut dimensions.

E33.4 General Requirements

(a) Where there is an applicable recommended standard for the design, construction and testing of a valve and/or actuator, e.g., AWWA, CGA, CSA etc., equipment to be supplied under this section will refer to this standard. Comply with these requirements for all equipment supplied in all regards. Where specifically requested, provide certificates of compliance with the applicable standards.

(b) Where it is not intended to supply equipment or valves to a specific standard, the Specification will indicate a reference product. Provide flanges as specified for all flanged valves for the line into which they are to be installed. As a minimum standard a Class one hundred twenty-five (125) pound rating will be required.

(c) The Contractor shall ensure that the valve end connections are compatible with pipe material in which the valve is installed.

(d) Do not install valves dissimilar with piping to avoid galvanic corrosion.

(e) All packing, gaskets, seats, diaphragms, lubricants, etc., shall be suitable for the intended operating conditions.

(f) Supply all valves free of asphalt varnish or other non-potable protective coatings if it is intended for potable water service. Mark valves with size, pressure rating and manufacturer on a corrosion resistant nameplate mounted on the body.

(g) Equip the valve with a disc position indicator and a direction of flow indicator where applicable.

E33.5 Shop Drawings and Submittals

(a) Submit submittals in accordance with Section 01 33 00- Submittal Procedures.

(b) Product Data:

(i) Submit manufacturer's instructions, printed product literature and data sheets for all valves and include product characteristics, performance criteria, physical size, finish and limitations.

(c) Shop Drawings:

(i) Submit Shop Drawings in accordance with Section 01 30 00 – Submittal Procedures

(ii) Submit drawings stamped and signed by professional engineer registered or licensed in Province of Manitoba, Canada.

(d) Spare Parts

(i) Provide list of recommended spare parts for City's follow-up.

(e) Submit close-out submittals in accordance with Section 01 78 00- Closeout Submittals.

E33.6 Execution

(a) Test AWWA valves in the shop in accordance with American Water Works Association requirements. A certified test report shall be submitted.

(b) On completion of installation and testing, submit the manufacturer's certification of the correctness of the installation to the Contract Administrator.

E33.7 Measurement and Payment:

E33.7.1 Payment will be Lump Sum based on Form B, “Process Mechanical Work”, as accepted and measured by the Contract Administrator.

(a) A maximum of 95% may be submitted for progress payments prior to the total completion of the associated services, including the provision of as-built drawing mark-ups and O&M manuals.

E34. CHECK VALVES

E34.1 Reference Standards

(a) American Water Works Association (AWWA), American National Standards Institute (ANSI)/American society of Mechanical Engineers (ASME).

(b) ANSI/ASME Bl.20.1, Pipe Threads, General Purpose (Inch).

E34.2 Process Check Valves:

E34.2.1 Description

(a) Two (2) two hundred (200) millimetre check valves with “hold-open” device [CV-L012, CV-L022];

E34.2.2 Specification

(a) The valves shall be designed, manufactured, tested and certified to American Water Works Association Standard ANSI/AWWA C508.

(b) The valves shall have flanges with drilling to ANSI B16.1, Class 125 with holes straddling centreline.

(c) Check valve to be rapid closure rubber flapper (RF) type with a forty-five (45) degreeseating face suitable for horizontal installation.

(d) The valves will be specified with a “hold open” device

(e) The valve body shall be full flow equal to nominal pipe diameter at all points through the valve. The top access port shall be full size, allowing removal of the disc without removing the valve from the line. The access cover shall be domed in shape to provide flushing action over the disc for operating in lines containing high solids content. A threaded port with pipe plug shall be provided in the access cover to allow for field installation of a mechanical disc position indicator.

(f) The disc shall be of one-piece construction, precision molded with an integral O- ring type sealing surface and reinforced with alloy steel.

(g) The valve body and cover shall be constructed of ASTM A536 Grade 65-45-12 ductile iron.

(h) The disc shall be precision molded Buna-N (NBR), ASTM D2000-BG. Optional disc material includes Viton, EPDM, Hypalon.

(i) Hinge pin to be stainless steel (303/316).

(j) The exterior and interior of the valve shall be coated with an AWWA C-550 approved fusion bonded epoxy coating.

(k) All valves shall be hydrostatically tested and seat tested to demonstrate zero (0) leakage. The manufacturer shall provide test certificates, dimensional Drawings, parts list Drawings and Operation and Maintenance Manuals.

(l) Submit Shop Drawings of check valves in accordance with Section 01 33 00 – Submittal Procedures.

(m) Approved check valve manufacturers:

(i) American Valve Company;

(ii) Clow Canada;

(iii) Dezurik;

(iv) ValMatic

(v) Mueller Canada; or

(vi) Approved equal in accordance with Section B7

E34.3 General Requirements

(a) Where there is an applicable recommended standard for the design, construction and testing of a valve and/or actuator, e.g., AWWA, CGA, CSA etc., equipment to be supplied under this section will refer to this standard. Comply with these requirements for all equipment supplied in all regards. Where specifically requested, provide certificates of compliance with the applicable standards.

(b) Where it is not intended to supply equipment or valves to a specific standard, the Specification will indicate a reference product. Provide flanges as specified for all flanged valves for the line into which they are to be installed. As a minimum standard a Class one hundred twenty-five (125) pound rating will be required.

(c) The Contractor shall ensure that the valve end connections are compatible with pipe material in which the valve is installed.

(d) Do not install valves dissimilar with piping to avoid galvanic corrosion.

(e) All packing, gaskets, seats, diaphragms, lubricants, etc., shall be suitable for the intended operating conditions.

(f) Supply all valves free of asphalt varnish or other non-potable protective coatings if it is intended for potable water service. Mark valves with size, pressure rating and manufacturer on a corrosion resistant nameplate mounted on the body.

(g) Equip the valve with a disc position indicator and a direction of flow indicator where applicable.

E34.4 Shop Drawings and Submittals

(a) Submit submittals in accordance with Section 01 33 00- Submittal Procedures.

(b) Product Data:

(i) Submit manufacturer's instructions, printed product literature and data sheets for all valves and include product characteristics, performance criteria, physical size, finish and limitations.

(c) Shop Drawings:

(i) Submit Shop Drawings in accordance with Section 01 30 00 – Submittal Procedures

(ii) Submit drawings stamped and signed by professional engineer registered or licensed in Province of Manitoba, Canada.

(d) Spare Parts

(i) Provide list of recommended spare parts for City's follow-up.

(e) Submit close-out submittals in accordance with Section 01 78 00- Closeout Submittals.

E34.5 Execution

(a) Test AWWA valves in the shop in accordance with American Water Works Association requirements. A certified test report shall be submitted.

(b) On completion of installation and testing, submit the manufacturer's certification of the correctness of the installation to the Contract Administrator.

E34.6 Measurement and Payment:

E34.6.1 Payment will be Lump Sum based on Form B, “Process Mechanical Work”, as accepted and measured by the Contract Administrator.

(a) A maximum of 95% may be submitted for progress payments prior to the total completion of the associated services, including the provision of as-built drawing mark-ups and O&M manuals.

E35. TOOLS, ACCESSORIES AND SPARE PARTS

E35.1 Tools and Accessories:

(a) Provide special tools or accessories required for maintenance, adjustment, assembly or disassembly of the pumping equipment supplied.

E35.2 Spare Parts: Provide two (2) sets of pumps rebuild kits. Provide special tools or accessories required for maintenance, adjustment, assembly or disassembly of the pumping equipment supplied.

(a) Qty 2 sets of wear rings;

(b) Qty 2 sets of mechanical seals;

(c) Qty 2 sets of bearings;

(d) Qty 2 impellers;

(e) Qty 2 sets of volute and casing gaskets.

(f) Hardware to install spare parts.

E35.3 Properly package spare parts to resist damage.

E35.4 Clearly identify package as to its contents.

E35.5 Spare parts shall be identical to those supplied in the pumps.

E36. TESTING AND INITIAL START-UP INSPECTION FOR THE PUMPING EQUIPMENT

E36.1 Pump and Motor Testing:

(a) In general, testing and initial start-up in accordance with section 01 91 13 – General Commissioning Requirements.

(b) Conduct pump tests in accordance with Hydraulic Institute Standards - Centrifugal Pumps Test Code. All definitions for the purpose of testing shall be as set forth by Hydraulic Institute Standards - Centrifugal Pumps Ratings.

(c) Each pump shall be tested to include:

(i) At both 100% rated speed and 70% rated speed, simulating flow and head conditions at six (6) evenly spaced flow rates between (and including) shut-off and run-out. Record motor efficiency and absorbed power usage at each flow rate listed. Absorbed power shall be obtained when power factor has been corrected to 0.95.

(ii) Develop Certified Test Curve(s) (per Hydraulic Institute Class A Standards) showing pump performance.

(iii) At both 100% rated speed and 70% rated speed, simulating flow and head conditions at six (6) evenly spaced flow rates between (and including) shut-off and run-out. Record motor efficiency and absorbed power usage at each flow rate listed. Absorbed power shall be obtained when power factor has been corrected to 0.95.

(iv) Perform fixed head test of 13m TDH, varying speed for each pump from 70 – 100%. Seven (7) evenly spaced duty points (70%, 75%, 80%, 85%, 90%, 95% and 100%) to be tested. Absorbed power shall be obtained when power factor has been corrected to 0.95.

(v) Develop Certified Fixed Head Test Curve (per Hydraulic Institute Class A Standards) showing pump performance.

(vi) Vibration while pump is under load.

(vii) Measure Bearing Temperature while under load.

(d) Pump tests to be non-witnessed performance tested as per Hydraulic Institute Standards 14.6 Grade 1B.

(e) Conduct motor tests in accordance with CSA C22.2 No. 100, EEMAC, MG-2. each motor shall be tested for:

(i) Running current,
(ii) Hi-pot test
(iii) Winding resistance
(iv) Power factor test
(v) Surge test
(vi) Partial discharge test
(vii) Insulation resistance test

(f) Conduct instrument tests to vary operation and monitoring. Each instrument shall be tested in the energized and de-energized states.

E36.2 Shop Tests:

(a) Pursuant to E36.1, Test each pump in the manufacturer's shops over the range of operation from shut-off to run-out.

(b) Provide a certified test curve in duplicate showing the head, capacity, pump efficiency and power for each pump to the Contract Administrator for review prior to shipping Goods.

(c) Test curves to be signed by the pump manufacturer’s official responsible for the test.

(d) Final payment for the Goods will be made only after the Contract Administrator has received the certified test curve for each pump supplied.

E36.3 Installation and Field Tests:

(a) Installation:

(i) All equipment and material shall be installed in a workmanlike manner, in accordance with the manufacturer’s recommendations.

(ii) Pump supplier to provide installation instructions, in accordance with the manufacturer’s requirements, including details for anchor bolts, frames and other items to be cast into concrete work, prior to the installation of the equipment.

(iii) The Contractor shall install the equipment where shown on the Drawings and in strict accordance with the manufacturer’s instructions and in compliance with applicable local, provincial and federal codes and regulations.

(iv) Supplier to provide appurtenances, fittings, connecting piping, framing, accessories and anchor bolts not herein or elsewhere specifically mentioned or included, but necessary for the operation of the equipment package.

(v) The Contractor shall provide concrete and grout, final piping and electrical connections and other appurtenances not herein or elsewhere specifically mentioned or included, but necessary for the installation, operation and testing of the equipment, without additional payment.

(vi) All possible precautions should be taken to ensure proper alignment of equipment shafts and pipe connections to avoid transmission of piping weight reactions to the equipment at pipe connections or equipment damage due to misalignment.

(vii) Comply with requirements of Hydraulic Institute Standards for installation of all pumps.

(b) Field tests will be performed on each pumping unit as soon as possible after the Contractor has inspected the installation. Field tests will be to determine and check for the following:

(i) Capacity,
(ii) Noise (bearing, mechanical seal, cavitation, other),
(iii) Vibration,
(iv) Electrical energy supplied to the motors from motor control centre, and
(v) The liquid pumped during the field test will be raw sewage with a density taken to be 1.00 kilogram per litre.

(c) If the field pump tests indicates the Goods supplied does not meet the specified requirements, the Contractor shall promptly correct the problem at his expense to the Contract Administrator's satisfaction.

(d) If the Contract Administrator is not satisfied with the procedure of the field tests or the City's interpretation of the results thereof, the Contractor may have the tests repeated, or their interpretation referred to a referee acceptable to both the City and themself. The cost of the services of such referee shall be borne by the City if the referee rules that the tests as reported by the City were to the detriment of the Contractor but if otherwise, the Contractor shall pay the cost of the services of the referee and of repeating the tests. The decision of the referee shall be final and binding both on the City and the Contractor.

E36.4 Initial Start-Up Inspection

(a) Goods supplied under this Contract will be installed under a separate Contract. The pumping equipment supplier will not be responsible for the installation work.

(b) The Contract Administrator will provide seven (7) Calendar Days notice of requirement for an initial pump start-up inspection.

(c) Provide the services of a qualified technical representative of the pump supplier to be present at the initial startup of each pumping unit supplied under this Contract to perform the following:

(i) Inspect the pumping equipment to ensure they have been properly installed in accordance with the manufacturer's instructions.

(ii) Conduct and document amp draw, rotation and speed tests.

(iii) Check for unusual vibration or noises.

(iv) Instruct City personnel in the operation and maintenance of the Goods.

(d) Promptly correct any deficiencies with the pumping equipment at own expense to the Contract Administrator's satisfaction.

(e) The costs associated with "Testing and Initial Startup Inspection" are to be included in the Lump Sum Payment for "Process Mechanical Work" (see E37) in Form B.

(f) The price provided for "Initial Start-up Inspection" shall cover all costs associated with this item of Work including travel expenses, accommodations, meals, and wages.

E37. PROCESS MECHANICAL WORK

E37.1 Description

E37.1.1 This Specification covers the process piping, equipment, and materials for the Pumping Station Upgrade Project.

E37.1.2 The Contractor shall remove the existing pumping units, motors, piping, equipment and materials as required and install new pumping units, piping, equipment and materials as shown on the drawings or as indicated by the Contract Administrator.

E37.1.3 Mechanical drawings indicate general layout only. The Contractor is responsible for confirming all dimensions prior to manufacture of piping.

E37.1.4 All equipment and material shall be supplied by the Contractor.

E37.2 Materials:

E37.2.1 Pumping Units: Refer to E32.3.

E37.2.2 Pump Motors:

(a) Two (2) pump motors complete with driveshaft assemblies shall be supplied by the Contractor.

(b) Refer to Section E32.3 and coordinate with Division 26 – Electrical.

E37.2.3 Process Gate Valves: Refer to Section 40 05 52.

(a) Gate valves shall be supplied by the Contractor.

E37.2.4 Process Check Valves: Refer to E33 and E34

(a) Process check valves shall be supplied by the Contractor.

E37.2.5 Carbon Steel Piping and Fittings:

(a) Pump Suction and Discharge Piping: All piping shall be ASTM A106/A106M Grade B Carbon steel extra heavy wall thickness.

(b) Fabricated fittings shall conform to ASTM A106/A106M Carbon Steel Grade B, extra heavy wall thickness.

(c) Steel fittings shall be ASTM A234 Grade B Carbon Steel, extra heavy wall thickness. Dimensions shall be to ANSI B16.9.

(d) Steel flanges shall be ASTM A105, slip-on or weld-neck, dimensions to ANSI B16.5, 150#, flat-face.

(e) Drains and vents, DN50 and smaller:

(i) Thredolet, carbon steel, ASTM A105, 3000#.

(ii) Pipe, carbon steel ASTM A106-B, ERW, schedule 160, threaded ends.

(iii) Ball valve, full-port, 2-piece, NPT, 316 SS, RTFE seats, 1000 psi WOG at 200°F, blowout-proof stem, lockable lever handle.

(iv) 316 stainless steel threaded plug in valve outlet.

(f) Interior finish

(i) Carbon steel pipe, fittings and flanges shall be internally lined with shop-applied epoxy coating in accordance with AWWA C210. Holiday testing required.

(ii) Conform to manufacturer requirements regarding:

- Surface preparation including sand blasting.
- Conditions under which painting system can be applied.
- Prime and final coat thicknesses.

(iii) Acceptable products: Two (2) prime coats Devoe Bar Rust 236, 6 mil DFT per coat, with Devoe Devgrip 238 abrasion resistant finish coat, 6 mil DFT. Total lining 18 mil DFT, or approved equal in accordance with B7.

(iv) On mechanically-coupled pipe ends with ring adapters, interior finish shall be continuous over end of pipe and ring adapter, up to and including coupling gasket sealing surface.

(v) Contractor shall add additional flanged breaks as required to complete internal lining of pipe spools with elbows.

(g) Exterior finish

(i) Apply epoxy finish to the exterior of all carbon steel or ductile iron piping components in accordance with AWWA C210.

(ii) Provide a 1-year warranty from project substantial performance date for entire painting system. See D39.

(iii) Conform to manufacturer requirements regarding:

- Surface preparation including sand blasting.
- Conditions under which painting system can be applied.
- Prime and final coat thicknesses.

(iv) Piping shall be identified per existing identification standard indicating the product and direction of flow. Provide white lettering / arrows on piping painted black. Provide black lettering / arrows on all other background colours.

(v) The exterior final coat colour of all piping shall be as directed by the Contract Administrator

(h) Submit shop drawings in accordance with Section 01 33 00.

E37.2.6 Ductile iron pipes and fittings.

(a) Pipe to be in accordance with the latest edition of ANSI/AWWA C151/A21.51 and CSA B131.13 and fittings to ANSI/AWWA C110/A21.10 with cement lining.

(b) Cement lining: All pipes and fittings to have cement lining to ANSI/AWWA C104/A21.4 latest edition.

(c) Pipe class: Class 52 unless higher class is specified elsewhere.

(d) Pressure temperature rating: one thousand fifty (1,050) kPa at forty (40) degrees Celsius.

(e) Joints:

(i) Indoors use all flanged one hundred fifty (150) pounds connections and victaulic couplings.

(ii) Maintenance and connection to other pipe classes: flange adaptors or victaulic coupling.

(iii) Adaptor flanges: Ductile Iron, Grade 65-45-12, conforming to the current ASTM Standard A536 for Ductile Iron Casting. Bolt holes shall be drilled in accordance with AWWA C1115 or ASME B16.1.

(iv) Clamping screws on adaptor flanges shall be zinc-plated, heat treated steel with a minimum tensile strength of twenty-eight (28) MPa.

(f) Bolting: to ANSI/AWWA C207 (ASTM A 307 Grade B, ANSI B18.2.1) latest edition for diameters one hundred fifty (150) millimetres and larger or ASTM A193-B7 for smaller diameters. Corresponding nuts to be ASTM A 194/A 194M – Grade 2.

(g) Gaskets:

(i) Garlock 7797, or approved equal in accordance with B7.

(ii) Painting:

- Alkyd primer/sealer – One (1) coat; and
- Alkyd – G5 finish – Two (2) coats.

E37.2.7 Stainless Steel Pipe and Fittings

(a) Schedule 40 Stainless steel pipe and fittings to ASTM A312 for stainless steel pipe; Joints: NPT threaded joints; Pressure rating: 10 bar (150 psi)

(b) Stainless Steel ball valves, (8 – 80 mm): 2 piece; full port; all 304/316 stainless body, follower and ball; Adjustable stem packing, Buna-N seal and seat; hand operating lever. Pressure rating: 10 bar (150 psi). Temperature range: -20°C – 200°C

E37.2.8 Large Diameter Flanges and Adaptor Flanges:

(a) Thread-on flanges for Ductile Iron Pipe: AWWA C115 or ASME B16.1.

(b) Adaptor flanges: Ductile Iron, Grade 65-45-12, conforming to the current ASTM Standard A536 for Ductile Iron Castings. Bolt holes shall be drilled in accordance with AWWA C115 or ASME B16.1.

(c) Clamping screws on adaptor flanges shall be zinc-plated, heat-treated steel with a minimum tensile strength of 28 MPa.

(d) Submit shop drawings in accordance with Section 01 33 00.

E37.2.9 Dismantling Joints:

(a) Use Dresser style 131 or Robar dismantling joint with tie rods or equivalent in accordance with B7.

(b) Materials:

(i) Spool Piece: Steel – AISI C1010-C1015

(ii) Flange Adapter: Steel – AISI C1010-C1015

(iii) Tie Rods: Steel – ASTM A193 Grade B7.

(iv) Nuts: ASTM A194 Grade 2H

(v) Gasket: Grade 27 BUNA S

(vi) Coatings: Fusion Bonded Epoxy

E37.2.10 Link Seal

(a) EPDM rubber modular wall penetration seal designed for permanent sealing with all stainless hardware.

(b) Pressure rating: Up to 12 m head (1.3 bar)

(c) Sizing: Match manufacturer's recommendations for pipe size / penetration size ratio

(d) Approved Product: Link Seal by GPT or approved equal in accordance with B7.

E37.2.11 Pipe Supports and Hangers:

(a) Pipe supports and hangers to be as shown on the Drawings and in accordance with 05 50 00, 23 05 03, and 23 05 29.

E37.2.12 PVC Water and Drain Piping:

(a) As per Section 22 13 16.16.

E37.2.13 Domestic water valves:

(a) As per Section 22 11 16.

E37.2.14 Plumbing Specialties and Accessories:

(a) As per Section 22 05 15.

E37.2.15 Sump Pump:

(a) As per Section 22 10 10.

E37.2.16 Fasteners:

(a) Flange nuts and bolts shall be ASTM A193-B8M class 2 Type 316 stainless steel bolts, ASTM A194-8M Type 316 stainless steel extra heavy hex nuts coated with anti-galling compound.

(b) Anchors shall be Kwik-bolt or Rawl Stud ASTM A276, Type 316 stainless steel. Embedment depth and size, where not shown on the Drawings, to be as required for load being carried or resisted.

E37.2.17 Gaskets:

(a) Flange gaskets shall be full faced rubberized cloth gaskets, 3mm in thickness.

(b) Rubber gaskets for adaptor flanges shall conform to AWWA C111, Standard for Rubber-gasket Joints for Cast Iron and Ductile Iron Pressure Pipe and Fittings.

E37.2.18 Paint:

(a) As per Section 09 01 90.63.

E37.3 Construction Methods:

E37.3.1 General:

(a) Install the new station piping and pumping equipment as indicated in this specification and shown on the Drawings. Make no changes, revisions or substitutions to the layout without obtaining written approval from the Contractor Administrator.

(b) Be aware of and contend with the wastewater in the existing force main when preparing to make the required piping modifications.

(c) Prior to pumping unit installation, provide a portable sewage pump and discharge hose to remove remaining wastewater in the wet well. The wastewater shall be directed to the upstream manhole or to a sewage hauler for disposal.

E37.3.2 Flow Control and Temporary By-Pass Pumping:

(a) Provide flow control measures and temporary by-pass pumping in accordance with E11.

E37.3.3 Locating Ground Services:

(a) The contractor shall be responsible for locating all services.

(b) Costs for locating the services shall be considered to incidental to the Contract Work.

E37.3.4 Existing Pump Level Controls and Alarms:

(a) Maintain and protect existing pump controls and float type alarms, located in the wet well or in the other areas of the Station, during the execution of the work until all the new equipment is ready for installation.

E37.3.5 Pumping Units and Piping Installation:

(a) The existing pumping station contains two (2) pumps complete with motors and related piping. These pumps will be replaced with two (2) new pumps complete with new motors and new drive shafts, bases, suction elbows, and related spare parts in accordance with E35.

(b) Remove all existing piping as indicated in the Specifications and on the Drawings and replace with new piping.

(c) The Contractor will provide the installation plan to the Contract Administrator at least seven (7) days prior to commencement for approval.

(d) After new pumps and piping have been installed; all pipes and pipe welds shall be painted in accordance with E37.2.5 Carbon Steel Piping & Fittings.

E37.3.6 Miscellaneous Metal Fabrications:

(a) As per 05 50 00 and 05 14 10.

E37.3.7 Paint:

(a) As per Section 09 01 90.63.

E37.3.8 Cleanup:

(a) Cleanup construction debris and materials inside the Station at the end of each day and before pumping station operation is restored.

E37.3.9 Replacement of Water Service:

(a) The existing water service piping shall be replaced starting from the water service entrance in the basement of the station, above the motor room to the main basement area under the control room. Work to be in accordance with CW 2110. The City will provide a new water meter to be installed by the Contractor. The Contractor is responsible to supply and install a reduced pressure backflow preventer to Section 220515 and as shown on the drawings.

E37.4 Measurement and Payment:

E37.4.1 Payment will be based on Form B, “Process Mechanical Work”, as accepted and measured by the Contract Administrator.

(a) A maximum of 95% may be submitted for progress payments prior to the total completion of the associated services, including the provision of as-built drawing mark-ups and O&M manuals.

E38. MECHANICAL AND BUILDING SERVICES WORK

E38.1 Scope of Work:

(a) Provide new ventilation, cooling and heating system in accordance with the drawings and specifications, including but not limited to the following:

(i) Demolition of the existing supply fan, associated ductwork, control wiring and unit heaters.

(ii) Supply and installation of new supply and exhaust fans, duct heater and appurtenances. See Sections 23 34 00 and 23 82 39.23.

(iii) Supply and installation of new wall mounted air conditioner for the main floor. See Section 23 81 23.

(iv) Supply and installation of mixing section with dampers and controls. See Section 23 33 15, Division 40 and drawings.

(v) Supply and installation of new, insulated ductwork. See Section 23 07 13 and Section 23 31 13, Section 23 31 30 and Section 23 37 20.

(vi) Supply and installation of new outdoor air and exhaust openings complete with new louvers. See Section 23 37 20.

(vii) Supply and installation a new electric unit heaters. See Section 23 82 39.23.

(viii) Supply and installation fire extinguishers as shown on plan drawings and Section 10 44 00.

(ix) Complete testing, adjusting and air balancing for HVAC equipment. See Section 23 05 93.

(x) Start-up commissioning and testing in accordance with section 01 91 13 – General Commissioning Requirements.

E38.2 Measurement and Payment:

E38.2.1 Payment will be based on Form B, “Mechanical Building Services Work”, as accepted and measured by the Contract Administrator.

(a) A maximum of 95% may be submitted for progress payments prior to the total completion of the associated services, including the provision of as-built drawing mark-ups and O&M manuals Site Development and Restoration.

E39. EXISTING PUMPING STATION OPERATION DURING CONSTRUCTION

E39.1 The facility related to the Work is critical to the transport of wastewater for the City of Winnipeg. Under no condition shall the station pumping be shut down without prior written permission from the Contract Administrator.

E39.2 The Contractor is advised that the pumping station will be allowed to be taken out of operation only after the Contractor’s schedule of activities to complete the Work is approved by the Contract Administrator. The Contractor shall plan his/her construction activities to allow for the minimum amount of disruption time to normal operating status of the station. Temporary bypass pumping in accordance with E11 is required when the station is not in operation.

E39.3 The Combined Sewer Outfall (CSO) panel for the gate chamber immediately south of the pumping station is to be salvaged but not removed from the site. This panel is to remain powered, online, and functional throughout the project and is to be installed in the final superstructure as per the Construction Drawings. See E28.

E39.4 The Contractor shall cooperate with and provide full access at all times for City personnel to carry out maintenance and operational duties.

(a) No additional payments will be made for providing access to City forces on the Site or any potential affect City crews might have on the Contractor’s Work.

E40. TEMPORARY SHUTDOWN OF THE LIFT STATION

E40.1 Temporary shutdown of the wastewater lift station will be allowed for the following work activities.

(a) Switch-over between station pumps and temporary by pass pumps and while temporary by-pass pumping is in operation during the lift station upgrades Work.

E40.2 The Contractor is advised that there is a short time window for temporary shutdown of the station at night prior to flow levels reaching the overflow weir elevation of 227.4 m. Should installation of bypass pumping require temporary shutdown of the station, prior to the temporary shutdown, the Contractor shall complete a test shutdown of the station to verify the Contractor's time window to install their initial temporary by-pass pumping.

E40.3 All shutdowns must be reviewed and approved by the Contract Administrator prior to the shutdown. Prepare and submit shutdown plans to Contract Administrator a minimum of fifteen (15) Working Days prior to proposed shutdown, with the estimated date included in the Contractor's by-pass pumping plan. The by-pass pumping plan and OSS submittals shall be issued ten (10) Working Days prior to the planned shutdown and commencement of Work (see E11). Shutdown plans must a minimum include:

(a) Location and duration of shutdown;

(b) Purpose/description of the planned shutdown;

(c) List of all relevant stakeholders;

(d) Risks and contingency planning;

(e) Outline of shutdown plan;

(f) Monitoring requirements;

(g) Key data and elevations;

(h) Assurance of continued operation of the CSO panel as per E39.

E40.4 All gate operation and other control relating to the wastewater process will be by the City.

E40.5 The Contractor shall monitor the upstream system at all times to ensure the stored level of wastewater will not exceed the critical basement elevation.

E40.6 Schedule work activities requiring shutdown of pumping operations to be done at night, unless otherwise authorized by the City and Contract Administrator in writing.

E40.7 Water and Waste Department, Collection System personnel will be available to aid the Contractor for shutdown of the wastewater pumping station to facilitate transition of station pumping to the Contractor's temporary pumping system.

E40.8 Coordination of the lift station shutdown and any associated Work described herein is incidental to Temporary By-Pass Pumping.

E41. COMMISSIONING

E41.1 The Manufacturer's Technical Representative, installation Contractor and Contract Administrator shall jointly commission the pumps in accordance with the written procedure for commissioning. The installation Contractor will provide sufficient manpower for the duration of the commissioning period. The installation Contractor will make necessary adjustments during commissioning to put the pumps into continuous operation.

(a) The Contract Administrator will request that the equipment be operated to demonstrate that it performs as specified. If the Contract Administrator notes deficiencies in the installation, the deficiency will be corrected immediately by the installation Contractor. The installation Contractor will advise the Contract Administrator, in writing, when the deficiencies have been corrected. If the Contract Administrator notes deficiencies in the supplied products, the deficiency shall be corrected immediately by this Contractor.

(b) Deficiencies of a serious nature, as determined by the Contract Administrator, shall be corrected by the manufacturer's representative.

E41.2 Provide the services of a qualified Manufacturer's technical representative to be present at the commissioning of each pumping unit supplied under this Contract to perform the following:

(a) Inspect the pumping equipment to ensure they have been properly installed in accordance with the manufacturer's instructions. If the installation is not in order, the technical representative shall provide instruction for the installation Contractor. The equipment shall be started and run, and adjustments made at this time;

(b) Conduct and document amp draw, rotation and speed tests;

(c) Check for unusual vibration or noises;

(d) Instruct City personnel in the operation and maintenance of the pumps; and

(e) Inspect and document vibration and bearing temperature reading.

E41.3 City of Winnipeg commissioning forms must be used. Forms are provided in Appendix G. The forms provided are subject to change prior to commissioning.

E41.4 After the equipment has been installed and prior to final acceptance, protect the equipment from damage. Ensure that protection measures are to the satisfaction of the Contract Administrator.

E41.5 The price provided for "Commissioning" shall cover all costs associated with this item of Work including travel expenses, accommodations, meals and wages.

E42. TRAINING

E42.1 Commissioning and training shall be combined. Training sessions shall be in accordance with 01 91 13.18 and shall be documented and include the following as a minimum.

(a) Functional description of equipment operation;

(b) Identification of components and their purpose;

(c) Confirmation of operating parameters and machine limits;

(d) Review of routine maintenance procedures and maintenance supplies;

(e) Trouble shooting procedures, limits of operator and maintenance competence;

(f) Long-term maintenance procedures, including anticipated overhaul frequencies; and

(g) Disconnection and removal of motors, drive shafts and pumps for maintenance Work.

E42.2 Training for the pumping equipment shall be conducted on Site, in conjunction with commissioning. The Contractor shall provide a qualified instructor as well as the necessary course materials.

E42.3 Training shall be provided in one (1) session for operation staff and one (1) session for maintenance staff.

E42.4 Provide a total of five (5) hardcopy training manuals in 3-ring binders along with an electronic copy for attendees of each session.

E42.5 No additional payment will be made by the City to an equipment supplier for the training. Cost to be included in the lump sum for the specific equipment.

E43. DRIVEWAY CONSTRUCTION

E43.1 References

(a) City of Winnipeg Specification CW 3150.

(b) Contract Drawings.

E43.2 Driving surface to be constructed according to CW 3150 and CW 3110.

E43.3 Measurement and Payment

E43.3.1 Driveway Construction will be paid for under the Contract Lump Sum Price for "Civil Works Complete". Said price shall be payment in full for supplying all materials and performing all

operations herein described and all other items incidental to the Work included in this Specification.

E44. TEMPORARY SURFACE RESTORATION AND MAINTENANCE

E44.1 Further to CW 1130, where permanent surface restorations cannot be made due to cold weather, the Contractor shall temporarily restore surfaces as follows:

(a) backfill and level boulevards and grassed areas to match existing surface elevations,

(b) cap excavations in concrete pavement with a 100 millimetre thick layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310,

(c) cap excavations in sidewalk pavement with a 50 millimetre thick layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310,

(d) insulate temporary concrete where required during 48hr curing period,

(e) where curb has been removed as part of the pavement cut pour temporary curb using "Concrete for Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310.

(f) remove all temporary pavements prior to permanent restorations.

E44.2 The Contractor shall monitor and maintain temporarily restored surfaces as required until permanent restoration is complete.

E44.3 If, in the opinion of the Contract Administrator, temporarily restored surfaces are not being adequately maintained or were not properly constructed and pose a danger to the public, maintenance or reconstruction will be done by the City forces with no advance notification to the Contractor.

E44.4 Backfill Under Temporary Surface Restorations

(a) Use class 2 backfill in excavation under temporary street pavement and sidewalk where Class 3 backfill cannot be jetted and flooded due to cold weather.

(b) Class 2 backfill may be compacted in 600mm lifts where backhoe operated pneumatic plate compactors are used.

(c) Jet and flood Class 2, Class 3 and Class 5 backfilled excavations in spring when ground is not frozen prior to permanent restoration.

E44.5 All costs associated with the maintenance or reconstruction of temporary pavement incurred by the City shall be deducted from future payments to the Contractor.

E44.6 Temporary Surface Restorations shall be considered incidental to the Works of this Contract and no separate payment will be made for this item.

E45. STEEL BOLLARDS

E45.1 Description

E45.1.1 This Specification shall cover the supply and installation of the new steel bollard to be installed outside of the new building superstructure (north west corner).

E45.2 Materials and Construction Methods

E45.2.1 Contractor to supply and install the new steel bollard in accordance with the detail shown on the Drawings.

E45.3 Measurement and Payment

E45.3.1 The Supply and Installation of Steel Bollard shall be measured and paid for at the Contract Lump Sum price for "Civil Works Complete", which shall be payment in full for supplying all materials and for performing all operations as described herein and all other items incidental to the Work

E46. SNOW CLEARING

E46.1 All required snow clearing shall be performed by the Contractor at his own expense.

E46.2 The Contractor will be required to perform snow clearing and sanding operations on City streets and sidewalks within the Site where access to City snow clearing and sanding crews is blocked due to construction activities or where construction activities have created unsafe, icy conditions.

E46.3 Snow built-up on sidewalks and roadway shall be maintained to the condition of the surrounding sidewalks and roadways.

PART F - SECURITY CLEARANCE

F1. SECURITY CLEARANCE

F1.1 Each individual proposed to perform the following portions of the Work:

(a) any Work on private property;

F1.1.1 Each Individual shall be required to obtain a Police Information Check from the police service having jurisdiction at their place of residence. Or

(a) Sterling BackCheck – for existing account holders, log into your account to send individual invitations to employees requiring security clearance. For those that do not have an account, click on the following link to open an account: https://forms.sterlingbackcheck.com/partners/platform2-en.php?&partner=winnipegcity; or

(b) Commissionaires (Manitoba Division), forms to be completed can be found on the website at: https://www.commissionaires.ca/en/manitoba/home; or

(c) FASTCHECK Criminal Record & Fingerprint Specialists, forms to be completed can be found on the website at: https://myfastcheck.com

F1.2 The following is a link to information for obtaining the Police Information Check from the City of Winnipeg Police Service. http://winnipeg.ca/police/pr/PIC.stm

F1.2.1 The Police Information Check shall include a Vulnerable Sector Screening. This can be obtained by following the link below http://winnipeg.ca/police/pr/PIC.stm

(a) Individuals will need to state in the form, that they may be working in City of Winnipeg pools, libraries and community centres;

F1.2.2 The original Police Information Check (Form P–612) will be provided by the Winnipeg Police Service to the individual applicant. The original has a validation sticker from the Winnipeg Police Service in the top right hand corner. The applicant shall:

(a) Provide the original Police Information Check (Form P–612) to the Contract Administrator.

F1.3 Prior to the award of Contact, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Police Information Check obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform such Work.

F1.4 Any individual for whom a Police Information Check is not provided, or for whom a Police Information Check indicates any convictions or pending charges related to property offences or crimes against another person will not be permitted to perform any Work specified in F1.1.

F1.5 Any Police Information Check obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.

F1.6 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require an updated Police Information Check. Any individual who fails to provide a satisfactory Police Information Check as a result of a repeated Police Information Check will not be permitted to continue to perform any Work specified in F1.1.