THE CITY OF WINNIPEG

TENDER

TENDER NO. 301-2024

CONSTRUCTION OF A NEW WASTEWATER LIFT STATION - CENTERPORT SOUTH REGIONAL WATER AND WASTEWATER SERVICING PHASE 1A (CONTRACT 1A)

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B1. CONTRACT TITLE

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B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 19, 2024.

B2.2 The Contract Administrator or the Manager of Purchasing may extend the Submission Deadline by issuing an addendum at

B2.3 any time prior to the time and date specified in B2.1.

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Bidder may view the Site without making an appointment.

B3.2 At a minimum, the Bidder's personnel viewing the Site shall ensure they are wearing high visibility vests to clearly identify themselves as Contractor personnel.

B3.3 The Bidder/Proponent is responsible for inspecting the Site, the nature of the Work to be done and all conditions that might affect their Bid/Proposal 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. BIDDERS' CONFERENCE

B4.1 Further to C3.1, the Contract Administrator will hold a Bidders' conference at KGS Group's south office at 895 Waverley street at:

(a) 10:00 am on July 3, 2024.

(b) 10:00 am on July 4, 2024.

B4.2 If attending, it is recommended to arrive 15 min ahead of the time(s) listed above to be directed to the correct meeting room. Attending the pre-bid meeting is not mandatory.

B4.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Bidders' Conference unless that information or interpretation is provided by the Contract Administrator in writing.

B5. ENQUIRIES

B5.1 All enquiries shall be directed to the Contract Administrator identified in D7.

B5.2 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.

B5.3 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.

B5.4 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.

B5.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B5 unless that response or interpretation is provided by the Contract Administrator in writing.

B5.6 Any enquiries concerning submitting through MERX should be addressed to:
MERX Customer Support
Phone: 1-800-964-6379
Email: merx@merx.com

B6. CONFIDENTIALITY

B6.1 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.

B6.2 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.

B7. ADDENDA

B7.1 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.

B7.2 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.

B7.3 Addenda will be available on the MERX website at www.merx.com.

B7.4 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.

B7.5 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.

B7.6 Notwithstanding B5, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D7.

B8. SUBSTITUTES

B8.1 The Work is based on the Plant, Materials and methods specified in the Tender.

B8.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B8.3 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.

B8.4 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.

B8.5 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.

B8.6 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.

B8.6.1 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.

B8.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

B8.8 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 B19.

B8.9 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.

B9. BID COMPONENTS

B9.1 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.

B9.2 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.

B9.3 The Bid shall be submitted electronically through MERX at www.merx.com.

B9.3.1 Bids will **only** be accepted electronically through MERX.

B9.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B19.1(a).

B10. BID

B10.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.

B10.2 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.

B10.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B10.2.

B10.3 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.

B10.4 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.

B10.4.1 The name and official capacity of all individuals signing Form A: Bid/Proposal should be entered below such signatures.

B10.5 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.

B11. PRICES

B11.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B11.1.1 Notwithstanding C12.2.3(c), prices on Form B: Prices shall include the Manitoba Retail Sales Tax (MRST, also known as PST), GST shall be extra where applicable.

B11.2 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.

B11.3 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.

B11.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B11.5 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.

B11.5.1 Bidders are advised that the calculation indicated in B19.4 will prevail over the Total Bid Price entered in MERX.

B12. DISCLOSURE

B12.1 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.

B12.2 The Persons are:

(a) Bothar Inc. – Constructability review of shaft construction and tunnelling works.

(b) Tydon Contracting Ltd. – Constructability review of shaft construction and hand tunnelling works.

(c) Xylem – Provided information and budget pricing for packaged FRP lift station and process pumps

(d) Federated Co-Operatives Limited – Provided information and budget pricing for propane tank and vaporizer

(e) Marwin Agencies Ltd. – Provided information and budget pricing for backflow preventor (lift station domestic water system)

(f) Robinson Supply – Provided budget pricing for tankless water heater

(g) GLP Canada – Provided information and budget pricing for BARD AC unit

(h) Summit Valves – Provided information and budget pricing for control valve and Rotork actuator

(i) Acculift – Provided budget pricing for electric chain hoist

(j) E.H. Price – Provided budget pricing for HVAC equipment

(k) Sever L. Construction Cost Consultants Inc. – Provide M&E Class 1 construction cost estimate

(l) Dexon Canada Air Systems Inc. – Provided information and budget pricing for DEXON air handling unit

(m) Midwest Engineering – Provided information and budget pricing for domestic water pumping components

(n) Victaulic – [waiting for] Provided selections and budget pricing for Valve Chamber process piping components.

(o) Strong Electric Manufacturing Inc. – CSTE Budgetary Pricing

(p) Schnieder Electric – Budgetary Pricing and information on the following items:
  (i) Motor Control Center MCC-L74
  (ii) Distribution Panel DP-L71
  (iii) Distribution Panel DP-L72
  (iv) Load Bank LDB-L72
  (v) Transfer Switch ATS-L73

(q) Pritchard Engineering Co. LTD – Generator Budgetary Pricing

(r) Bell – MTS Service Application

(s) Manitoba Hydro – Service Application

(t) MIRUS International Inc – Harmonic Filter

(u) W.D. Industrial – Provided budget pricing for Liberty sump pumps

(v) Proform Construction Products – Information and pricing on precast wet well

(w) Georg Fischer – Restrained flexible joint information and pricing

(x) Equinox – Water cistern pricing and information

(y) White Spruce Archaeology Inc. – Conducted preliminary archaeological investigation of the lift station site.

B13. CONFLICT OF INTEREST AND GOOD FAITH

B13.1 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.

B13.2 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.

B13.3 In connection with their Bid, each entity identified in B13.2 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.

B13.4 Without limiting B13.3, 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.

B13.5 Without limiting B13.3, 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 B13.4 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.

B13.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in their sole discretion.

B14. QUALIFICATION

B14.1 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.

B14.2 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, Purchasing Division website https://www.winnipeg.ca/matmgt/Templates/files/debar.pdf

B14.3 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 B14.5 and D9).

B14.4 Further to B14.3(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, Purchasing Division website at http://www.winnipeg.ca/matmgt/.

B14.5 Further to B14.3(d), the Bidder acknowledges they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at Accessibility Training for anyone that may have any interaction with the public on behalf of the City of Winnipeg.

B14.6 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.

B14.7 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.

B15. BID SECURITY

B15.1 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, Purchasing Division website at https://www.winnipeg.ca/MatMgt/templates/files/Bidsecurity.pdf.

B15.2 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 B15.2(b).

B15.3 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 B19.1(a).

B15.4 Bonds passing the verification process will be treated as original and authentic.

B15.4.1 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.

B15.5 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.

B15.6 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.

B16. OPENING OF BIDS AND RELEASE OF INFORMATION

B16.1 Bids will not be opened publicly.

B16.2 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.

B16.3 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.

B16.4 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).

B16.4.1 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.

B17. IRREVOCABLE BID

B17.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B17.2 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.

B18. WITHDRAWAL OF BIDS

B18.1 A Bidder may withdraw their Bid without penalty at any time prior to the Submission Deadline.

B19. EVALUATION OF BIDS

B19.1 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 B14 (pass/fail);

(c) Total Bid Price;

(d) economic analysis of any approved alternative pursuant to B8.

B19.2 Further to B19.1(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.

B19.3 Further to B19.1(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.

B19.4 Further to B19.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

B19.4.1 Further to B19.1(a), 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.

B19.4.2 Bidders are advised that the calculation indicated in B19.4 will prevail over the Total Bid Price entered in MERX.

B20. AWARD OF CONTRACT

B20.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B20.2 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.

B20.2.1 Without limiting the generality of B20.2, 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.

B20.3 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 B19.

B20.3.1 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, Purchasing 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.

(a) Further to C2.4:

(i) Specifications shall govern over the Geotechnical Baseline Report (GBR)

(ii) The GBR shall govern over the Geotechnical Data Report (GDR)

(b) Further to C3.1(a), revise clause (ii) with the following:

(i) The nature of the surface and subsurface conditions at the Site and reviewed the GBR and GDR appended to these Specifications.

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. BACKGROUND AND PROJECT INFORMATION

D3.1 CentrePort Canada is North America's largest tri-modal port shared between the City of Winnipeg and the RM of Rosser. The goal of this project is to bring regional water and wastewater infrastructure to the southern portions of CentrePort Canada (CentrePort South) located within the City of Winnipeg. These lands, previously referred to as Airport Area West (AAW), will ultimately result in an additional 1,457 hectares of serviced lands planned for commercial and residential development.

D3.2 The first phase of the CentrePort Program (referred to as Phase 1A) includes four (4) separate construction contracts, Three (3) associated with regional wastewater collection, and one (1) associated with regional water supply.

(a) The current project (Contract 1A) includes the installation of a new wastewater lift station (Details in Section D4). The lift station will receive wastewater flows from a 1200 mm Wastewater Interceptor Sewer (Contract 3). The lift station will in turn pump the wastewater flows to an interceptor sewer located at the intersection of Brookside Boulevard and Inkster Boulevard via a 450 mm force main (Contract 2A).

(b) Regional Water infrastructure will be supported by a feeder main contract.

(c) The other three contracts are being constructed separately from the current project under the following City of Winnipeg Tenders are:

(i) Tender 990-20223B - Interceptor Sewer (Contract 3)

(ii) Tender 427-2024 – Force Main (Contract 2A)

(iii) Tender 220-2024 – Feeder Main (Contract (4A)

Additional information on the above tenders can be found at the City of Winnipeg website at Bid Opportunities - Purchasing - Corporate Finance - City of Winnipeg

(d) The four contracts associated with Phase 1A are intended to support the initial years of development of the CentrePort South lands. As development expands, future regional infrastructure will be required including an expanded lift station and a second 900 mm force main. The Drawings associated with the current Phase 1A lift station include elements of the future infrastructure within the presented designs. However, the future expanded lift station and second 900 mm force main are not being constructed as part of the current phase 1A contracts.

D3.3 To address the interface between the three phase 1A wastewater contracts, the current lift station contract includes the following elements

(a) The current contract includes 17 m of hand mined 1200 mm tunnel extending to property line to connect to the 1200 mm hand mined tunnel being installed under the interceptor contract (Tender 990-2022B). The Interceptor tender has closed and is anticipated to be awarded during the tendering process for current lift station project. The successful bidder for the Interceptor Contract will be available on the City Web Site upon award of that contract.

(b) The current contract includes approximately 60 m of 450 mm force main that will connect to the 450 mm force main being installed by the force main contract (Contract 2A).

D3.4 Portions of the Site and areas adjacent to the site will be occupied by other contractors in 2024 and early 2025 working on the interceptor sewer and force main contracts. Critical Stages have been included within the Interceptor Sewer and Force Main contracts to ensure that their work is completed with sufficient time for the successful lift station Contractor to complete their Work. A figure is included in Appendix C (Contract Site Extents Figure) that presents the below working areas of the various contractors and the associated timelines.

(a) The Bidder may assume that the following areas will be available within 15 calendar days of the following dates:

(i) To accommodate the hand mining tunnel Works in the current contract, the Interceptor Sewer contract (Tender 990-2023B) requires that their portion of the 1200 mm hand mined tunnel be installed to property line (complete with temporary bulkhead) by December 20, 2024.

(ii) To accommodate the force main Works in the current contract, the Force Main Contact (Tender 427-2024) requires that the force main along Sturgeon Access will be installed between June 15, 2025 and September 17, 2025

(iii) To accommodate the drainage, final grading and restoration Works, the Interceptor Sewer contract (Tender 990-2023B) requires that all works immediately adjacent to the Site will be completed by September 17, 2025.

D3.5 Commissioning of the lift station will be completed using the feeder main, interceptor sewer and force main.

(a) An actuated valve is being installed on the feeder main as part of the current contract. The valve will release water into a piped connection to Manhole 4 on the interceptor sewer. The purpose of the valve is to add supplemental water in the early years of development when wastewater flows are below the optimum level for the pumps.

(b) During commissioning, the valve will be used to fill the interceptor sewer upstream of the station to support the commissioning of the lift station.

D3.6 The project Site is located in Winnipeg

(a) Winnipeg's geographical location results in highly variable seasonal temperatures that may affect construction. During the winter the ground freezes to approximately 2.5 meters depth, and the impact of low temperatures must be considered for construction methods, equipment operation and rates of production.

(b) Winnipeg is located beneath what was once glacial Lake Agassiz and lies in a flood plain at the confluence of the Red and Assiniboine Rivers, which influences both the geotechnical and hydrologic characteristics of the region.

D3.7 A geotechnical investigation was undertaken to determine soil stratigraphy and evaluate the competency of the underlying bedrock including strength, hardness, extent of fracture, water bearing potential and rock quality designation index. The findings of the geotechnical investigation are summarized in the attached Geotechnical Data Report (GDR) and presented in Appendix A.

D3.8 A Geotechnical Baseline Report (GBR) which addresses subsurface conditions has been developed for the project and is presented in Appendix B.

D3.9 The lift station site land is currently owned by the Province of Manitoba. This land is anticipated to be purchased by the City of Winnipeg prior to construction beginning in October 2024.

D4. SCOPE OF WORK

D4.1 The Work to be done under the Contract shall consist of the construction of a new dry well/wet well type wastewater pumping station complete with a backup generator and other site amenities. The complete Scope of Work is described in the Drawings and Specifications.

D4.2 The major components of the Work are as follows:

(a) Shaft construction to accommodate the Work associated with this project.

(b) Connection of a new 1200 mm PVC sewer to a sewer installed by the interceptor construction team (Contract 3) at the property line of the lift station site.

(c) A new 3.65 m diameter precast concrete wet well to receive the wastewater from the sewer.

(d) A new 3.65 m diameter Fibreglass Reinforced Plastic (FRP) dry well complete with pumps, valves, access platforms, sump, sump pump, motors and other appurtenances to pump the flow from the wet well to the valve chamber.

(e) A cast in place concrete valve chamber complete with valving and other appurtenance to allow for flow routing to a 450 mm force main.

(f) Approximately 60 m of 450 mm force main that is to connect to a force main system to be installed by the force main construction team (Contract 2A).

(g) A 8.3 m X 8.3 m superstructure above the dry well to house electrical and mechanical equipment.

(h) A propane fuelled backup generator, vaporizer and propane tank to provide backup power to the lift station and superstructure.

(i) Raising of the existing site between 1.5 to 2 m using imported fill and installation of gabion walls on the east and west sides of the project site.

(j) Providing a gravel driving surface for the site.

(k) A water cistern to provide wash down/site usage water to the superstructure.

(l) All electrical and mechanical works needed for a fully functional dry well/wet well lift station.

(m) Land drainage sewer and catch basins to provide site drainage.

D4.3 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

D5. SITE INVESTIGATION DUE DILIGENCE AND RISK

D5.1 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.

D6. DEFINITIONS

D6.1 When used in this Tender:

(a) **"AWWA"** means American Water Works Association

(b) **"ATS"** means Automatic Transfer Switch;

(c) **"Benchmark"** is a permanent reference Control Point established by the Contractor;

(d) **"CEPA"** means Canadian Environmental Protection Act;

(e) **"CEAA"** means Canadian Environmental Assessment Act;

(f) **"Controlled Low Strength Material"** (CLSM) is cement stabilized fill, per CW 2160;

(g) **"Control Point"** means a marker established as a referenced point for survey methods;

(h) **"CPM"** means Critical Path Method;

(i) **"CP"** means Control Panel;

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

(k) **"CSSR"** means Customer Service Standard Regulation;

(l) **"CSTE"** means Customer Service Termination Enclosure;

(m) **"DP"** means Distribution Panel;

(n) **"DR"** means Dimension Ratio;

(o) **"FRP"** means Fiberglass Reinforced Plastic;

(p) **"GBR"** means Geotechnical Baseline Report;

(q) **"GDR"** means Geotechnical Data Report;

(r) **"HDPE"** means High Density Polyethylene;

(s) **"HMI"** means Human-Machine Interface;

(t) **"ILO"** means International Labour Organization;

(u) **"LDS"** means Land Drainage Sewer;

(v) **"MCC"** means Motor Control Center;

(w) **"NMS"** means National Master Specification;

(x) **"PPE"** means Personal Protective Equipment;

(y) **"PLC"** means Programable Logic Controller;

(z) **"PVC"** means Polyvinyl Chloride;

(aa) **"P&ID"** means Process and Instrumentation Diagram;

(bb) **"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;

(cc) "**Site**" means the lands and other places on, under, in or through which the work is to be performed;

(dd) **"SPMDD"** means Standard Proctor Maximum Dry Density;

(ee) **"UDHR"** means United Nations Declaration of Human Rights;

(ff) **"USC"** means Unified Soil Classification;

(gg) **"VFD"** means Variable Frequency Drive;

(hh) "**Work**" or "**Works**" means the carrying out and the doing of all things, whether of a temporary or permanent nature, that are to be done pursuant to the Contract and, without limiting the generality of the foregoing, includes the furnishing of all Plant, Material, labour and services necessary for or incidental to the fulfilment of the requirements of the Contract, including all Changes in Work which may be ordered as herein provided.

D7. CONTRACT ADMINISTRATOR

D7.1 The Contract Administrator is KGS Group, represented by:

Harman Mallhi, P.Eng.

Phone: 431-275-9868

hmallhi@kgsgroup.com

D7.2 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.

D8. CONTRACTOR'S SUPERVISOR

D8.1 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.

D9. ACCESSIBLE CUSTOMER SERVICE REQUIREMENTS

D9.1 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.

D9.1.1 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.

D9.1.2 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.

D10. UNFAIR LABOUR PRACTICES

D10.1 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.

D10.2 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.

D10.3 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.).

D10.4 Failure to provide the evidence required under D10.3, may be determined to be an event of default in accordance with C18.

D10.5 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.

D10.5.1 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.

D10.5.2 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 D10.5. The City may also hold back the amount of the Unfair Labour Practice Penalty from payment for any amount it owes the Contractor.

D10.5.3 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.

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, Purchasing Division website at http://www.winnipeg.ca/matmgt/Safety/default.stm

D13.3 Notwithstanding B14.4 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 City shall provide and maintain the following owner controlled insurance coverage to remain in place at all times during the performance of the Work:

(a) wrap up liability insurance, in the amount of at least ten million dollars ($10,000,000.00) inclusive. The insured parties shall include the City, Contractor and all subcontractor whether named or unnamed in the policy and all others having an insurable interest in the Work. Manitoba, its ministers, officers, employees and agents to be listed as additional insureds. Wrap up liability insurance to include but not limited to:

(i) products and completed operations
(ii) blanket contractual liability
(iii) unlicensed motor vehicle liability,
(iv) sudden and accidental pollution liability with a minimum sublimit of $1,000,000
(v) City and Contractors protective coverage
(vi) blasting, tunneling or the removal or weakening of support of any land, whether such support be natural or otherwise,
(vii) no XCU exclusion,
(viii) cross liability clauses
(ix) non-owned automobile liability

(b) Wrap up liability insurance shall be maintained from the date of the commencement of the Work until the date of Total Performance of the Work and shall include an additional twenty-four months completed operations coverage that will take affect after Total Performance. .

(c) The City reserves the right to add, delete, revise and redefine insurance requirements and deductibles at any time, at its sole discretion, or as necessitated by the placement, extensions/renewals of the insurance policy, during the term of the Project.

D14.2 Deductibles under the policy not to exceed $50,000 maximum of any one loss and shall be borne by the Contractor;

D14.3 The Contractor shall provide and maintain the following insurance coverage at all times during the performance of the Work and throughout the warranty period:

(a) Wrap up general liability insurance written in the joint names of the City, the Contractor, all subcontractors, the consultants and subconsultants involved in the Project with the limit of liability not less than five million dollars ($5,000,000) inclusive per occurrence. Such policy shall provide coverage for bodily injury, personal injury, property damage and products and completed operations. Wrap up liability insurance to also and include evidence of a cross liability clause, sudden and accidental pollution in the minimum amount of $1, 000,000 contractual liability and 24 months completed operations which will take effect after Total Performance. The insurance maintained by the Contractor shall be primary and on-

contributory to any other insurance. Manitoba its ministers, officers, employees and agents shall be added as additional insured.

(b) All risks Course of Construction insurance including equipment breakdown and testing and commissioning in the amount of one hundred percent (100%) of the total Contract Price, written jointly in the name of the Contractor and the City, at all times during the performance of the Work until the date of Substantial Performance and if all testing and commissioning has not been completed at that time, the policy shall extend until such time as all testing and commissioning has been completed.

(c) 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 $5,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.

(d) All risks property insurance for all equipment, machinery, field offices, portable toilets and tools used on the Project that may be owned, rented, leased or borrowed.,

D14.4 Deductibles shall be borne by the Contractor.

D14.5 All policies shall be taken out with insurers licensed to carry on business in the Province of Manitoba.

D14.6 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.

D14.7 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 15.1 (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 D7.1 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 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 at least te n (10) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract.

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

(a) A critical path method (CPM) schedule for the work; and

(b) A Gantt chart for the Work based on the CPM schedule;

(c) a daily manpower schedule for the Work;

as acceptable by the Contract Administrator.

D18.3 Further to D18.2(a), the CPM schedule shall clearly identify start and completion dates of the following Work items:

(a) Commencement date

(b) Mobilization

(c) Utility locates

(d) Wet Well/Dry Well Shaft

(i) Excavation and support

(ii) Working slab

(e) Gravity Sewer and sewer connection

(f) Wet Well/Dry Well Installation

(g) Superstructure Construction

(h) Valve Chamber Construction

(i) Force main Construction

(j) Testing of Lift Station

(k) Commissioning of Lift Station

(l) Training

(m) Additional Critical Dates

(n) Substantial Performance

(o) Site Restoration

(p) Operations and Maintenance Manuals

(q) Total Performance

(r) All construction activities on the lift station site that require stripping, grubbing and disposal of topsoil work. A minimum two – week notice must be provided to Manitoba Metis Federation (MMF) prior to commencement of any stripping, grubbing and disposal of topsoil work.

D18.4 The Contractor shall update the schedule and provide it to the Contract Administrator prior to each weekly construction site meeting for review and discussion at the meetings.

D19. DEWATERING AND DRAINAGE PLAN

D19.1 In addition to C6 and in co-ordination with the E section, the Contractor is solely responsible for planning, implementing, maintaining and monitoring an effective dewatering and drainage system for the Site during performance of the Work.

D19.2 The Contractor is responsible for the control, diversion, storage and pumping of all water including without limitation rain, snow melt, groundwater, leaking infrastructure and water in pipes throughout all stages of the Work.

D19.3 The Contractor shall submit a Dewatering and Drainage Plan to the Contract Administrator at least five (5) Calendar Days prior to commencement of Work at the Site. The Contractor must obtain approval of the Dewatering and Drainage Plan prior to implementation. If changes are made to the dewatering plan during construction, the Contractor shall submit these changes to the Contract Administrator for approval in advance of implementation of the changes. The Dewatering and Drainage Plan submittal shall include the following at a minimum:

(a) a sketch or sketches of the Site clearly showing the drainage scheme and flow paths including temporary features such as ditches/swales or piping, pump locations, storage elements and connections or outlets to the existing land drainage system;

(b) information for all pipe used including material, diameter, length, fittings, connections, restraints, blocking, protection features;

(c) dimensions for all swales and ditches to be used;

(d) description of all erosion protection measures and material used;

(e) monitoring and maintenance plan including Contractor's designated contact person responsible for dewatering and drainage, inspection intervals and means for supervising and monitoring pumping activity;

(f) any other related information reasonably requested by the Contract Administrator.

D19.4 Do not pump or drain any water containing excessive suspended materials or harmful substances into waterways, sewers or other drainage systems. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with governing authority's limitations and requirements.

D19.5 The Contractor shall be responsible for all damages within or outside the Site directly resultant from Contractor's actions, omissions or neglect which may be caused by or which may result from water backing up, flowing through, overflowing or excessive surcharge of drainage systems.

D19.6 The Contractor shall organize and bear all costs related to the effective dewatering of excavations and all other pumping and drainage necessary for the proper execution of the Work, including keeping the pipes, structures, shafts, excavations and trenches free of undesirable accumulations of groundwater, seepage, surface water, melt water or rainwater.

D19.7 All dewatering equipment and discharge hoses shall be protected from freezing and shall remain fully operational in freezing weather.

D19.8 The Contractor is responsible for dewatering and disposing of all water drained or pumped as above in compliance with all local, Municipal, Provincial and Federal environmental regulations, ordinances, bylaws, etc., as reviewed and accepted by the Contract Administrator. Provide documentation, in advance of discharging, indicating that authority has been granted to take and/or discharge effluent water into any drainage ditch or other area. Contractor shall develop and implement at their own cost any filtration, settlement or other acceptable treatment methods required prior to disposal.

D19.9 Further to D19.8, the Contractor is responsible for water sampling and testing prior to discharging to determine what, if any, treatment is required prior to disposal and to ensure all local, Municipal, Provincial and Federal environmental regulations and by-laws are adhered to. A record of water quality must be provided to the Contract Administrator prior to disposal.

D19.10 Keep all drainage channels, gutters, swales, ditches, sewers, culverts and disposal areas free of silt, sand, debris and gravel and remove such deposits as required and/or as directed by the Contract Administrator.

D19.11 All Work associated with the Dewatering and Drainage plan (with the exception of water sampling) will be considered incidental to Site Development and Restoration.

D19.12 Costs associated with water sampling, testing, and permitting prior to discharging as required shall be paid for under the Contract Unit Price for “Allowance for Material Sampling and Testing”. Costs will be based on actual invoiced costs to complete the Work with allowable Contractor mark-ups in accordance with the General Conditions.

D20. SITE DEVELOPMENT PLAN

D20.1 The Contractor shall provide the Contract Administrator with a Site Development Plan at least ten (10) Business Days prior to the commencement of any Work on the Site.

D20.2 The work shall consider the Work by Others in Section D23 and their associated footprint in presented in Appendix C (Contract Site Extents Figure)

D20.3 The Site Development Plan shall at minimum include:

(a) Laydown areas

(b) Location of spoil material

(c) Location of site trailer

(d) Planned construction staging/ equipment needs for the various elements of the Work including but not limited to shaft construction, hand mining of gravity sewer, lift station installation, super structure construction, valve chamber construction, force main construction, construction of Gabion wall, Backfilling site, and installation of ancillary structures (water reservoir, generator and propane tank etc.).

(e) Vehicle access/egress locations

(f) Contractor parking,

D20.4 Note that City owned lands outside of the Site may be used for laydown of materials and equipment, however any disturbed lands must be restored to preconstruction condition in accordance with Site Development and Restoration E6. Coordinate with the Contract Administrator to determine which City lands can be used for additional laydown areas. Furthermore, some areas around the site may not be accessible to the Contractor, refer to Appendix C – Contract Site Extents Figure.

SCHEDULE OF WORK

D21. EXPEDITED SHOP DRAWINGS AND UTILITY LOCATES

D21.1 Further to NMS Section 01 33 00, in order to expedite Shop Drawings with critical timeliness, the lowest responsive Bidder, as outlined in B16, will be permitted, after receiving written approval from the Contract Administrator, to arrange for the preparation of Shop Drawings for the following items with critical timelines:

(a) Shaft Construction/Shoring

(b) Slide gate

(c) Valves

(d) Dry Well, Pumps and Associated Components

(e) Customer Service Termination Enclosure (CSTE-L70)

(f) Generator (GEN-L72)

(g) Distribution Panels (DP-L71 & DP-L72)

(h) Load bank (LDB-L72)

(i) Automatic Transfer Switch (ATS-L73)

(j) Motor Control Center (MCC-L74)

(k) VFD Enclosures (VFD-L01 & VFD-L02)

(l) Harmonic Filters (HF-L01 & HF-L02)

(m) PLC Panel (CP-L81)

(n) HVAC Starter Panel (CP-L601)

D21.2 In order to expedite utility locates, the lowest responsive Bidder, as outlined in B16, will be permitted, after receiving written approval from the Contract Administrator, to arrange for utility locates for the Site.

D21.3 If Award is made to the lowest responsive Bidder, then as indicated in NMS Section 01 33 00, no payment for the preparation of Shop Drawings will be made.

D21.4 If Award is made to the lowest responsive Bidder, no payment for the booking of utility locates will be made.

D21.5 If no Contract is awarded, then the City of Winnipeg will pay the lowest responsive Bidder up to a maximum of five hundred dollars ($500.00) for each of the requested items identified in D21.1 for the preparation and delivery of Shop Drawings and a single payment for the booking of utility locates as per D21.2. Delivery of the Shop Drawings to the City, booking of Utility Locates, and payment of the above mentioned amounts will constitute full and final consideration of each party to the other, and neither party will have any further liability to the other with respect to this Tender.

D22. COMMENCEMENT

D22.1 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.

D22.2 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 Dewatering and Drainage Plan specified in D19;
  (x) the Site Development Plan specified 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.

(c) the Contractor has provided a scope change management document for the shaft excavation and tunnelling works that details daily costs for all equipment, including but not limited to shaft construction and hand tunnelling equipment, construction vehicles, Contractor trucks and their staff's personal vehicles, temporary site/storage facilities, rental equipment and all other ancillary equipment required to undertake the shaft construction and tunnelling activities. A daily breakdown of labour, material and equipment will be provided in the scope change document. This document will be used in the event of Change in Contract Conditions as detailed in E7.

D22.3 The City intends to award this Contract by October 18, 2024.

D22.3.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D23. WORK BY OTHERS

D23.1 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.

D23.2 As shown in Appendix C – Contract Site Extents Figure, work by others on or near the Site will include but not necessarily be limited to the CentrePort South Phase 1A Regional Wastewater contracts:

(a) Contract 1A (Interceptor Sewer) – Tender 990-2023B) – Contractor TBD.
  (i) Work on the Interceptor Sewer contract is anticipated to be taking place concurrently with this Contract. Specific areas have been designated for each contract to avoid conflicts and ensure that there is a single contractor designated to any location at any time. See Appendix C – Contract Site Extents Figure.
  (ii) The land immediately south of the lift station Site is designated for use by the contractor for the Interceptor Sewer. Shaft construction and tunnelling work will be taking place at this location. Contract 990-2023B includes a Critical Stage date of September 2, 2025 to complete all of their work at this location. The Bidder for the Lift station contract may assume that the land will be available for their use 15 calendar days following this date.

(b) Contract 2A (Force Main – Tender 427-2024) – Contractor TBD.

(i) Work on the force main contract is anticipated to be taking place concurrently with this Contract east of the access to the lift station. Specific areas have been designated for each contract to avoid conflicts and ensure that there is a single Contractor designated to any location at any time. See Appendix C – Contract Site Extents Figure.

(ii) The Force Main contractor (Tender 427-2024) will not be able to commence their work in this section until July 1, 2025.

(iii) The Force main Contract (Tender 427-2024) includes a Critical Stage date of September 2, 2025 to complete all of their work at this location. The Bidder for the Lift station contract may assume that the land will be available for their use 15 calendar days following this date.

(iv) The lift station Contractor may assume that they can use this land outside of the dates listed above

(v) Coordination will be required between the Contractor for the current lift station contract and the contractor for the force main contract (427-2024) to make the final connection to the 450 mm force main as shown on Drawing 1-024L-C0004-001 at Sta 2+831.55. Bid items have been included for both an inline plug and an in-line connection within both contracts to make this final connection. Coordination between the two contracts and the Contract Administrator will be required to determine which contractor completes this piece of the work.

D23.3 Utility installations to support the lift station contract will also be occurring on and/or near the Site including but not necessarily limited to:

(a) Manitoba Hydro, to install the electrical service for the lift station

(b) Bell MTS, to install the communication services for the lift station

(c) Coordination of both the Manitoba Hydro and Bell MTS services will be the responsibility of the Contractor. However, the invoices from these utilities will be directed to the City of Winnipeg for direct payment outside of this Contract.

D23.4 An MMF archeologist will be on site observing the Contractors archeologist (see E4) stripping and grubbing Works as described in section E31

D23.5 Further to D23.1 the Contractor shall cooperate and coordinate all activities with all parties performing required Work by Others identified in D23.2 and D23.3 and accommodate the necessary area on Site required for the Work by Others to complete the Work

D24. WORKING DAYS

D24.1 Further to C1.1, 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.

D24.2 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.

D24.3 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.

D24.4 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.

D25. CRITICAL STAGES

D25.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

(a) Critical Stage 1 – If the Critical Stage 1 Area is used by the Lift Station Contractor, the Lift Station Contractor shall completely vacate the Critical Stage 1 Work Area prior to June 15, 2025 to facilitate the Force Main Contract Schedule as indicated in Appendix C Contract Site Figure.

(b) Substantial Performance as listed in D26.

(c) Total Performance as listed in D27.

D26. SUBSTANTIAL PERFORMANCE

D26.1 The Contractor shall achieve Substantial Performance by March 15, 2026.

D26.2 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.

D26.3 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.

D26.4 Substantial Performance will not be granted until commissioning of the lift station has been accepted by the Contract Administrator.

D27. TOTAL PERFORMANCE

D27.1 The Contractor shall achieve Total Performance by June 15, 2026 .

D27.2 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.

D27.3 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.

D28. LIQUIDATED DAMAGES

D28.1 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 – Two Thousand seven hundred dollars *(*$2,700)

(b) Substantial Performance - Two Thousand seven hundred dollars *(*$2,700*);*

(c) Total Performance - One Thousand five hundred dollars ($1,500).

D28.2 The amounts specified for liquidated damages in D28.1 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.

D28.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D29. SUPPLY CHAIN DISRUPTION SCHEDULE DELAYS

D29.1 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.

D29.2 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.

D29.3 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.

D29.4 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 D29.3. Failure to provide this notice will result in no additional time delays being considered by the City.

D29.5 The Work schedule, including the durations identified in D25 to D27 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.

D29.6 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.

D29.7 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.

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 B14.4, 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 B14.4.

D33. WORK UNDERNEATH AND IN THE VICINITY OF HYDRO POWER INFRASTRUCTURE

D33.1 The Contractor is responsible for notifying Manitoba Hydro in advance of Work in the vicinity and underneath Hydro infrastructure (e.g. overhead transmission lines). The Contractor shall follow all Manitoba Hydro requirements for safe working distances and clearances from Hydro infrastructure including but not limited to overhead electrical lines.

D33.2 Manitoba Hydro requires a minimum vertical clearance from their overhead electrical lines as follows:

(a) Minimum 10 feet from overhead distribution lines,

(b) Minimum 15 feet from overhead transmission lines.

D34. WORK IN PROXIMITY TO LARGE NATURAL GAS MAINS

D34.1 The Contractor should be familiar with and comply with the requirements of the latest revision of Manitoba Hydro's "Safe Excavation & Safety Watch Guidelines". This document is available at: http://www.hydro.mb.ca/customer_services/permits_and_inspections/excavation_guidelines.pdf

D34.2 Work precautions and procedures required for working near gas mains will be incidental to the Contract.

D35. CONFINED SPACE ENTRY

D35.1 The Contractor's attention is drawn to the Province of Manitoba Workplace Safety and Health Act ("the Act"), and the Regulations and Guidelines there-under pertaining to Confined Entry Work, and in particular the requirements for conducting hazard/risk assessment and providing personal protective equipment (PPE).

D35.2 The Contractor shall assist and provide Supplied Air Breathing Apparatus conforming to the requirements of the Act, Regulations and Guidelines for the use of the Contract Administrator where confined entry is required to allow for inspection of the Work.

D36. GEOTECHNICAL DATA REPORT (GDR) AND GEOTECHNICAL BASELINE REPORT (GBR)

D36.1 The Geotechnical Data Report and Geotechnical Base Line Report are provided in Appendix A and Appendix B, respectively.

D36.2 The primary purpose of the GBR is to establish a contractual understanding of the geotechnical conditions anticipated to be encountered during construction of the project. The GBR sets baselines for geotechnical conditions and material behavior anticipated to be encountered during construction in order to provide a basis for bidding and assist in resolution of disputes that may arise over subsurface conditions. Secondarily, the GBR:

(a) Presents the geotechnical conditions that formed the basis of design.

(b) Identifies important considerations, key project constraints, and select requirements that must be addressed by the Contractor during bid preparation and construction.

(c) Provides information to assist the Contractor in evaluating requirements for excavating and supporting the ground.

(d) Provides guidance to the Contract Administrator in administering the contract and monitoring Contractor performance.

D36.3 The GBR provides the basis for identifying geotechnical and geologic conditions that qualify as a “substantial difference in the nature of the surface or subsurface conditions”, as defined in D38. The geotechnical baseline conditions (baseline) contained within the GBR are not necessarily geotechnical fact. The baseline was developed using judgment to interpolate between borings and extrapolate beyond the boring logs and laboratory test data. The judgment applied in the interpolations and extrapolations reflects the view of the author of the report in describing the baseline. Bidders should use the baseline subsurface conditions and the surface conditions which can be observed during a site visit as the basis for bids. It should be noted that the project design was based on assumed construction methods and levels of workmanship. The behavior of the geologic materials present in the surface and subsurface excavations will be influenced by the Contractor’s selected equipment, means, and methods.

D36.4 The GDR provides a summary of results for the geotechnical and geophysical explorations, field testing, and laboratory testing undertaken within the CentrePort project area and at the lift station site.

D36.5 Bidders should have a geotechnical engineer and/or engineering geologist review and explain the information presented in the GBR and GDR to assure a complete understanding of the reported information as a basis for submitting a Bid. Additional documents used to develop the GBR are listed in the References section of the GBR.

(a) The GBR was developed in part from the GDR. The technical data contained within the GDR upon which Contractor may rely are: the boring method, the locations and logs of the borings, the levels of subsurface water (if any), laboratory test methods and results, geophysical survey data, and similar factual data. The Contractor is not entitled to rely upon other technical data.

(b) Bore hole information represents subsurface characteristics to the extent indicated, only for the point location of the bore hole and, with regard to the level of subsurface water (if any), only at the time the boring was made and when subsurface water level readings were collected.

D36.6 Geophysical seismic refraction surveys (presented in the GDR) were conducted to estimate the depth to bedrock along the pipe alignment (for the interceptor and force main contracts) and the results are based on interpretation of the data. The depths to subsurface boundaries derived from seismic refraction surveys are generally accepted as accurate to within ten percent of the true depths to the boundaries, below 10 meters. Above 10 meters, the accuracy of the seismic refraction data is approximately +/- 1.0 meters. Structural discontinuities in the bedrock occurring on a scale less than the geophone spacing would go undetected in the interpretation of the data.

D36.7 Risks associated with subsurface conditions consistent with, or less adverse than the baseline conditions are allocated to the Contractor. Those risks associated with subsurface conditions more adverse than the baseline condition are accepted by the City. The provision of a baseline condition in the Contract is not a warranty that the baseline condition will be encountered. The baseline condition is the contractual standard that the City and the Contractor will agree to use when interpreting D38.

D36.8 The City accepts the risks for subsurface conditions that are more adverse than the stated baseline conditions. The City will negotiate with the Contractor for additional reasonable compensation to the Contractor if these three conditions exist:

(a) The actual subsurface conditions encountered are more adverse than the baseline conditions.

(b) The Contractor can document that the subsurface conditions are more adverse than those described in the baseline and that the conditions materially and significantly increased the cost and/or time required to complete the work.

(c) The Contractor has made diligent efforts to complete the work described in the Contract Documents, including any changes to methods, equipment, labor, and materials made necessary by the adverse conditions using the most cost effective means.

D36.9 If all of the foregoing conditions are satisfactorily met, additional compensation and schedule will be negotiated, based on the provisions described in D38 and E7.

MEASUREMENT AND PAYMENT

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.

D38. CHANGES IN WORK

D38.1 Amend C7.2.1 (a) to include the following additional clauses:

(a) Contractor shall notify the Contract Administrator promptly in writing of any changes in geotechnical, geologic or material behaviour conditions that the Contractor considers more adverse than the GBR baseline conditions upon discovery and before they are disturbed, in any event no later than five (5) calendar days after discovery.

(b) No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under the Contract Documents.

(c) No claim by the Contractor related to shaft construction and/or tunnelling shall be allowed under the Changes of Work provisions unless the Contractor investigates and demonstrates that such alleged conditions are materially different from those conditions identified in the Geotechnical Baseline Report and results in an increase in the Contractor's cost of and/or time required for performance of the Work. The Contractor shall within 30 calendar days after notification to the City that the Contractor believes a material difference exists, provide the documentation, backup, justification, and compensation for the alleged impact to Contractor's cost of and/or time required for performance of the Work. Any and all costs incurred by the Contractor for demonstrating that a material difference exists shall be borne by the Contractor unless the City agrees that the material difference does have a cost and/or time impact. If City agrees that there is a material difference that impacts Contractor's cost and/or time, payment for geologic investigation(s) and testing of the material difference will be paid for by the City. Payment will be made by the City for reasonable and customary prices for geologic investigation(s) and testing. Contractor is encouraged to review geologic investigations and/or testing planned to demonstrate a material difference with the Contract Administrator prior to execution of the same. City will be sole judge of what is reasonable and customary.

(d) The Contractor expressly agrees to maintain detailed daily labor, material, production, and equipment logs defining hours and costs for all periods of Contractor performance representing claimed differing site conditions. These logs shall fully separate bid Contract Work from claimed differing site condition work, and the Contractor shall provide these documents to the Contract Administrator for review. These daily logs shall constitute documentation of performance and must be signed on a daily basis both by the Contractor and Contract Administrator. Said signatures do not mean acceptance of the claim or value of adjustment of Contract Price and/or Time but will serve to document the Contractor's use of labor, material, and equipment. If Contract Administrator and City agree that there is a material difference that impacts Contractor's cost and/or time, payment for the material difference in labour, material, production and equipment will be paid for by the City based on reasonable and customary prices, using the methods defined in C7.4. Equipment rates will be established in accordance with the Daily Equipment Rate listed on the Form B and as defined in E7. The failure of the Contractor to maintain said logs or to obtain signatures on the logs shall render the Contract Administrators daily records as definitive.

STANDARDIZED EQUIPMENT

D39. GENERAL

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

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

(b) Standardized Electric Valve Actuators as per E15.

(c) Standardized Gas Detection Systems as per E16 .

(d) Standardized Instrumentation as per E17.

D40. CONTRACTUAL ARRANGEMENT

D40.1 Each Standardization Vendor shall be a Subcontractor of the Contractor.

D40.2 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.

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

D40.3 In the event that a potential dispute arises between the Contractor and a Standardization Vendor, the Contract Administrator shall be notified.

D41. PAYMENT OF STANDARDIZATION VENDORS

D41.1 The Contractor is obligated to pay the Standardization Vendors in accordance with general terms of supply applicable to such Standardization Vendor.

D41.2 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:

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

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

(i) 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.

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

(iii) 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.

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

D41.3 The Contractor's payment terms to the Standardization Vendor, in respect of Standardized Electric Valve Actuators identified in E15 include the following:

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

D41.4 The Contractor's payment terms to the Standardization Vendor, in respect of Standardized Gas Detection Systems identified in E16, include the following:

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

D41.5 The Contractor's payment terms to the Standardization Vendor, in respect of Standardized Instrumentation identified in E17, include the following:

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

WARRANTY

D42. WARRANTY

D42.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D42.2 Notwithstanding C13.2 or D42.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:

(a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.

D42.2.1 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.

DISPUTE RESOLUTION

D43. DISPUTE RESOLUTION

D43.1 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 D43.

D43.2 The entire text of C21.4 is deleted, and amended to read: "Intentionally Deleted"

D43.3 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 Purchasing 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.

D43.4 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.

D43.5 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.

D43.6 As these negotiations are not an adjudicative hearing, neither party may have legal counsel present during the negotiations.

D43.7 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.

D43.8 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 D43.7, 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

D44. INDEMNITY

D44.1 Indemnity shall be as stated in C17.

D44.2 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.

THIRD PARTY AGREEMENTS

D45. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D45.1 Funding for the Work of the Contract is being provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada and accordingly, as required by the applicable funding agreements, the following terms and conditions shall apply.

D45.2 For the purposes of D45:

(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.

D45.3 Indemnification By Contractor

D45.3.1 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.

D45.3.2 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.

D45.4 Records Retention and Audits

D45.4.1 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.

D45.4.2 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 D45.4.1 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.

D45.5 Other Obligations

D45.5.1 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.

D45.5.2 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.

D45.5.3 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.

D45.5.4 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.

D45.5.5 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.

D45.5.6 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. 301-2024

Construction of a New Wastewater Lift Station - Centerport South Regional Water and Wastewater Servicing Phase 1A (contract 1A)

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. 301-2024

CONSTRUCTION OF A NEW WASTEWATER LIFT STATION - CENTERPORT SOUTH REGIONAL WATER AND WASTEWATER SERVICING PHASE 1A (CONTRACT 1A)

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)

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, Purchasing 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 B8. 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 B8.

E1.4 The following are applicable to the Work:

NMS SPECIFICATIONS

DIVISION 01 –	**GENERAL REQUIREMENTS**
13300	Submittal Procedures
13300	RFI
14500	Quality Control
17800	Closeout Submittals
19113	General Commissioning Requirements
19113.13	Commissioning Plan
19113.16	Commissioning Forms
19113.18	Commissioning Training
DIVISION 03 –	**CONCRETE**
31000	Concrete Forming and Accessories
32000	Concrete Reinforcing
33000	Cast-In-Place Concrete
DIVISION 04 –	**MASONRY**
40500	Common Work Results for Masonry
40513	Masonry Mortaring and Grouting
40519	Masonry Anchorage and Reinforcing
40523	Masonry Accessories
42200	Concrete Unit Masonry
44323	Quarried Stone Veneer Cladding
DIVISION 05 –	**METALS**
55000	Metal Fabrications
DIVISION 06 –	**WOOD, PLASTICS AND**

	COMPOSITES
61053	Miscellaneous Rough Carpentry
DIVISION 07 –	**THERMAL AND MOISTURE PROTECTION**
72113	Board Insulation
72700.01	Air Barriers
76100	Sheet Metal Roofing
76200	Sheet Metal Flashing and Trim
79200	Joint Sealants
DIVISION 08 –	**OPENINGS**
81100	Metal Doors and Frames
87100	Door Hardware
DIVISION 09 –	**FINISHES**
92116.08	Gypsum Board Assemblies for Minor Works
96723	Epoxy Flooring
99123	Interior Painting
99650	Graffiti-Resistant Coatings
DIVISION 10 –	**SPECIALTIES**
104400	Fire Protection Specialties
DIVISION 14 –	**CONVEYING EQUIPMENT**
146300	Monorail Hoists
DIVISION 22 –	**PLUMBING**
220500	Common Work Results for Plumbing
220515	Plumbing Specialties and Accessories
221010	Plumbing Pumps
221116	Domestic Water Piping
221316.16	Sanitary Waste and Vent Piping - Plastic
DIVISION 23 –	**HVAC**
230500	Common Work Results for HVAC
230513	Common Motor Requirements for HVAC Equipment
230519.13	Thermometers and Pressure Gauges - Piping Systems
230529	Hangers and Supports for HVAC Piping and Equipment
230553	Identification For HVAC Piping and Equipment
230593	Testing, Adjusting and Balancing for HVAC
230713	Duct Insulation
230933	Electric And Electronic Control System for HVAC
231126	Facility Liquid-petroleum Gas Piping
233113.01	Metal Ducts - Low Pressure To 500 Pa
233300	Air Duct Accessories
233314	Dampers - Balancing

233315	Dampers - Operating
233400	HVAC Fans
233713	Diffusers, Registers and Grilles
233720	Louvres, Intakes and Vents
234000	HVAC Air Cleaning Devices
237300.16	Air Handling Units - Packaged
238123	Air Conditioning
238216.14	Electric-resistance Air Coils
238239.23	Unit Heaters - Electric
DIVISION 26 –	**ELECTRICAL**
260500	Common Work Results
260520	Wire and Box Connectors (0-1000V)
260521	Wires and Cables (0-1000V)
260528	Grounding – Secondary
260529	Hangers and Supports for Electrical Systems
260531	Splitters, Junction, Pull Boxes and Cabinets
260532	Outlet Boxes, Conduit Boxes and Fittings
260534	Conduits, Conduit Fastenings & Conduit Fittings
260536	Cable Trays for Electrical Systems
261216.01	Dry Type Transformers up to 600V Primary
261841	Interlock Systems
262416.01	Panelboards Breaker Type
262419	Motor Control Centers
262716	Electrical Cabinets and Enclosures
262726	Wiring Devices
262816.02	Moulded Case Circuit Breakers
262823	Disconnect Switches – Fused and Non-Fused
262901	Contactors
262903	Control Devices
262910	Motor Starters
262923	Variable Frequency Drives
263200.01	Emergency Generator, Transfer Switch and Load Bank
263526	Harmonic Filters
265000	Lighting
265201	Emergency Lighting
DIVISION 33–	**UTILITIES**
335613	Aboveground Fuel - Storage Tanks
DIVISION 40–	**PROCESS EQUIPMENT**
400501	Common Work Results - Automation
400551	Process Valves
400559	Stainless Steel Gates

401010	Process Pumps
402320	Process Piping
403213.14	Packaged Sewage Lift Station, Dry Well Type
400501	Common Work Results - Automation
408008	Factory Acceptance Test
408011	Automation - Commissioning
409001	Automation–Field Pushbuttons, Switches & Indica
409100	Automation - Process Measurement Devices
409200	Automation – Primary Control Devices
409443	Programmable Logic Controller
409513	Control Panels
409901	Training
409990	Maintenance and Support

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5	Civil Servicing Site Plan	1-0241L-C0002-001
6	Civil Grading Site Plan	1-0241L-C0003-001
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13	Main Floor Plan & Roof Plan	1-0241L-B0003-001
14	Elevations	1-0241L-B0004-001
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120	Automation - Loop Diagram - Offtake Structure 3 - Modulating Valve FV-B80	1-0241L-A0049-001

GENERAL REQUIREMENTS

E2. GEOTECHNICAL INVESTIGATION REPORT

E2.1 Geotechnical Data Report (GDR)

(a) The GDR summarizes the testing and geotechnical conditions observed at the lift station site within the project area and provides technical support for the GBR. This report includes geotechnical and geophysical data collected at the project site and summary of encountered subsurface conditions. A copy of the GDR is included in Appendix A.

E2.2 Geotechnical Baseline Report (GBR)

(a) The GBR presents an interpretation of the geotechnical conditions to be anticipated during construction of the work, based on the GDR, for use by Bidders for Bid preparation and administration of the Contract. Further information is provided in D36 and a copy of the GBR is included in Appendix B.

E3. OFFICE FACILITIES

E3.1 The Contractor shall supply a Site trailer with available office space for use by the Contract Administrator adjacent to the project Site.

E3.2 The office facility shall meet the following requirements:

(a) The field office shall be for the exclusive use of the Contract Administrator and City staff and will be used for site meetings.

(b) The building shall have a minimum floor area of 25 square metres, minimum of two windows and a door entrance with suitable lock.

(c) The building shall be suitable for all-weather use. It shall be equipped with an electric heater and air conditioner capable of maintaining a temperature range between 16 °C and 25 °C.

(d) The building shall be supplied with adequate lighting and have a minimum of three wall outlets with 120 Volt power supply.

(e) The building shall be furnished with two desks, two meeting tables, one drafting table, one filing cabinet and a minimum of 12 chairs.

(f) A portable toilet shall be located near the field office building. The toilet shall have a locking door.

(g) The field office shall be cleaned on a weekly basis, prior to the Site Meetings to the satisfaction of the Contract Administrator.

E3.3 The office facilities will be provided from the date of the commencement of the Work to the date of Substantial Performance.

E3.4 Measurement and Payment

(a) The Contractor shall be responsible for all installation, transportation and removal costs, all operating costs, provision of furnishings and equipment, cleaning and the general maintenance of the office facilities.

(b) Payment for the office facility is considered incidental to Site Development and Restoration.

E4. HERITAGE RESOURCES PROTECTION AND MONITORING PROGRAM

E4.1 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the Heritage Resources Act (1986), Section 12, which outlines the protections against the disturbance of heritage resources.

E4.2 Description

E4.2.1 The Historic Resources Branch (HRB) in their assessment of the heritage potential for this project (AAS File # AAS-23-20756), issued conditional approval for all areas of the project. In the event that heritage resources are found on site during the stripping and grubbing operations as described in E31, the Contractor shall follow the stipulations of the Heritage Resources Protection Plan (HRPP), included in Appendix E.

E4.2.2 The HRPP includes measures and requirements that the Contractor must follow if artifacts are encountered while completing the Works.

E4.3 Construction Methods

E4.3.1 The Contractor shall be responsible for the implementation of the HRPP that details the procedures to be followed in the event that heritage resources are accidentally encountered during construction activities.

E4.3.2 Prior to completing any Works associated with Stripping and Grubbing as described in E31, the Contractor shall contract an archaeologist qualified to conduct an HRIA in the Province of Manitoba.

E4.3.3 The Archaeologist shall secure a Heritage Permit to Search for or Excavate a Heritage Object from HRB for the project.

E4.3.4 The Archaeologist shall monitor all ground disturbance activities and inspect all shafts, trenches and their removed sediments for heritage resources. The Archaeologist shall maintain written field notes and a photographic record.

E4.3.5 The Archaeologist shall document any heritage features and identify and collect any heritage resources exposed during the construction activities. All heritage objects will be treated according to HRB management standards.

E4.3.6 Upon conclusion of the fieldwork, the Archaeologist shall prepare a report meeting the requirements of the HRPP.

E4.3.7 Heritage objects recovered during the course of the monitoring are owned by the Crown with the custody residing in the HRB. All archaeological materials will be processed, packaged, and submitted to the HRB by the date specified on the relevant Heritage Permit and in accordance to Archaeological Artifact Submission Standards (2009).

E4.3.8 Should heritage resources be found at any point during construction outside of the monitoring area designated above, the Contractor shall meet all requirements of Items E4.3.2 to E4.3.7.

E4.4 Basis of Payment

E4.4.1 Costs incurred by the Contractor related to heritage resource monitoring and reporting shall be paid for under the allowance for “Heritage Resources Mitigation Measures”. Payment will be based on actual invoiced costs for HRIA activities with allowable mark-ups in accordance with the General Conditions.

E5. ENVIRONMENTAL PROTECTION PLAN

E5.1 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the environmental protection measures as herein specified.

E5.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:

(a) Federal
  (i) Canadian Environmental Protection Act (CEPA) c.16
  (ii) Canadian Environmental Assessment Act (CEAA) c.37
  (iii) Transportation of Dangerous Goods Act and Regulations c.34

(b) Provincial

(i) The Dangerous Goods Handling and Transportation Act D12
(ii) The Endangered Species Act E111
(iii) The Environment Act c.E125
(iv) The Fire Prevention Act F80
(v) The Manitoba Heritage Resources Act H39.1
(vi) The Manitoba Noxious Weeds Act N110
(vii) The Manitoba Nuisance Act N120
(viii) The Public Health Act c.P210
(ix) The Workplace Safety and Health Act W120
(x) Other current applicable associated regulations.

(c) Municipal
(i) The City of Winnipeg By-law no. 1/2008
(ii) Other applicable Acts, Regulations and By-laws.

E5.3 The Contractor is advised that the following environmental protection measures apply to the Work.

(a) Materials Handling and Storage
(i) Construction materials and debris shall be prevented from entering drainage pipes or channels.
(ii) Construction materials and debris shall also be prevented from accumulating on local roadways and sidewalks when tracked out of the Site by trucks hauling excavated materials.
(iii) The Contractor shall provide on-Site measures to mitigate the tracking of sediment off-Site and therefore reduce the amount of street cleaning required. These measures may take the form of a truck wheel wash (automated or manually operated) or other measures as approved by the Contract Administrator.

(b) Fuel Handling and Storage
(i) The Contractor shall obtain all necessary permits from Manitoba Environment and Climate Change for the handling and storage of fuel products and shall provide copies to the Contract Administrator.
(ii) All fuel handling and storage facilities shall comply with The Dangerous Goods and Transportation Act Storage and Handling of Petroleum Products Regulation and any local land use permits.
(iii) Fuels, lubricants, and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act shall be stored and handled within the approved storage areas.
(iv) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
(v) Products transferred from the fuel storage area(s) to specific Work Sites shall not exceed the daily usage requirement.
(vi) When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, a groundsheet of suitable material (such as HDPE) and size shall be spread on the ground to catch the fluid in the event of a leak or spill.
(vii) Refuelling of mobile equipment and vehicles shall take place at least 100 metres from a watercourse.
(viii) The area around storage Sites and fuel lines shall be distinctly marked and kept clear of snow and debris to allow for routine inspection and leak detection.
(ix) A sufficient supply of materials, such as absorbent material and plastic oil booms to clean up minor spills shall be stores nearby on-site. The Contractor shall ensure that additional material can be made available on short notice.

(c) Waste Handling and Disposal

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

(ii) At no time during construction shall personal or construction waste be permitted to accumulate for more than one day at any location on the construction Site, other than at a dedicated storage area as may be approved by the Contract Administrator.

(iii) All resulting debris shall be deposited at a Waste Disposal Ground operating under the authority of Manitoba Regulation #150/91. Exceptions are liquid industrial and hazardous wastes which may require special disposal methods.

(iv) Indiscriminate dumping, littering, or abandonment shall not take place.

(v) No on-site burning of waste is permitted.

(vi) Waste storage areas shall not be located so as to block natural drainage.

(vii) Run-off from a waste storage area shall not be allowed to cause siltation of a watercourse.

(viii) Waste storage areas shall be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.

(ix) Equipment shall not be cleaned near watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.

(d) Dangerous Goods/Hazardous Waste Handling and Disposal

(i) Dangerous goods/hazardous wastes are identified by, and shall be handled according to, The Dangerous Goods Handling and Transportation Act and Regulations.

(ii) The Contractor shall be familiar with The Dangerous Goods Handling and Transportation Act and Regulations.

(iii) The Contractor shall have on-site staff that is trained and certified in the handling of the dangerous/hazardous goods, when said dangerous/hazardous goods are being utilized on-site for the performance of the Work.

(iv) Different waste streams shall not be mixed.

(v) Disposal of dangerous goods/hazardous wastes shall be at approved hazardous waste facilities.

(vi) Liquid hydrocarbons shall not be stored or disposed of in earthen pits on-site.

(vii) Used oils shall be stored in appropriate drums, or tankage, until shipment to waste oil recycling centres, incinerators, or secure disposal facilities approved for such wastes.

(viii) Used oil filters shall be drained, placed in suitable storage containers, and buried or incinerated at approved hazardous waste treatment and disposal facilities.

(ix) Dangerous goods/hazardous waste storage areas shall be located at least 100 metres away from the high water line and be dyked.

(x) Dangerous goods/hazardous waste storage areas shall not be located so as to block natural drainage.

(xi) Run-off from a dangerous goods/hazardous waste storage area shall not be allowed to cause siltation of a watercourse.

(xii) Dangerous goods/hazardous waste storage areas shall be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.

(e) Emergency Response

(i) The Contractor shall ensure that due care and caution is taken to prevent spills.

(ii) The Contractor shall report all major spills of petroleum products or other hazardous substances with significant impact on the environment and threat to human health and safety to Manitoba Conservation, immediately after occurrence of the environmental accident, by calling the 24-hour emergency phone number (204) 945-4888. The Contract Administrator shall also be notified.

(iii) The Contractor shall designate a qualified supervisor as the on-site emergency response co-ordinator for the project. The emergency response co-ordinator shall have the authority to redirect manpower in order to respond in the event of a spill.

(iv) The following actions shall be taken by the person in charge of the spilled material or the first person(s) arriving at the scene of a hazardous material accident or the on-site emergency response co-ordinator:

- Notify emergency-response co-ordinator of the accident:
  - identify exact location and time of accident
  - indicate injuries, if any
  - request assistance as required by magnitude of accident (Manitoba Conservation 24-hour Spill Response Line (204) 945-4888, Police, Fire Department, Ambulance, company backup)
- Attend to public safety:
  - stop traffic, roadblock/cordon off the immediate danger area
  - eliminate ignition sources
  - initiate evacuation procedures if necessary
- Assess situation and gather information on the status of the situation, noting:
  - personnel on-site
  - cause and effect of spill
  - estimated extent of damage
  - amount and type of material involved
  - proximity to waterways, sewers, and manholes
- If safe to do so, try to stop the dispersion or flow of spill material:
  - approach from upwind
  - stop or reduce leak if safe to do so
  - dike spill material with dry, inert sorbet material or dry clay soil or sand
  - prevent spill material from entering waterways and utilities by diking
  - prevent spill material from entering manholes and other openings by covering with rubber spill mats or diking. Resume any effective action to contain, clean up, or stop the flow of the spilled product.

(v) The emergency response co-ordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to Manitoba Conservation according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.

(vi) When dangerous goods are used on-site, materials for containment and cleanup of spill material (e.g. absorbent materials, plastic oil booms, and oversized recovery drums) shall be available on-site.

(vii) Minor spills of such substances that may be contained on land with no significant impact on the environment may be responded to with in-house resources without formal notification to Manitoba Environment.

(viii) City emergency response, 9-1-1, shall be used if other means are not available.

(f) Vegetation

(i) Vegetation shall not be distributed without written permission of the Contract Administrator. The Contractor shall protect plants which may be at risk of accidental damage. Such measures may include protective fencing or signage and shall be approved in advance by the Contractor Administrator.

(ii) Herbicides and pesticides shall not be used adjacent to any surface watercourses.

(iii) All landowners adjacent to the area of application of herbicides or pesticides shall be notified prior to the Work.

(iv) Trees and shrubs shall not be felled into watercourses.

(v) Areas where vegetation is removed during clearing, construction, and decommissioning activities, shall be revegetated as soon as possible in accordance with the landscaping plans forming part of the contract, or as directed by the Contract Administrator.

E5.4 Method of Measurement and Payment

(a) Adherence to the laws that govern the requirements for Environmental Protection are incidental to the Contract.

E6. SITE DEVELOPMENT AND RESTORATION

E6.1 Description

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

E6.2 This Specification shall cover all aspects of the Site Development and Restoration Work, including but not limited to:

(a) Mobilization and Demobilization;

(b) Snow clearing;

(c) Equipment Setup and Removal

(d) Diversion of Flow;

(e) Topsoil, Seeding and Sod

(f) Traffic Management and Control

(g) Site Security

(h) General Site Cleanup and Restoration

(i) Office Facilities;

E6.3 Submittals

(a) Layout Plans for review and approval by the Contract Administrator, in accordance with D20 and CW 1110, for the following items:

(i) All shafts as required for lift station and pipeline construction.

(ii) Traffic Management Plan in accordance with E11

(iii) Flow Control Plan in accordance with D19

(iv) Site Access Plan

E6.4 Snow Clearing

(i) 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.

(ii) Snow build-up on sidewalks and roadways shall be maintained to the condition of the surrounding sidewalks and roadways

E6.5 Equipment Setup and Removal

(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.

E6.6 Construction Methods

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

(b) Prior to commencing construction, the Contractor shall submit their site access plan(s) to the Contract Administrator for approval.

(c) The Contractor is responsible for obtaining and paying for all required permits that are necessary for Site access.

E6.7 Diversion of Flows

(a) Flows such as snowmelt, rainfall, or any other flow traveling through the Site, into excavations, or through pipes being worked on shall be diverted during construction. Also reference D19.

E6.8 Topsoil, Seeding, and Sod

(a) All topsoil, seeding, and sodding Work shall be performed in accordance with CW 3510 and CW 3520. Topsoil and Seeding and/or Sodding Work shall include all existing grassed areas disturbed by the Contractor. The Contractor shall restore all areas disturbed during construction to the condition prior to the initiation of the Work or better, using topsoil and seed and/or sod at the Contractor's own cost. **All topsoil, and seeding beyond the quantities listed on Form B: Prices will be considered incidental to Site Development and Restoration, and no additional payment will be made for the additional quantities.**

E6.9 Traffic Control and Signage

(a) Coordinate, install and maintain traffic control and signage in accordance with the City of Winnipeg Manual of Temporary Traffic Control. The Contractor shall coordinate temporary lane closures required throughout construction with the Contract Administrator. Reference E11.

E6.10 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.

E6.11 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.

E6.12 Method of Measurement and Payment

(a) Site development and restoration will be measured and paid for at the Contract Lump Sum Price for "Site Development and Restoration", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

(b) 30% of the Site Development and Restoration unit price will be paid on the first progress payment following commencement of the Work.

(c) 40% of the Site Development and Restoration unit price will be paid on subsequent progress payments on a proportional basis based on the extent of progress up to Substantial Performance, as determined by the Contract Administrator.

(d) 30% of the Site Development and Restoration unit price will be paid on the progress payment following Total Completion.

E7. CHANGE IN CONTRACT CONDITIONS

E7.1 Description

(a) This specification covers changes identified to the scope of work including changes in geotechnical and geological conditions that may impact the shaft construction and hand tunnelling works

(b) The basis for the geotechnical and geologic conditions are described in the GBR and GDR as defined in Section D36.

(c) The method for reviewing, recording and accepting a change to geotechnical and geologic conditions or obstructions is described in section D38.

E7.2 Measurement and Payment

(a) Where a Contractor has made a claim in accordance with C7 or D38 which has been accepted by the Contract Administrator and City, the Contractor will be compensated in accordance with D38 from the allowance under the Contact unit price "Change in Contract Conditions"

E8. ALLOWANCE FOR MATERIAL SAMPLING AND TESTING

E8.1 Description

(a) Further to E33, CW 2125, CW 2110, CW 2130, CW 3110 and CW 3150, this specification shall cover additional inspection and testing requirements for all materials used in the Work associated with this Contract.

(b) The Contractor shall be responsible to schedule, coordinate and provide material testing, including test reports, for all construction materials as outlined in E33, CW 2125, CW 2110, CW 2130, CW 3110, CW 3150, other relevant City specifications, NMS Specifications and any additional specifications within this Contract. The Contractor shall engage an independent material inspection and testing agency and the testing shall be selected by the Contract Administrator for the purpose of conducting the material tests and obtaining associated documentation when directed by the Contract Administrator.

E8.2 Construction Methods

(a) The Contractor shall be responsible for scheduling field testing with an independent material inspection and testing Agency. All material tests conducted on Site shall be attended by the Contract Administrator. It is the Contractor's responsibility to coordinate each of the scheduled tests with the Contract Administrator.

(b) The contact information from the Contract Administrator and City staff shall be provided to the testing agencies and all test results from all laboratory and field tests shall be provided to the Contract Administrator for review and/or approval.

(c) Copies of invoices from the testing agencies shall be provided monthly to the Contract Administrator.

E8.3 Measurement and Payment

(a) The cost for material sampling and testing shall be paid for under the Contract unit price for "Allowance for Material Sampling and Testing". Costs will be based on actual invoiced costs for inspections, equipment, and monitoring with allowable mark-ups in accordance with the General Conditions.

E9. ADDITIONAL WORK ALLOWANCE

E9.1 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.

E9.2 A cash allowance has been included on Form B: Prices.

E9.3 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.

E9.4 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.

E9.5 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.

E9.6 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.

E9.7 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.

E9.8 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.

TRAFFIC MANAGEMENT AND CONTROL

E10. TRUCK WEIGHT LIMITS

E10.1 Description

(a) Spring weight restrictions may apply to streets within the area of Work. The City shall not pay for any portion of material which results in the vehicle exceeding the maximum gross vehicle weight allowed under The City of Winnipeg Traffic By-Law, unless such vehicle is operating under special permit.

E11. TRAFFIC MANAGEMENT

E11.1 Description

(a) This specification covers activities related to managing traffic throughout the work Site. Items listed here are to be followed in addition to all standard requirements.

(b) The Contractor shall submit temporary traffic control plans to the Contract Administrator for review and approval prior to starting Work.

(c) The below traffic requirements must be adhered to within the Contractor's traffic management plans.

E11.2 Materials and Equipment

E11.2.1 Further to Clause 3.7 of CW 1130:

(a) The Contractor shall be responsible for all signage and barricades as identified in the City of Winnipeg Manual of Temporary Traffic Control on City Streets. The Contractor shall provide the Contract Administrator a suitable Traffic Accommodation Strategy covering all the details for traffic management (cones and signage etc.) for each Work element at least three (3) weeks prior to commencement of any lane closures related to the Work.

(b) The City of Winnipeg Manual of Temporary Traffic Control on City Streets is available online at:

(i) http://winnipeg.ca/publicworks/trafficControl/manualTempTrafficControl.stm

E11.3 General Requirements

E11.3.1 The Contractor shall not park company or private vehicles inside the barricaded work zone in a manner that will block sightlines for vehicles approaching and crossing or create any other safety concern.

E11.3.2 The Contractor shall minimize the duration of lane closures as much as possible such that only areas with active construction are closed off when needed to facilitate the Work. Complete road closure is not permitted.

E11.3.3 Emergency vehicle access must be maintained at all times.

E11.3.4 Intersecting streets, private approach and lane access shall be maintained at all times (unless approved within the Specifications or by the Contract Administrator in writing).

E11.4 Regional Street Requirements

E11.4.1 Regional Streets impacted by the Work will include:

(a) Sturgeon Access

E11.4.2 General

(a) Intermittent lane closures will be permitted along Sturgeon Access immediately adjacent to the proposed approach for the lift station for tying in the approach to Sturgeon Access.

(b) Lane closures outside of the locations noted will not be permitted.

(c) The Contractor shall submit temporary traffic control plans to the Contract Administrator for review and approval prior to starting Work.

E11.4.3 For all temporary lane closures and where not shown otherwise in the Drawings, the Contractor shall:

(a) Maintain a minimum of one lane of traffic that can be used in either direction.

(b) Ambulance/ emergency vehicle access must be maintained at all times.

E11.5 Measurement and Payment

(a) All Work associated with adhering to the Traffic Management requirements identified are incidental to Site Development and Restoration.

UTILITY COORDINATION

E12. SUPPORT OR TEMPORARY RELOCATION OF EXISTING UTILITIES

E12.1 The Contractor shall provide support or temporary relocation of existing services and utilities when excavations/shafts expose or require the support of these services (due to proximity or other reasons). Support of the services shall be undertaken to the requirements of the utility owner. Services and utilities may only be interrupted with the permission of the Contract Administrator and the utility owner

(a) Where these utilities include buried gas or electrical lines, the Contractor shall contact Manitoba Hydro and follow the Safe Excavation & Safety Watch Guidelines listed at https://www.hydro.mb.ca/safety/pdfs/safe_excavation_safety_watch_guidelines.pdf

E12.2 Measurement and Payment

Support of existing pipes and utilities will be incidental to the cost of the sewer installation under Lift Station Shaft (incl. backfill), Sewer Construction and Land Drainage System Construction.

STANDARDIZED EQUIPMENT

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:

(a) Control System and Motor Control Equipment in accordance with E14.

(b) Electric Valve Actuators in accordance with E15.

(c) Gas Detection Systems in accordance with E16.

(d) Instrumentation in accordance with E17.

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.

(a) 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:

(a) 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.

(b) 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.

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

(d) 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) D40.2(a):

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

(b) Errors or omissions by a Standardization Vendor shall not be a cause for a Change in Work.

(c) 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.

(d) The Contractor shall engage directly with the persons listed as the Standardized Vendor contact in the following sections E14.8, E15.9.2, E16.6, E17.7unless otherwise directed by the Contract Administrator.

E13.9 E1.9 Submittals

(a) 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 E14.8 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) PLC to Infi90 Termination Unit migration cables.

(c) Programmable Controller Programming Software.

(d) Aveva Dynamic - Dynsim Process Simulator Software.

(e) HMI System software.

(f) Historian Server and Client Software.

(g) Touchscreen HMI systems such as HarmonyHMIs.

(h) Touchscreen HMI Programming Software.

(i) Motor Control Centers including all components

(j) Loose VFDs, motor starters, soft starters, and associated components.

(k) 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.

(l) MDT Version Management Software.

(m) Aveva Insight Information Server Software.

(n) Training sessions.

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) Modicon M580, and M340 PLCs;

(b) Modicon X80 PLC I/O;

(c) EcoStruxure Control Expert programming software;

(d) Aveva Plant Scada HMI systems;

(e) Aveva Historian;

(f) Local HMI – Harmony HMIGTO or HMIGTU series;

(g) Schneider Electric Model 6 MCC – NEMA rated starters, Intelligent Ethernet (unless otherwise specified);

(h) Altivar Process 600 series VFDs for variable torque applications; and

(i) Altivar Process 900 series VFDs for more demanding applications.

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.

E14.6 Commissioning and start-up:

E14.7 Training

E14.7.1 Programmable Controller Local Training

(a) Overview

(i) Provide instruction to designated City personnel in the operation and maintenance of the Schneider programmable controller control system components and associated Schneider tools and equipment.

(ii) This training shall be provided by Schneider.

(iii) This training does not relieve the Contractor of other training requirements associated with the control system.

(b) Location

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

(ii) The room will be classroom style.

(c) 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.

(d) Quality Assurance

(i) Provide competent instructors thoroughly familiar with all aspects of the programmable controller control system.

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

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

(e) Duration

(i) The training shall be a minimum of one (1) day in duration.

(f) 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.

(g) Attendees

(i) The attendees are expected to include, but not be limited to: electrical and instrumentation maintenance personnel and programmable controller support specialists.

(h) Content

(i) Overview of the equipment.

(ii) Equipment maintenance training including:

- Installation
- Troubleshooting
- Preventative maintenance
- Replacement of modules
- Network communication troubleshooting and diagnostics.
- Fieldbus troubleshooting and diagnostics
- Programmable controller redundancy strategies and operation.

(iii) Maintenance use of programmable controller programming software, including:

- Basic operation of the software
- Connecting to programmable controllers
- Download and upload of software configuration.
- Diagnostics and troubleshooting.

(i) Number of Sessions:

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

E14.7.2 MCC and VFD Local Training Session

(a) Overview

(i) Provide instruction to designated City personnel in the operation and maintenance of the motor control centres and variable frequency drives.

(ii) This training shall be provided by Schneider.

(iii) This training does not relieve the Contractor of other training requirements associated with the control system.

(b) Location

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

(c) 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.

(d) Quality Assurance

(i) Provide competent instructors thoroughly familiar with all aspects of the MCC and VFD systems.

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

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

(e) Duration

(i) The training shall be a minimum of six (6) hours in duration, excluding coffee and lunch breaks.

(f) 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.

(g) Attendees

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

- Electrical and instrumentation maintenance personnel.
- Programmable controller support specialists.

(h) Content

(i) Overview of the equipment.

(ii) Equipment maintenance training including:

- Installation
- Troubleshooting
- Preventative maintenance
- Replacement of modules
- Fieldbus diagnostics
- Configuration of equipment parameters.

(iii) Maintenance use of equipment configuration software, including:

- Basic operation of the software
- Connecting to intelligent starts and VFDs.
- Download and upload of software configuration.
- Diagnostics and troubleshooting.

(i) Number of Sessions:

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

E14.8 The contact information for all quotations and purchases from Schneider is:

Garth Eastman
Omands Creek Blvd
Winnipeg, MB, R2R 2V2
Telephone: 204-228-7807
E-mail: garth.eastman@se.com

E14.8.1 Goods to be procured directly from Schneider using the Schneider contact:

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

(i) PLC to Infi90 Termination Unit migration cables;

(ii) Process Simulator Software;

(iii) Historian Server and Client Software;

(iv) Version Management Software; and

(v) Training sessions.

E14.8.2 Goods to be procured via Eecol Electric (Eecol), 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:

Jon Buccini
1760 Welllington Avenue
Winnipeg, MB, R3H 0E9
Telephone(Office): 204-774-2800
Telephone(Cell): 204-451-1664
E-mail: jon.buccini@eecol.com

(c) All correspondence related to requests-for-quotations to Eecol for goods listed under E14.8.2(a) shall be copied to the Schneider contact listed under E14.8.

(d) For whatever reason, if Eecol is unable to receive or respond to request-for-quotations for goods listed under E14.8.2(a) request-for-quotations may be issued directly to the Schneider contact listed under E14.8.

E14.9 Quotations and orders:

E14.9.1 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."

E14.10 Measurement and Payment:

E14.10.1 Payment will be based on 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 ELECTRIC VALVE ACTUATORS

E15.1 The City has standardized on a specific vendor for the supply and delivery of electric valve actuators. The Standardization Vendor was selected via RFP 331-2014 and was awarded to Rotork Control Canada Ltd. (Rotork).

(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 include but are not limited to:

(a) Multi-turn electric valve actuators and quarter-turn electric valve actuators with approximate torque requirements of:

(i) On/off torques > 250 Nm

(ii) Modulating torques > 150 Nm

(b) Associated accessories are also included in the agreement.

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

(a) Solenoid valve actuators;

(b) Small HVAC damper actuators; and

(c) Electric valve actuators with a power supply < 120 VAC.

E15.4 The use of gearboxes shall not be utilized to reduce actuator torque requirements for the purpose of bypassing this standardization agreement.

E15.5 The following model series shall be utilized unless otherwise indicated in the Specifications, Drawings or otherwise approved by the Contract Administrator:

(a) IQ3 Range – (IQ, IQM, IQS, IQT, IQTM)

E15.6 Valve Integration Assistance

E15.6.1 Coordinate with Rotork to review the integration of valves with the valve actuators. Comply with guidance provided by Rotork.

E15.6.2 The review provided by Rotork shall be for the purpose of ascertaining conformance of the actuator application with the given valve. The responsibility for integration of the valve with the valve actuator shall remain with the Contractor.

E15.6.3 Rotork will make all applicable actuator shop drawings and datasheets available to the Contractor to allow for integration of the valve with the valve actuator.

E15.6.4 In the event that the valve cannot directly attach to a standard base available for the electric actuator, supply and installation of valve adaptors between the actuator base and the valve will be the responsibility of the Contractor.

E15.6.5 Costs

(a) Rotork is obligated to provide valve integration assistance services at no additional cost above the supply of the actuator.

E15.7 Valve Integration Services

E15.7.1 The Contractor may engage Rotork to provide valve integration services in addition to that required in E15.6; however, this additional work would be outside of the Standardization Agreement.

(a) The Contractor is encouraged to provide the best value for services provided.

E15.8 Field setup and commissioning:

E15.8.1 Field setup and commissioning of the actuators shall be performed by Rotork under the standardization agreement for the following:

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

(b) A minimum of two actuators additional of each type, or 5% of the actuators of that type, whichever is greater.

E15.8.2 Coordinate with Rotork as required to understand the limitations of Rotork's field setup and commissioning services and provide all remaining services to provide a complete commissioning and start-up.

E15.8.3 Field setup and commissioning of the remaining actuators may be performed by Rotork, or by a representative of the valve manufacturer.

E15.8.4 Rotork's presence to setup and commission the actuator in no way limits the valve or gate vendor's responsibility for setup and commissioning.

E15.8.5 Responsibility of the Contractor:

(a) It is the responsibility of the Contractor to ensure that the installation of the actuator is complete and that the valve is ready to commission, as per Rotork's documented pre- commissioning checklist.

E15.8.6 Field setup and commissioning servers shall include all standard manufacturer recommended start-up and commissioning procedures, as well as the following:

(a) Visual Inspection
  (i) Inspect equipment for signs of damage.
  (ii) Verify mechanical installation per drawings.
  (iii) Inspect electrical terminal compartment for foreign objects.

(b) Mechanical Inspection
  (i) Check all bolts for tightness and to the correct torque.
  (ii) Check for alignment.
  (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 for continuity.
  (iii) Confirm input voltage and phase rotation is correct.
  (iv) Confirm that the control / fieldbus connections are correct.

(d) Start-up Services
  (i) Coordinate turning on power to the actuator.
  (ii) Perform functional tests.
  (iii) Coordinate with City personnel and designated representatives to confirm and finalize the application requirements.
  (iv) Configure and document all settings, as appropriate for the application.
  (v) Perform test runs.
  (vi) Verify that all configuration values are in the correct state.
  (vii) Transfer the configuration settings to on-site personnel.

E15.9 On-Site Training Session

E15.9.1 Operation and Basic Maintenance

(a) Overview
  (i) Provide instruction to designated City personnel in the operation and basic maintenance of the electric actuators.

(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 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 Calendar Days prior to the anticipated date of beginning of training.

(e) Quality Assurance
  (i) Provide competent instructors thoroughly familiar with all aspects of the electric actuators.
  (ii) The Contract Administrator may reject instructors it deems 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 consist of two (2) three and a half (3.5) hours periods, excluding coffee breaks. Both sessions shall be in one day.

(ii) Each day shall be assumed to be independent of other training days, 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:

- Operations personnel.
- Mechanical maintenance personnel.
- Electrical and instrumentation maintenance personnel.

(i) Content

(i) Overview of the equipment.

(ii) Internal operation of the actuators.

(iii) Equipment operating training including:

- Local operation of the actuator,
- Manual / handwheel operation,
- Remote operation, and
- Operation via the remote configuration tool.

(j) Basic equipment maintenance training including:

(i) Basic diagnostics,

(ii) Basic troubleshooting,

(iii) Access to historical information and torque values, and

(iv) Preventative maintenance

(k) Number of Sessions:

(i) Provide a minimum of three (3) sessions.

E15.9.2 Detailed Configuration and Service

(a) Overview

(i) Provide instruction to designated City personnel in the detailed setup, configuration, and service of the electric actuators.

(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 Calendar Days prior to the anticipated date of beginning of training.

(e) Quality Assurance

(i) Provide competent instructors thoroughly familiar with all aspects of the electric actuators.

(ii) The Contract Administrator may reject instructors it deems 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 consist of two days, each seven (7) hour sessions, excluding lunch and coffee breaks. The session days shall be back-to-back.

(ii) Each session (2-days) 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:

- Mechanical maintenance personnel.
- Electrical and instrumentation maintenance personnel.

(i) Content

(i) Detailed overview of the equipment and its internal construction.

(ii) Equipment configuration training, including:

- Setup of the actuator parameters,
- Establishing communications, and
- Setting torque limits and end limits.

(j) Equipment maintenance training including:

(i) Detailed diagnostics,

(ii) Detailed troubleshooting,

(iii) Preventative maintenance,

(iv) Disassembly,

(v) Replacement of modules, and

(vi) Fieldbus diagnostics

(k) Maintenance use of equipment configuration software, including:

(i) Basic operation of the software,

(ii) Connecting to electric actuators,

(iii) Download and upload of the actuator configuration, and

(iv) Diagnostics and troubleshooting.

(l) Number of Sessions: Provide a minimum of two (2) sessions.

E15.10 The contact for all quotations and purchases:

Brett Kinaschuk
Sales Manager- Oil and Gas – Canada
P: (403) 569-9455 ext 12251
C: (403) 993-5522
E: brett.kinaschuk@rotork.com
Rotork Controls (Canada) Ltd.
120S 3030-3rd Ave N.E. Calgary, AB T2A 6T7

Terry Arduini
Sector Manager
Water & Power – Canada
C: +1 (514) 292-3488
E: terry.arduini@rotork.com
Rotork Controls (Canada) Ltd

4228 – 55 Ave NW, Edmonton, AB T6B 3S2

E15.11 Quotations and orders:

(a) 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 331-2014."

E15.12 Measurement and Payment:

E15.12.1 Payment will be based on 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 UltimaX 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 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)

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."

E16.8 Measurement and Payment:

E16.8.1 Payment will be based on 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.

E17. STANDARDIZED INSTRUMENTATION

E17.1 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.

E17.2 Goods to be procured via this standardization agreement include but are not limited to:

(a) Flowmeters – Electromagnetic;

(b) Flowmeters – Differential pressure based;

(c) Pressure Transmitters including manifold assemblies;

(d) Temperature Transmitters including temperature elements and thermowells;

(e) Ultrasonic Level Transmitters; and

(f) Associated accessories.

E17.3 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).

E17.4 The following model series shall be utilized unless otherwise indicated in the Specifications, Drawings or otherwise approved by the Contract Administrator:

(a) Magnetic Flowmeter Flowtubes – SITRANS F M MAG 5100W series.

(i) SITRANS F M MAG 3100W series may be utilized where specified.

(b) Magnetic Flowmeter Transmitters - SITRANS F M MAG 6000 series.

(c) Pressure Transmitters - SITRANS P420.

(d) Temperature Transmitters

(i) SITRANS TF (Process Applications)

(ii) SITRANS TH400 (HVAC applications)

(e) Ultrasonic Level Transmitters

(i) Integrated applications: SITRANS Probe LU

(ii) Separate controller applications: Multiranger 100/200 with EchoMax transducers.

E17.5 Field setup and commissioning:

E17.5.1 Field setup and commissioning of the gas detection systems may be performed by Trans-West under the Standardization Agreement. Coordinate with Trans-West as required to understand the capabilities and limitations of Trans-West's field setup and commissioning services and provide all remaining services to provide a complete commissioning and start-up.

E17.5.2 Field setup and commissioning of the standardized instrumentation shall 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.

E17.5.3 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.

E17.5.4 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.

(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.

E17.5.5 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.

E17.6 Training

E17.6.1 Local Training Session – General Requirements

(a) Overview:
(i) Provide instruction to designated City personnel in the operation, configuration, and maintenance of the proposed instruments and associated components.

(b) Location:
(i) The location of the training will be in the City of Winnipeg, in a facility provided by the City.
(ii) The room will be classroom style.

(c) 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 Calendar Days prior to the anticipated date of beginning of training.

(d) Quality Assurance:
(i) Provide competent instructors thoroughly familiar with all aspects of the instruments.
(ii) The Contract Administrator may reject instructors it deems to not be qualified.
(iii) In the event that the training provided is not satisfactory, reduction in payment may be applied.

(e) Materials:

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

(ii) Sample instruments of each type shall be provided, along with all equipment required to power and configure the instruments.

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

(f) Attendees:

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

- Electrical and instrumentation maintenance personnel.

E17.6.2 Local Training Session – Electromagnetic Flowmeter, Pressure, Temperature

(a) Provide local training sessions, in accordance with E17.6:

(b) Duration:

(i) Each training session shall be a minimum of six (6) hours in duration, excluding coffee and lunch breaks.

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

(c) Scope:

(i) Each training session shall address the complete scope of all products proposed.

(d) For each instrument type, provide the following training content:

(i) Overview of the instrument,

(ii) Equipment maintenance training, including:

- Installation,
- Troubleshooting,
- Preventative maintenance,
- Replacement of components,
- Fieldbus network troubleshooting and diagnostics, and
- Calibration procedures.

(iii) Maintenance use of associated software and HART/PROFIBUS parameters, including:

- Basic operation of software,
- Connecting to instruments,
- Configuration of parameters,
- Download and upload software configuration, and

(iv) Diagnostics and troubleshooting.

(e) Number of Sessions:

(i) Provide a minimum of two (2) sessions for each instrument type.

E17.6.3 Local Training Session – Ultrasonic Level

(a) Provide local training sessions, in accordance with E17.6 :

(b) Duration:

(i) Each training session shall be a minimum of three (3) hours in duration, excluding coffee and lunch breaks.

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

(c) Scope:

(i) Each training session shall address the complete scope of all products proposed.

(d) For each instrument, provide the following training content:

(i) Overview of the instrument,

(ii) Equipment maintenance training, including:

- Installation,
- Troubleshooting,
- Preventative maintenance,
- Replacement of components,
- Fieldbus network troubleshooting and diagnostics, and
- Calibration procedures.

(iii) Maintenance use of associated software and HART/PROFIBUS parameters, including:

- Basic operation of software,
- Connecting to instruments,
- Configuration of parameters,
- Download and upload software configuration, and
- Diagnostics and troubleshooting.

(e) Number of Sessions:

(i) Provide a minimum of two (2) sessions for each instrument type.

E17.6.4 Electromagnetic Flowmeter Calibration Verification Tool Training

(a) Provide local training sessions, in accordance with E17.6:

(b) Provide one training session per unit supplied, to instruct designated City personnel in the operation, configuration, and maintenance of the proposed instruments and associated components.

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

(d) Provide competent instructors thoroughly familiar with all aspects of the verification tool.

(i) The Contract Administrator may reject instructors it deems to not be qualified.

E17.6.5 Each training session shall be a minimum of four (4) hours in duration, excluding coffee and lunch breaks, or longer as required to instruct personnel in the required operation.

E17.7 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

E17.8 Quotations and orders:

E17.8.1 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."

E17.9 Measurement and Payment:

E17.9.1 Payment will be based on 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.

SHAFT, TUNNELL AND SEWER CONSTRUCTION

E18. SUPPLY AND INSTALLATION OF TEMPORARY SHORING

E18.1 Description

(a) This Specification shall cover shoring general requirements for the temporary shoring work and is supplemented by E19.

E18.2 Construction Methods

E18.2.1 Excavation

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

(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.

E18.2.2 Basal Heave Requirements

(a) The base of excavation and shoring for the shaft construction shall be designed to achieve a minimum factor of safety of 2.0 with respect to basal heave.

(b) Depressurization can be considered to address basal heave and facilitate the excavation and foundations for the shafts; however, it is anticipated that groundwater depressurization may be ineffective and alternate methods to address the basal heave requirements will be required. Contractor to review and reference the GDR.

E18.2.3 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 as per CW 3550 or approved equal in accordance with B8, 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.

E18.2.4 Shoring

(a) The type, strength, and amount of shoring and bracing shall be such as the nature of the ground and attendance conditions may require, taking into account property lines, existing slopes, utilities and roadways.

(b) Shoring and bracing shall be so spaced and dimensioned as to prevent caving, loss of ground, surface settlement, or squeezing of the soil beyond the neat lines of excavation. It 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 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 and sealed by a Professional Engineer registered or 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 on a bi-weekly basis.

(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 the Contractor's own cost, to the satisfaction of the Contract Administrator.

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

E18.2.5 Monitoring Movement of Shoring

(a) The Contractor shall submit to the Contract Administrator a plan for monitoring the movement of shoring during construction at the same time the shoring design plans are submitted prior to the installation 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.

E18.3 Measurement and Payment

(a) Shoring required for shafts to complete the Work will be incidental to "Lift Station Shaft (incl. backfill)". No additional payment will be made for supplying materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

E19. SHAFT EXCAVATION AND SUPPORT

E19.1 This section outlines the minimum requirements for shaft excavation and support of shaft excavation for installation of the wet well, dry well, interconnection pipe, and construction of stub-outs (hand tunnelling) as shown on the Drawings. The Contractor is responsible for selecting the means and methods to complete the shaft construction at the location shown on the Drawings.

E19.2 The use of single shaft or multiple shafts and the size and orientation of the shaft(s) is at the discretion of the Contractor, but must be designed to support the anticipated Work and in accordance with this Specification.

E19.3 Design Criteria

(a) Excavation support systems shall be designed by a Professional Engineer registered in the Province of Manitoba, who has a minimum of five years' experience in the design of soil/rock retaining structures.

(b) The Contractor is fully responsible for the selection of the support of excavation system, sizes, dimensions, and methods of construction. **The size of the shafts shall be adequate to support hand tunneling operations and accommodate the permanent structure construction as shown on the Drawings.** Shafts shall be designed for the anticipated geotechnical and hydrogeological conditions as indicated in the GBR. Shaft designs are subject to review by the Contract Administrator. Acceptable support of excavation systems include:

(i) Secant Piles;

(ii) Concrete Caissons (Segmental or Insitu);

(iii) Steel Piles with bracing or

(iv) The Contractor may propose to use another type of support of excavation or combination of types based on the anticipated geotechnical and hydrogeological conditions as indicated in the GBR, subject to review by the Contract Administrator.

(c) Excavation support systems shall be designed by the Contractor to support earth pressure, groundwater pressure, utility loads, equipment, jacking loads, traffic loads, surcharge loads, and bottom heave/uplift.

(i) The base of excavation and shoring shall be designed to achieve a minimum factor of safety of 2.0 with respect to basal heave.

(d) Excavation support systems shall not damage adjacent structures including buildings, pipelines, and utilities.

(e) Excavation support systems shall be generally watertight with construction water removal permitted to control nuisance water and seepage.

(f) The Contractor shall be responsible for selecting ground improvements to maintain a watertight condition. Dewatering outside of the shaft shall not be permitted.

(g) Blasting will not be permitted during shaft construction. Where rock is encountered, jack hammering may be used.

(h) The Contractor shall design a tremie or base slab to seal the shaft from groundwater inflows and to resist uplift of the completed shaft. The minimum acceptable factor of safety for resistance to uplift shall be 1.2 under the most extreme loading conditions.

(i) The Contractor shall incorporate a sump in the design of the base slab to remove any groundwater, rainwater, runoff, or construction water that enters the shaft. The sump shall be filled in prior to the wet well and dry well structures being installed in place.

(j) Extend shaft lining around full perimeter of shaft to a minimum of 0.3 m above grade to prevent surface water overtopping shaft lining.

(k) The Contractor shall design shafts for staged installations and consider the removal of necessary portions to accommodate construction of connections and backfill sequences.

(l) Launch and reception seals shall be provided in the shafts. These seals shall consist of one or more rubber flanges attached to a steel housing.

(m) Deviation from plumb shall not exceed 100 mm in 30 metres. Correction of shaft deviation and any construction and associated costs resulting from relocation of appurtenances inside the shafts, including pipe connections caused by the shaft's deviation or other deficiencies in workmanship, shall be completed at the Contractor's expense.

(n) Provide sufficient detail to allow the Contract Administrator to review whether the proposed equipment, materials, and procedures meet the requirements of the Specifications. Review of the Contractor's submittals by the Contract Administrator shall not be construed in any way as relieving the Contractor of their responsibilities under this Specification.

(o) Shaft Excavation and Support Work Plan: Submit a work plan complete with drawings, written descriptions, procedures, and manufacturer's information identifying the details of the proposed methods of construction, support of excavation systems and dimensions, initial support systems, ground improvements, equipment, materials, and sequence of operations during construction. This work plan shall include:

(i) Sequence of shaft construction.

(ii) Description of equipment and procedures to be used to construct the shafts through the soils indicated in the GBR.

(iii) Description of ground improvement measures and procedures to create watertight conditions.

(iv) Description of shoring, bracing, reinforcement, and connection details.

(v) Description of dewatering procedures and methodologies.

(vi) Description of procedures for providing groundwater control during hand tunneling operations.

(vii) Description of methods and procedures of excavation, including methods for hoisting excavated material, stockpiling, and fully containing spoils.

(viii) Description of methods for hauling and disposal of excavated materials.

(ix) Written documentation signed by a reviewed disposal site indicating that the site will accept the spoils and that the site is in compliance with all applicable Provincial and Federal regulations.

(x) Procedures for checking and maintaining plumbness of shaft components.

(xi) Connection details to permanent structures.

(xii) Description of contingency plans for excessive movement of shaft elements, flooding, bottom heaving, and sloughing or caving earth.

(xiii) Description of methods and procedures to remove the upper portions of support of excavation systems below grade as shown on the Drawings.

(p) Shop Drawings and Layout Drawings

(i) Submit shop drawings showing plan and section views of support of excavation systems, including dimensions and sizes. Shop drawings shall describe proposed shaft elements, vertical risers, and equipment staging within staging areas at the shaft locations. Equipment shall include cranes, front-end loader, spoil transfer areas, spoil containment system, spoil hauling equipment, pumps, generators, tool trailers, containers, and other required equipment.

(q) Calculations:

(i) Submit design calculations for the support of excavation systems demonstrating that the systems are capable of supporting the maximum loads anticipated by the Contractor during shaft construction, hand tunnelling operations, and backfilling, consistent with the ground conditions outlined in the GBR.

(ii) Design calculations shall consider ground and hydrostatic loads, equipment, construction loads, and any other surcharge loads that may be reasonably anticipated during shaft construction or hand tunnelling operations.

(iii) Submit design calculations for the tremie slab/base slab confirming structural connection to the shaft walls.

(iv) Design calculations shall be sealed and signed by a registered Professional Engineer licensed in the Province of Manitoba.

(v) The Contractor shall clearly state all assumptions and values used in their calculations.

(r) Safety Plan:

(i) Submit a detailed safety plan for all shaft construction activities. The plan shall include details of air monitoring equipment, frequency of calibrating instruments, and procedures for lighting, ventilation, and electrical safeguards. Provide the name and qualifications for the site safety representative responsible for implementing the plan during the work.

(s) Contingency Plans: Submit contingency plans for the following list of problems that may be encountered during hand tunnelling operations.

(i) Difficulties advancing shaft components to required elevations within the geotechnical materials outlined in the GBR.

(ii) Excessive groundwater infiltration.

(iii) Encountering contaminated media and/or groundwater.

E19.4 Execution General

(a) Contractor shall furnish all necessary equipment, materials, power, water and utilities for all shaft construction and excavation activities required to complete this work.

(b) Shaft construction shall not begin until:

(i) All required submittals have been completed, reviewed and approved by the Contract Administrator.

(ii) Notification has been submitted by the Contractor to all utility companies and all required permits have been obtained.

(iii) Existing structures, utilities, trees, shrubs, and other facilities are adequately protected.

(iv) Contractor shall notify the Contract Administrator not less than fifteen (15) days before beginning any excavation.

(c) The Contractor shall ensure operations on or off the site do not interfere with traffic or create a dust, mud, or noise nuisance.

(d) The Contractor shall operate with a full crew 24 hours a day if a condition arises that jeopardizes the stability of the excavation or adjacent structures. This work shall include weekends and holidays without interruption until conditions no longer jeopardize the stability of the work.

(e) Conduct shaft construction activities in accordance with all City of Winnipeg safety regulations and applicable provisions of all relevant Federal, Provincial and regulatory and inspecting authorities. Contractor shall provide temporary safety railing and fencing around all excavations.

(f) All excavated materials shall be completely contained when stockpiled on site and shall be disposed of by the Contractor at a landfill licensed to accept. Contractor shall immediately clean up any spills.

E19.5 Quality Assurance

(a) All shaft excavation work shall be completed by an experienced Contractor who has a minimum of three (3) years of experience in constructing similar shafts within materials similar to those described in the Geotechnical Reports.

(b) The Contractor's superintendent shall have a minimum of three (3) years experience with the method(s) of shaft construction employed.

(c) The Contractor shall allow access to the Contract Administrator and shall provide necessary assistance and cooperation to aid the Contract Administrator in documenting observations, measurements, and sample collection prior to, during and following all shaft construction operations.

(d) The Contractor shall provide safe access to all equipment in accordance with all safety regulations. The Contractor is responsible for all aspects of safety of the support of excavation systems.

(e) The Contractor shall take immediate action to limit loss of ground and inform the Contract Administrator should ground fall out or excessive voids occur during shaft construction for any reason.

E19.6 Ground Water Control

(a) Dewatering outside of the shaft perimeter to facilitate shaft construction will not be allowed. Contractor shall use ground improvement techniques such as jet grouting or other grouting measures to isolate the groundwater from the shafts.

E19.7 Secant Piles

(a) If used, concrete piles shall be driven in plumb. Piles shall overlap with adjacent piles to generate a groundwater cutoff and eliminate groundwater infiltration.

(b) Piles shall be driven and seated into the underlying material. Grout shall be used to seal and isolate groundwater flow around the piles through the existing material.

(c) Reinforcing steel shall not be used near planned tunnelling eyes.

(d) Excavation shall not commence until such time as the concrete has achieved the minimum required strength.

E19.8 Concrete Caissons

(a) If used, caisson lifts shall not be placed until the previous lift has achieved its minimum required strength.

(b) Where possible, during construction the internal excavation shall be hydrostatically balanced with the natural groundwater to prevent heave, caving or sloughing of material.

(c) Ports and pipes shall be provided for the supply of bentonite to the outside of the caisson shell to reduce skin friction and aid in the sinking of the shaft.

(d) Construction joints and waterstops shall be used between caisson lifts and between the cutting shoe and the first lift.

(e) Reinforcing steel shall not be used near planned tunnelling eyes.

(f) Shaft shall be seated into the existing material. Bottom of caisson shall consist of grout ports to aid in sealing the interface between the bottom of the soil and the existing ground.

E19.9 Shaft Eyes

(a) The Contractor shall be responsible to assess the geotechnical conditions and the need for ground improvement at each of the launch shaft and reception shaft locations. If the Contractor determines the need for ground improvement exists, the design shall be included in the shaft submission and noted on the construction schedule. Details including the method, scope, and targeted zone should be noted and clear in the submission for the Contract Administrator's review.

E19.10 Backfilling of Shafts

(a) The Contractor shall backfill shafts with CLSM. Cement Stabilized Fill (CLSM) in accordance with CW 2030 and Table CW 2160.1 shall be used as initial backfill for all shafts unless otherwise indicated on the Drawings. Further to Table CW2160.1 the maximum compressive strength at 28 days to be no more than **1 MPa.**The Contractor shall install fill in lifts and provide sufficient supports to resist uplift of piping or structures due to backfilling.

(b) Areas to be backfilled shall be free of debris, snow, ice, water, or frozen ground.

(c) The Contractor is responsible for repairing all damage and correcting all deficiencies which may result from the settlement of backfill areas at no additional cost to the City.

E19.11 Removal of Support System

(a) The Contractor shall only remove the upper portions of the shaft wall to three (3) metres below final grade to permit restoration around the shaft.

E19.12 Site Clean Up and Restoration

(a) The Contractor shall remove all construction debris, spoils, oil, grease, and other materials from the shafts and staging areas upon completion of the Work.

(b) The Contractor shall dispose of all excavated materials. Excavated materials shall be transported in lined trucks. Only those disposal sites identified in the reviewed submittals shall be used.

(c) The Contractor shall restore and repair any damage resulting from their construction activities. Property damaged shall be restored to a condition equal to or better than existing prior to construction.

E19.13 Measurement and Payment

(a) Shaft Excavation and Support

(i) Construction of the lift station shaft shall be measured at the contract unit price for "Lift Station Shaft (incl. backfill)". The price shall be for the shaft construction described in these Specifications to support the Work shown on the Drawings. The price includes but is not limited to, shaft excavation (removal of all subsurface materials within the shored area), shaft excavation support (Shoring), any measures to mitigate buoyancy, construction of the mud slab, and backfill of the shaft following installation of the dry well and wet well and associated piping as shown on the Drawings, and all appurtenances and miscellaneous materials as required to successfully carry out the shaft construction.

(ii) The lump sum payment covers the costs for all shafts required for the Work whether the contractor constructs a single shaft or multiple shafts

(iii) Payment for shaft will be made on the monthly progress payment, once the shafts have been excavated and shored in accordance with the Specifications and approved shop drawings, and as approved by the Contract Administrator.

(iv) Shoring requirements identified in E18 are incidental to this item.

E20. LARGE DIAMETER MANHOLE

E20.1 Description

(a) This Specification supplements and amends City of Winnipeg Standard Construction Specification CW 2130 Gravity Sewers and shall cover the installation of large diameter manholes.

(b) For the purposes of this specification, large diameter manholes are precast concrete manholes sized to accommodate pipe larger than 525 mm as shown on the Drawings.

(c) The manhole covered in this section is the precast sections of the wet well as shown on the Drawings.

E20.2 Submittals

(a) Submit shoring design, Shop Drawings for pre-cast sections and pipe to manhole connections, reinforcing steel Shop Drawings, and concrete mix design in accordance to CW 2160.

E20.3 Materials

(a) Precast concrete sections and adjusting rings, joint gaskets and cast-iron frames and covers in accordance with CW 2130.

(b) HDPE lining and Epoxy Coating in accordance with E21 and as identified on the Drawings.

E20.4 Construction Methods

(a) Manhole installation as per CW 2130 and as shown on the Drawings.

(b) Manhole sections will be placed on the precast base as shown on the drawings. It is the responsibility of the contractor to ensure fit and finish of the connection to prevent leakage and infiltration.

E20.5 Measurement and Payment

(a) Construction of Large Diameter Manholes shall be measured on a vertical metre basis at the contract unit price for each type a manhole as listed below. The price shall include but not be limited to adjusting rings, frames and covers, benching, couplings, appurtenances and miscellaneous metals and materials.

(i) Large Diameter Manhole

- Wet Well (3650 mm diameter c/w lining)

(b) Further to (a), prices include connections of the proposed sewer piping as described in E22 and E23 to the manholes as detailed on the Drawings as required for the select installation methodology.

E21. CONCRETE PROTECTIVE LINERS AND COATINGS

E21.1 Description

(a) This Specification shall cover the protective liner requirements for the wet well to be installed as part of this project.

E21.2 Reference Standards

ASTM International

(a) ASTM D792, Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

(b) ASTM D4218, Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique

(c) ASTM D5199, Standard Test Method for Measuring the Nominal Thickness of Geosynthetics

(d) ASTM D5596, Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics

(e) ASTM D6365, Standard Practice for Nondestructive Testing of Geomembrane Seams Using the Spark Test

(f) ASTM D6392, Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produces Using Thermo-Fusion Methods

(g) ASTM D6693, Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes

(h) ASTM D7234, Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers

(i) ASTM D7853, Standard Test Method for Hydraulic Pullout Resistance of a Geomembrane with Locking Extensions Embedded in Concrete

Geosynthetic Institute

(j) GRI-GM19a, Standard Specification for Seam Strength and Related Properties of Thermally Bonded Homogeneous Polyolefin Geomembrane/Barriers

E21.3 Submittals

(a) Submittals to be in accordance with Division 1 Specifications.

(b) Submit manufacturer's instructions, printed product literature, and data sheets for the concrete protective liner (CPL).

(c) Submit written certification from the CPL manufacturer that the CPL meets or exceeds the requirements of this specification.

(d) Submit manufacturer's instructions, printed product literature, and data sheets for the epoxy coating.

(e) Submit the precast concrete manufacturer's Factory Quality Control Program for the CPL including welding procedures, equipment details, qualifications of the factory welding technicians, extruder trial procedures and trial frequencies, and non-destructive test methods and test frequencies.

(f) Submit the CPL installer's Field Quality Control Program including welding procedures, equipment details, qualifications of the field welding technicians, extruder trial procedures and trial frequencies, and non-destructive test methods and test frequencies.

E21.4 Closeout Submittals

(a) Submit final records of all the extruder trials and non-destructive tests for both the factory and field CPL seaming.

(b) Submit a final record of all field tests for the epoxy coating.

E21.5 Delivery, Storage and Handling

(a) Deliver, store and handle Materials in accordance with manufacturer's written instructions.

(b) Delivery and Acceptance Requirements: deliver Materials to site in original factory packaging, labelled with manufacturer's name and address.

(c) Storage and Handling Requirements:

(i) Store Material in accordance with manufacturer's recommendations.

(ii) Store and protect Materials from damage.

(iii) Replace defective or damaged Materials with new.

E21.6 Materials

(a) Concrete Protective Liner (CPL) shall be smooth HDPE liner with a minimum nominal thickness of 4.0mm (or as indicated elsewhere in the Contract Documents), measured in accordance with ASTM D5199, complete with locking extensions on one side of the liner for embedment into concrete.

(b) Locking extensions shall be manufactured during the extrusion process in one homogenous piece with the CPL and shall not be attached by secondary manufacturing processes such as welding or mechanical finishing.

(c) CPL for precast concrete sewer sections (e.g., wet well) shall be cast-in-place at the factory. Precast concrete sections with CPL shall be manufactured by wet-cast method. A maximum of one longitudinal CPL seam is permitted for each precast concrete sewer section (i.e., individual pipe segment or manhole barrel).

(d) CPL cap strips for overlapping joints shall be smooth HDPE liner with a minimum nominal thickness of 4.0 mm (or as indicated elsewhere in the Contract Document), measured in accordance with ASTM D5199, and a nominal width range of 60 to 200 mm unless otherwise approved by the Contract Administrator.

(e) The CPL shall be repairable at any time during the life of the structure.

(f) Openings or discontinuities in the CPL for the relief of weep water and vapor pressure shall be provided. If no openings or discontinuities in the CPL are indicated on the Drawings the CPL shall be a fully sealed system.

(g) The CPL shall meet the following properties:

Property	**Test Method**	**Minimum Average Values**		
Nominal Thickness (mm)	ASTM D5199	2.0	3.0	5.0
Density (g/cc)	ASTM D792, Method B	0.935		
Tensile Yield Strength (N/mm)	ASTM D6693, Type IV	30.8	46	77
Break Elongation (%)	ASTM D6693, Type IV	300	300	300
Carbon Black Content (%)	ASTM D4218	2 - 3		
Carbon Black Dispersion (category)	ASTM D5596	Only near spherical agglomerates for 10 views: 9 views in Cat. 1 or 2, and 1 view in Cat. 3		
Hydraulic Pullout Resistance (kPa)	ASTM D7853	206.9 for min. 200 hr		

(h) Approved products:

(i) AGRU Ultra-Grip or equivalent.

E21.7 Extrudate Rod

(a) Extrudate material shall be manufactured from the same parent material as the CPL.

(b) Extrudate material shall be free of contamination by moisture or foreign matter.

E21.8 Epoxy Coating

(a) Epoxy coatings for wastewater infrastructure concrete protection shall be hand-applied or sprayable to a minimum final film thickness of 6 mm.

(b) Epoxy coatings shall be used to protect wastewater infrastructure concrete not protected by factory or field cast-in-place CPL (e.g., cast-in-place manhole benching, mortared pipe-to-manhole connections, and precast concrete grade rings).

(c) Approved products:

(i) Neopoxy NPR-5305.

E21.9 Construction/Execution

E21.9.1 CPL Field Seams

(a) The installation contractor shall be trained and licensed to install the CPL product. Welders shall be IAGI Certified.

(b) Field seaming shall not occur if the material temperature is lower than 0°C. All CPL surfaces to be seamed shall be dry, free from dirt, mud, and debris, and free from standing water.

(c) Seaming shall be performed by extrusion welding.

(d) Hot air welding may only be used for tacking materials prior to extrusion welding.

(e) Joints between CPL panels greater than or equal to 10 mm in width require overlapping CPL cap strips seamed with extrusion fillet welds. Joints between CPL panels less than 10 mm in width may be seamed with extrusion butt welds.

(f) If grinding of the surfaces to be welded is required, the grinding marks shall be orientated perpendicular to the seam direction and no marks shall extend beyond the extrudate after placement.

(g) Clean overlapped areas and maintain state of cleanliness until the weld is complete. Inspect cap strips and liner structures for flaws and repair as required.

(h) Insert a continuous electrically conductive material into field seams immediately prior to or during fabrication to facilitate spark testing in accordance with ASTM D6365.

(i) The extruder identification, date, time, technician initials, and barrel and air temperatures shall be recorded on the CPL.

E21.9.2 Extruder Trial Seams

(a) Extruder trial seams are required:

(i) At the start of each welding period.

(ii) If welding has ceased for four hours or more.

(iii) If a new operator or new machine starts welding.

(b) Extruder trail seams are to be completed using the CPL cap strip materials in the same conditions or in as close as practicable conditions to the conditions of the field welding.

(c) Extruder trial seams shall be at least 1 m long with the seam centred lengthwise. Prepare and test specimens in accordance with ASTM D6392 for peel and shear.

(d) Peel and shear strengths shall meet or exceed the extrusion fillet seam strengths specified in GRI-GM19a Table 1(b). If the nominal thickness of the trail seam material is greater than 3 mm, the peel and shear strengths shall meet or exceed the extrusion fillet seam strengths specified in GRI-GM19a Table 1(b) for 3 mm nominal thickness geomembrane.

E21.9.3 Spark Testing

(a) The Contractor shall non-destructively test all field seams over their full length by Spark Testing in accordance with ASTM D6365.

(b) Each seam shall be numbered or otherwise designated. The date, time, tester initials, and outcome of the testing shall be recorded both on the CPL and in a log for submission to the Contract Administrator.

(c) Testing should be done as the seaming work progresses. All defects found during testing shall be numbered and marked immediately after detection. All defects found should be repaired, retested, and remarked to indicate acceptable completion of the repair.

E21.9.4 CPL Defects and Repairs

(a) All seams and non-seam areas of the CPL shall be inspected by the Contractor for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter.

(b) Defective seams shall be restarted/re-seamed. Defective seams shall be grinded prior to rewelding a new seam. Welding shall commence where the grinding started and must overlap the previous seam by at least 75 mm.

(c) Small holes less than 5 mm in diameter may be repaired by extrusion cap welding.

(d) Holes larger than 5 mm in diameter shall be repaired by patching.

(e) Tears shall be repaired by patching. Where the tear is on an area of stress and has a sharp end, it must be rounded prior to patching.

(f) Blisters, large holes, undispersed raw materials, and contamination by foreign matter shall be repaired by patches.

(g) CPL surfaces, which are to be patched shall be abraded and cleaned no more than 15 minutes prior to the repair. No more than 10% of the thickness shall be removed.

(h) Patches shall be round or oval, made from material equivalent to the CPL cap strip, and extend a minimum of 75 mm beyond the edge of the defect. Conductive inserts or backing materials are required to facilitate post-repair spark testing.

(i) All patches shall have their top (or outside) edge beveled with an angle grinder either prior to or after the patch is placed on the CPL.

E21.9.5 Epoxy Coating Application

(a) The temperature of the surface to be coated shall be between 5 and 26°C.

(b) Fill any voids with epoxy patching material or cementitious fast set grout. For flowing or weeping water conditions, rapid setting cementitious plug materials may be used instead of epoxy grouts.

(c) Clean the surface to be coated by removing any laitance, dust, contaminated materials, plaster, oil, paint, grease, etc.

(d) All new concrete surfaces to be coated must cure at least 28 days prior to application of the coating product.

(e) Epoxy coating may commence when surface is visibly dry.

(f) Application procedures shall conform to the recommendations of the manufacturer, including material handling and mixing.

(g) Specified surfaces shall be coated by trowel or spray application.

(h) Thickness measurements shall be made using a wet film thickness gauge at a grid spacing of 1 m, vertically and horizontally.

(i) When the epoxy coating product has cured to a hard surface, the area of application shall be visually inspected for discontinuities and/or pinholes. Visible discontinuities shall be marked for subsequent repairs.

E21.9.6 Pull-off Adhesion Testing

(a) The Contractor shall destructively test all coated surfaces by Pull-Off Adhesion Testing in accordance with ASTM D7234. The minimum pull-off strength shall be 1.7 MPa and not less than 80% of the break shall be cohesive failure in the concrete substrate.

(b) A minimum of one representative test shall be completed for each day of coating. The representative tests for each day shall be completed within the respective area coated for that day.

(c) Pull-off adhesion testing shall not be completed until the coating has fully cured to ensure cohesive strength and adhesion.

E21.10 Measurement and Payment

(a) All costs associated with concrete protective liners and coatings as described herein are incidental to Wet Well (3650 mm diameter c/w lining). No separate measurement or payment will be made.

SEWER CONSTRUCTION

E22. SEWER CONSTRUCTION – 1200 MM STUB CONNECTION TO PROPERTY LINE

E22.1 Description

(a) This Specification covers the pipe installation method for the installation of the 1200 mm diameter stub connection from the lift station site to Property Line, as shown on the Drawings.

(b) The Contractor is responsible for the selection of the means and methods for the installation of the primary trenchless liner and the method of blocking and grouting of the 1200 mm diameter stub, provided they meet the requirements set out herein and are constructed as shown on the Drawings.

(c) This Specification supplements and amends City of Winnipeg Standard Construction Specification CW 2130 Gravity Sewers, and shall cover the installation of sewers not covered under the specifications.

(d) Further to Clause 3.4.1 of CW 2130, sewers shall be installed by trenchless methods.

(e) The current Contract includes 17 m of hand mined 1200 mm tunnel extending to property line to connect to the 1200 mm hand mined tunnel being installed under the interceptor contract (Tender 990-2022B). The Interceptor tender has closed and is anticipated to be awarded during the tendering process for the current Lift Station project. The successful Bidder for the Interceptor Sewer Contract will be available on the City Website upon award of that Contract.

(f) Further to (e), the Lift Station Contractor will be responsible for removal of the concrete bulkhead and completing the connection to the existing PVC stub at property line.

E22.2 Materials

(a) Selection of the primary liner of the stub trenchless installation shall be at the discretion of the Contractor.

(b) Pipe material of the stub connection shall be 1200 mm diameter SDR 35.

(c) Blocking material shall be at the discretion of the Contractor.

(d) Grouting material shall have a minimum 28-day compressive strength of 5 MPa. Materials shall be tested to ASTM C109.

E22.3 Construction Methods

(a) Selection of equipment, means, and methods for installation of sewer stub by trenchless methods shall be the responsibility of the Contractor and shall be made based on expected soil conditions as detailed in the geotechnical report.

(b) The Contractor shall provide a Trenchless Methodology Submission that should include the following:

(i) Primary liner design for the trenchless stub stamped by a Professional Engineer licenced in the Province of Manitoba.

(ii) Carrier pipe blocking details and grouting plan which includes calculations that demonstrate the suitability of the installation plan. Calculations shall be provided for confirming forces exceeding its capacity in terms of buckling, ovality, floatation, and heat of hydration of the grouting material. Refer to Drawings. Calculations shall be stamped by a Professional Engineer licenced in the Province of Manitoba.

(c) Grouting may be done in more than one lift.

(d) Contractors selected method must provide ground support such that the connections may be constructed as shown on the Drawings.

(e) The Lift Station Contractor shall keep the Contract Administrator apprised of their schedule so that the Contract Administrator can coordinate with the Interceptor Sewer Contract personnel on anticipated timing for the connection to take place. The Interceptor Sewer Contractor will be responsible to install a temporary plug within their section of the stub to facilitate the Lift Station Contractor's hand tunnelling and connection Work and to prevent any potential drilling fluid from entering the stub.

(f) The Contract Administrator will provide coordinates of the bulkhead installed by the Interceptor Sewer Contractor.

E22.4 Measurement and Payment

(a) Payment for the sewer installation shall be made under the Contract Unit Price of "Sewer Construction – 1200 mm Stub Connection to Property Line" on the Form B: Prices. The pipe shall be measured on a linear meter basis from the upstream face of the wet well to the connection point at the property line as shown on the Drawings.

(i) Payment for the temporary or permanent relocation of existing utilities, and or temporary support of existing utilities required for the placement of shafts shall be incidental to Sewer Construction.

(ii) Connecting new sewers to new manholes will be incidental to Sewer Installation.

(iii) Repair of damage to underground and surface structures due to surface subsidence and soil heaving caused by auger boring installation methods will be at the contractors expense.

(b) Payment for removal of the existing bulkhead and connecting the 1200mm PVC DR25 stub to the existing 1200mm PVC DR25 stub (installed by the Interceptor Sewer Contractor) shall be measured on a Lump Sum basis and paid for under the Contract Unit Price of "Sewer Construction – Connection of 1200 mm Stub Connection to Property Line to Existing 1200mm PVC DR 35 Stub" on the Form B: Prices.

E23. SEWER CONSTRUCTION – 1200 MM STUB WITH BULKHEAD

E23.1 Description

(a) This Specification covers the pipe installation method for the installation of the 1200 mm diameter stub connection complete with bulkhead from the wet well out towards the future expansion Site, as shown on the Drawings.

(b) Further to (a), the stub pipe will be required to extend 1.0 meter past the outside face of the Contractor's selected shoring system.

(c) The Contractor is responsible for the selection of the means and methods for the installation of the primary trenchless liner and the method of blocking and grouting of the 1200mm diameter stub with bulkhead provided they meet the requirements set out herein and are constructed as shown on the Drawings.

(d) This Specification supplements and amends City of Winnipeg Standard Construction Specification CW 2130 Gravity Sewers, and shall cover the installation of sewers not covered under the specifications.

(e) Further to Clause 3.4.1 of CW 2130, sewers shall be installed by trenchless methods.

(f) A temporary bulkhead shall be constructed at the downstream end of the stub to facilitate future tie in connection.

E23.2 Materials

(a) Selection of the primary liner of the stub trenchless installation and bulkhead shall be at the discretion of the Contractor.

(b) Pipe material of the stub connections shall be 1200mm diameter SDR 35.

(c) Blocking material shall be at the discretion of the Contractor.

(d) Grouting material shall have a minimum 28-day compressive strength of 5 MPa. Materials shall be tested to ASTM C109.

(e) Bulkhead shall be lined with 4 mm HDPE Ultragrip liner wall as shown on the drawings.

E23.3 Construction Methods

(a) Selection of equipment, means, and methods for installation of sewer stub by trenchless methods shall be the responsibility of the Contractor and shall be made based on expected soil conditions as detailed in the geotechnical report.

(b) The stub pipe shall extend from the downstream face of the precast wet well structure to 1.0 meter past the outside face of the Contractor's selected shoring system. The pipe shall be installed with bell end downstream to facilitate future connection.

(c) The Contractor shall provide a Trenchless Methodology Submission that should include the following:

(i) Primary liner design for the trenchless stub and temporary bulkhead installation stamped by a Professional Engineer licenced in the Province of Manitoba.

(ii) Carrier pipe blocking details and grouting plan which includes calculations that demonstrate the suitability of the installation plan. Calculations shall be provided for confirming forces exceeding its capacity in terms of buckling, ovality, floatation, and heat of hydration of the grouting material. Refer to Drawings. Calculations shall be stamped by a Professional Engineer licenced in the Province of Manitoba.

(d) Grouting may be done in more than one lift.

(e) Where a bulkhead is installed at the end of a pipe section where a manhole is not present, above grade markers shall be installed to indicate the location of the plug/future pipe connection. Where the plug is within a grassed area, the marker shall be a 19 mm rebar, 1 m long installed in the ground with 50 mm exposed above surface. A 1.5 m 4x4 wooden post shall be installed adjacent to the rebar with 0.6 m below grade and 0.9 m above grade. Where the plug is within finished concrete or asphalt, the marker shall be a 3 inch bolt drilled and grouted into the surface with the head of the bold 3 mm below surface.

(f) Locations of plug end/bulkhead end shall be surveyed for final grade and location. Surveyed information shall be provided to the Contract Administrator.

E23.4 Measurement and Payment

(a) Payment for the 1200 mm stub connection with bulkhead shall be measured on a Lump Sum basis and paid for at the Contract Unit Price of "Sewer Construction - 1200 mm Stub with Bulkhead" on the Form B: Prices. The price shall be payment in full for installing the stub pipe from the downstream face of the precast wet well structure to 1.0 meter past the outside face of the Contractor's selected shoring system and construction of bulkhead, and include all Works and materials necessary to complete the installation as described herein and as shown on the Drawings. No separate measurement or payment will be made.

(b) Connecting the sewer to the wet well will be incidental to this item.

(c) Construction of bulkhead is considered incidental to this item.

(d) Payment for the temporary or permanent relocation of existing utilities, and or temporary support of existing utilities required for the installation of the sewer will be considered incidental to this item.

(e) Repair of damage to underground and surface structures due to surface subsidence and soil heaving caused by auger boring installation methods will be at the contractors expense.

FORCE MAIN

E24. FORCE MAIN

E24.1 Description

(a) This Specification describes the supply and installation of force mains and shall supplement the requirements of CW 2110.

(b) The term "force main" shall be considered equivalent to the term "water main".

(c) Disinfection of the force main pipe will not be required.

E24.2 Pipe shall be installed using open cut methods. Deviation from this methodology must be submitted to the Contract Administrator for approval prior to commencement of Construction.

E24.3 Submittals

(a) Laying Schedule

(i) Submit laying schedule for review by the Contract Administrator. Laying schedule shall show general pipe layout, location of fittings and specials, proposed direction of lay and connection points.

(ii) Minor adjustments to pipe design plans to suit standard pipe lengths may be permitted by the Contract Administrator.

(b) Fittings

(i) Submit details of all fabricated fittings and specials, including details of proposed connections to existing pipes.

(c) Affidavit of Compliance

(i) An affidavit of compliance signed by an officer of the pipe manufacturer shall be provided stating that the pipe and fittings comply with this Specification, in accordance with Section 6.3 of AWWA C900.

E24.4 Materials

(a) Force Main Pipe

(i) The force main shall be constructed using AWWA C900 PVC DR 25 pipe or an equivalent product from the City of Winnipeg Approved Product list and as per Section B8.

(b) Restrained Joint Coupling

(i) Restrained Joint Coupling shall be Georg Fischer Multijoint 3000 Plus Couplings. Each coupling shall be capable of connecting the pipe materials as indicated on the drawings.

(c) Equipment

(i) 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 always have sufficient standby equipment available, as required.

E24.5 Construction Methods

(a) Trench Shoring and Excavation

(i) Work must be completed in accordance with CW 2030 unless otherwise indicated by the Contract Administrator.

(ii) The Contractor shall take precautionary steps to prevent damage from construction activities to adjacent properties. All damage to adjacent properties caused by the Contractor's activities shall be repaired to equal or better condition than prior to construction, as approved by the Contract Administrator. No separate measurement or payment will be made for the protection of adjacent private property.

(iii) 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 the material.

E24.6 Method of Measurement and Payment

(a) Supply and Installation of PVC Force Main Pipe.

(i) Force main installation will be measured on a length basis for each size, method of installation, type of bedding and type of backfill and paid for at the Contract Unit Price per metre for "Force Main". The length to be paid for will be the total number of

linear metres supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.

(ii) Correction of alignment and grade exceeding the allowable variance will be at the Contractor's own expense.

LAND DRAINAGE SEWER

E25. MANHOLE

E25.1 Description

(a) This Specification describes the supply and installation of manholes and shall supplement the requirements of CW 2130.

E25.2 Materials

(a) The manhole will serve as a 1200 mm diameter catch basin and shall have a standard grated cover, approved catch basin hood (per SD 25), 72 mm restrictor (per SD 25B) and 600 mm sump (per SD 25)

E25.3 Measurement and Payment

(a) Measurement and Payment shall be per CW 2130.

GABION WALL SYSTEM

E26. TRENCHED ROCKFILL SHEAR KEY

E26.1 Description

E26.1.1 This Specification shall cover the installation of the trenched rockfill shear key, including shear key excavation, placement and compaction of shear key backfill, vibrocompaction of the shear key backfill, and provisions for handling groundwater infiltration.

E26.1.2 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.

E26.2 Materials

E26.2.1 The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

E26.2.2 Shear Key Backfill

(a) The rockfill material for use as shear key backfill shall consist of a clean free draining, sound, dense, durable, crushed rock. The material shall be free from organics, roots, silts, sand, clay, snow, ice or any other material that would detract from the strength and drainage characteristics of clean rockfill.

(b) Individual particles shall be shaped such that no dimension is greater than two times the smallest dimension. Flat, elongated, or platy particle shapes will not be accepted.

(c) Should the Contractor choose to use limestone, it shall be durable white crystalline limestone that has proven freeze-thaw durability based on the material requirements given below. Softer buff to yellow dolomite or dolostone will not be accepted.

(d) Where shear key backfill has become contaminated with silt, clay, snow, ice or other deleterious material due to the Contractor's method of operation, negligence, failure to backfill in a timely manner, etc. the material shall be classified as rejected backfill and shall be weighed prior to disposal for deduction from the total weight of rockfill measured for payment. The Contractor shall be responsible for the removal of all contaminated shear key backfill.

(e) The shear key backfill shall meet the following requirements:

Parameter	Test Method	Specified Limit
LA Abrasion Loss	ASTM C535	32% maximum
Soundness	ASTM C88	13% maximum
Gradation	ASTM D5519	See below
Bulk Specific Gravity	ASTM C127	2.6 minimum
Absorption	ASTM C127	2.5% maximim

(f) The shear key backfill shall be graded having a range of sizes, generally conforming to the following gradation:

Canadian Metric Sieve Size (millimeters)	Percent of Total Dry Weight Passing Each Sieve
150	100%
75	40-70%
25	0-5%

E26.3 Equipment

E26.3.1 Contractor shall submit a list of all equipment required to complete the Work. 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 and/or additional support standby equipment available at all times, as required, to complete project Works.

E26.3.2 The Contractor shall use vibratory equipment that can be directly inserted to the bottom of the trenched rockfill shear key to densify the shear key backfill throughout the entire depth of the shear key.

E26.4 Submittals

E26.4.1 The Contractor shall submit the proposed supplier and location of the source quarry for supply of shear key backfill.

E26.4.2 Representative samples of the shear key backfill, crushed to a maximum 75 mm aggregate size, shall be submitted to the Contract Administrator for approval a minimum of two (2) weeks prior to delivery of shear key backfill to the Site.

E26.5 Quarry Sites

E26.5.1 Contractors supplying shear key backfill shall be responsible for demonstrating that the material is of adequate quality and volume to meet the material Specifications contained herein.

E26.6 Testing and Approval

E26.6.1 All materials set forth in this Specification shall be subject to inspection and testing by the Contract Administrator or by the testing laboratory designated by the Contract Administrator. There shall be no charge for any materials taken by the Contract Administrator for testing purposes.

E26.6.2 The Contract Administrator will visit the proposed quarry for inspection of the proposed shear key backfill a minimum of seven (7) days prior to the supply and placement of shear key backfill.

E26.6.3 No supply and placement of shear key backfill will be permitted prior to the Contract Administrator receiving and reviewing representative samples of the shear key backfill.

E26.6.4 The procedures for preparation of all rockfill samples for use in material inspection and testing shall be subject to review and acceptance by the Contract Administrator for

individual tests. The samples may be obtained from crushed and processed material at the sizing necessary for specific tests if the material is deemed to be representative of the shear key backfill that will be used, subject to the acceptance of the Contract Administrator.

E26.6.5 The testing frequency necessary to confirm the material quality will be specified at the discretion of the Contract Administrator.

E26.7 Construction Methods

E26.7.1 Excavation

(a) The excavation shall be supervised at all times, and open excavations shall be adequately guarded or covered for safety.

(b) No excavations shall be permitted to be left open overnight for any length of time as placement of shear key backfill shall follow excavation immediately.

(c) The trenched rockfill shear key trench shall be excavated and backfilled to achieve the embedment depth into till as illustrated on the Drawings. Note that the till elevation may vary and therefore the total depth of excavation may differ than that illustrated on the Drawings. The trench shall be excavated by a hydraulic excavator a minimum 0.6 m into the component till layer, as approved by the Contract Administrator.

(d) The Contractor shall not commence excavation of the trench until the shear key backfill, is on-site. The construction of the trenched rockfill shear key shall be a continuous operation with backfilling immediately following excavation.

(e) The Contractor must not excavate more than 2 metres ahead of the backfill placement as measured at the bottom of the excavation.

(f) Any deleterious or sloughed material shall be removed from the trench prior to backfilling.

(g) The Contractor shall be responsible to contain and direct any displaced surface water or groundwater such that it will not affect other construction work, cause sediment to enter any water course, or cause excessive erosion. The control of surface water and groundwater shall be the responsibility of the Contractor and shall be considered incidental to the Work.

(h) The Contractor shall take all precautions necessary to maintain the excavation geometry to the neat lines shown on the Drawings. If necessary, the excavation shall be completed in stages and allowed to freeze, to prevent sloughing of the side slopes and shear key sidewalls. Such precautions will be considered incidental to the excavation and will not be paid for separately.

(i) Excavated material shall be removed from the site area immediately upon excavation and disposed of off-site. Stockpiling of excavated material on site will not be permitted. If the material is determined to be suitable as “Imported Fill Materials”, by the Contract Administrator, the Contractor may temporarily stockpile the material in an area approved by the Contract Administrator.

(j) It shall be the responsibility of the Contractor to dispose of all material designated as unsuitable backfill by the Contract Administrator off-site, at a location determined by the Contractor. The unsuitable backfill shall become the property of the Contractor.

(k) It shall be the responsibility of the Contractor to dispose of all excess clay as designated by the Contract Administrator off-site, at a location determined by the Contractor. The excess clay shall become the property of the Contractor.

E26.7.2 Backfilling and Compaction

(a) The Contractor shall monitor the supply rate of the shear key backfill to ensure that backfilling operations are not delayed.

(b) Stockpiling of rockfill material on site is not permitted except at locations where the shear key has been installed and subject to the approval of the Contract Administrator.

(c) Compaction of shear key backfill shall be by vibrocompaction utilizing a vibrocompaction lance capable of being inserted through the full depth of the rockfill, into the underlying till and capable of increasing the rockfill density a minimum of 15% versus the uncompacted material. Vibrocompaction shall be completed over the entire length of the trenched rockfill shear key as shown on the Drawings. The lance will first be inserted through the shear key backfill into the underlying till. The lance will then be held stationary and vibrated at the bottom of the excavation and vibrated for a minimum of 1 minute. The lance will then be raised in 1 m increments and vibrated for a minimum of 1 minute at each increment to the top of the shear key backfill. Deviations from the specified procedure shall not be permitted without prior written approval from the Contract Administrator.

E26.8 Measurement and Payment

E26.8.1 Shear Key Excavation

(a) The excavation of the shear key will be measured and paid on a volume basis. The volume to be paid shall be the total number of cubic metres of "Shear Key Excavation", completed in accordance with this Specification, as measured in the field and accepted by the Contract Administrator. No additional payment will be made for hauling of excavated material from the site, as this is considered incidental to the Work.

(b) Excavation of the shear key will be paid for at the Contract Unit Price for "Shear Key Excavation", measured as specified herein, which 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.

E26.8.2 Shear Key Backfill

(a) The supply, placement and compaction of the Shear Key Backfill will be measured on a weight basis. The weight to be paid for shall be the total number of metric tonnes of Shear Key Backfill material, supplied and placed in accordance with this Specification, acceptable to the Contract Administrator, as measured on a certified weigh scale. The Contractor shall provide the weight tickets to the Contract Administrator for the material supplied to the Site at the time of delivery. No payment will be made for any weigh tickets that are not supplied at the time of delivery, or which are lost.

(b) The supply, placement and compaction of the Shear Key Backfill will be paid for at the Contract Unit Price for "Shear Key Backfill", measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described, and all other items incidental to the Work included in this Specification.

(c) Shear key backfill vibrocompaction will be considered incidental to the supply and placement of Shear Key Backfill and no separate payment for compaction will be made.

E27. GABION RETAINING WALL

E27.1 Description

E27.1.1 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 other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as hereinafter specified including, but not necessarily confined to the following:

(a) Supply and Installation of gabion baskets.

E27.2 Materials and Construction Methods

E27.2.1 Gabion Baskets

(a) New 1 m x 1 m x 1 m rock filled gabions are to be installed as indicated on the drawings.

E27.3 Measurement and Payment

E27.3.1 Gabion Baskets

(a) The supply and installation of the Gabion Baskets shall be measured on a lineal metre basis at the contract unit price for “Gabion Retaining Wall”. Three (3) gabion baskets are required per metre, as shown on the drawings. The price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described, as listed on the Construction Drawings and all other items incidental to the Work included in this Specification and acceptable to the Contract Administrator.

E28. GABION WALL FENCE

E28.1 Description

(a) This Specification supplements and amends City of Winnipeg Standard Construction Specification CW 3550.

E28.2 Materials

(a) Fence materials shall be per CW 3550 installed in concrete into gabions as shown on the drawings.

E28.3 Construction Method

(a) Construct per the drawings, embedding the fence into the gabion using sonotube infilled with concrete.

E28.4 Measurement and Payment

(a) The supply and installation of the fence will be paid for at the Contract Unit Price for “Gabion Wall Fence”, measured per lineal metre (which price shall be payment in full for supplying all materials and for performing all operations described herein and on the drawings.

E29. WATER CISTERN

E29.1 Description

(a) A water cistern is required for providing non potable water for the superstructure.

E29.2 Materials

(a) The water cistern shall consist of a single compartment Fiberglass tank. Tank shall be CSA approved, complete with a riser extending 200 mm above ground surface with a childproof cover, shall be water tight, and shall be suitable for deep burial with a minimum of 2.1 meters of soil cover over the top of the tank.

(b) The tank shall have a minimum capacity of 1,000 IMP Gallon.

(c) The tank shall have a lid and locking bar for access.

(d) The tank shall either include or have the ability to incorporate 40 mm discharge piping with a 316 Stainless Steel foot valve.

E29.3 Construction Methods

(a) The water tank shall be installed per the drawings. A base consisting of 300 mm granular base course shall be installed prior to placing the tank. The tank shall be strapped down with anti flotation anchor straps to deadmen capable of withstanding buoyant forces as detailed on the drawings. The system shall be capable of withstanding an uplift of 9,085 kg.

E29.4 Measurement and Payment

(a) The supply and installation of the water cistern shall be measured on a lump sum basis at the contract unit price for “Water Cistern”. The price shall be payment in full for supplying

all labour, equipment and materials, and performing all operations herein described, as listed on the Construction Drawings and all other items incidental to the Work included in this Specification and acceptable to the Contract Administrator. The 40 mm line from the cistern to the superstructure and the foot valve are incidental to this item. Supply and placement of 300 mm base granular A is considered incidental to this item.

E30. INSTALLATION OF SUBDRAIN

E30.1 General

(a) In addition to CW 3120, this Specification covers requirements for excavation, bedding and backfill.

(b) Drainage materials shall be per Table CW 3120.

(c) Subdrain discharge pipe shall be DR 26 HDPE pipe connected to HDPE Type SP pipe with Class 2 perforations, using a coupling compatible with both pipes outer diameters.

(d) Cleanout is required on the subdrain discharge pipe as indicated on the drawings.

E30.2 Measurement and Payment

(a) Connecting the subdrain to wet well will be included in the payment for “Installation of Subdrains”

(b) Measurement for the length of subdrain installed will be made horizontally at grade above the centreline of the pipe through fittings from the beginning of the drainage pipe at the valve chamber to its end at the wet well. Drainage materials and drainage geotextile fabric as required per SD-245 are considered incidental to this item. Cleanout as required by the drawings is incidental to this item. Subdrain discharge pipe length is included in the total pipe length included on Form B and is incidental to this item.

SURFACE WORKS

E31. STRIPPING, GRUBBING AND DISPOSAL OF TOPSOIL

E31.1 Description

(a) This Specification supplements and amends City of Winnipeg Standard Construction Specification CW 3010

(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 other things necessary for an incidental to the satisfactory performance and completion of all works as detailed herein and on the drawings.

(c) This specification applies to areas south of the north edge of gravel as shown on the drawings. Any stripping, grubbing or disposal of topsoil north of the north edge of gravel shall be considered incidental to Site Development and Restoration.

(d) The following Works shall be completed as part of this item:

(i) Tree removal has taken place, tree stumps have not been removed, the contractor will be required to remove tree stumps from the site prior to beginning construction.

(ii) Topsoil shall be removed and disposed of per all local, provincial and federal regulations.

(iii) Minimum of 150 mm removal of top soil is required

E31.2 Measurement and Payment

(a) Stripping, grubbing and removal of topsoil will be measured on an area basis and paid for at the Contract Unit Price per hectare for “Stripping, Grubbing and Disposal of Topsoil”. The area to be paid for will be the total number of hectares of area stripped, grubbed and

top soil disposed in accordance with CW 3010 and this specification, accepted and measured by the Contract Administrator.

E32. SUPPLY AND PLACE TOPSOIL

E32.1 Description

(a) This Specification supplements and amends City of Winnipeg Standard Construction Specification CW 3540

(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 other things necessary for an incidental to the satisfactory performance and completion of all works as detailed herein and on the drawings.

(c) A minimum of 150 mm of topsoil is required.

(d) This specification applies to the seeding areas shown on Drawing 1-0241L-C0003-001 south of the south property line of the lift station site. Any topsoil placement outside of the seeding extents shown on the Drawings will be considered incidental to Site Development and Restoration.

E32.2 Measurement and Payment

(a) Supply and Placement of topsoil will be measured on a volume basis and paid for at the Contract Unit Price per hectare for “Supply and Place Topsoil”. The volume to be paid for will be the total number of cubic meters of topsoil supplied and placed in accordance with CW 3540 and this specification, accepted and measured by the Contract Administrator.

E33. IMPORTED FILL MATERIALS

E33.1 Description

(a) This Specification supplements and amends City of Winnipeg Standard Construction Specification CW 3110 Sub-Grade, Sub-Base and Base Course Construction, and shall cover the installation of imported fill materials for raising the lift station site and shown on the drawings.

E33.2 Materials

(a) Imported fill materials will meet the following requirements:

(i) Classifies as high plasticity clay (CH) according to the modified Unified Soil Classification (USC) system.
(ii) Is free of organic matter, snow, ice, frozen or other deleterious material.
(iii) Contains no more than 15% sand and gravel-sized particles.
(iv) Is free of cobbles and boulders.

(b) The Contractor shall adhere to the minimum inspection and testing frequencies specified below for Imported Fill:

Test or Action	Frequency	Test Method
Particle Size Analysis	Once per source and once per 2,000 m^3 placed and compacted (Note 1)	ASTM D6913 ASTM D7928
Plasticity Index	Once per source and once per 2,000 m^3 placed and	ASTM D4318

Test or Action	Frequency	Test Method
	compacted (Note 1)	
Proctor (multi-point)	Once per source and once per 2,000 m^3 placed and compacted (Note 1)	ASTM D698 ASTM D1557
Field Density (Nuclear Densometer)	Once per 250 m^3 placed and compacted (Note 1)	ASTM D6938

Note 1: The Contract Administrator may increase or decrease the testing frequency depending on the consistency of the test results.

E33.3 Placement:

(a) Prior to placement, the subgrade shall be proof roll and compacted per CW3130.

(b) No material shall be placed on the subgrade until it has been inspected and accepted by the Contract Administrator.

(c) Fill shall not be placed in a frozen condition and shall not be placed on a surface which is frozen or covered with snow or ice. Placement of imported fill in freezing weather will not be permitted.

(d) Imported fill shall be placed and managed to promote surface water runoff and minimize the risk of precipitation ponding that could affect the compacted fill already in place. Any portion of the imported fill which has suffered a reduction in density due to the action of frost, rain, or due to any other reason, shall be scarified and re-compacted, or removed and replaced with suitable material.

(e) If imported fill placement is to be discontinued for an extended period of time, or when rain is anticipated, the surface of the imported fill material shall be crowned to promote surface water runoff, and sealed to minimize infiltration.

(f) The use of temporary openings into or through the imported fill placement areas shall be minimized and will be subject to acceptance by the Contract Administrator prior to their construction. The slope of openings through Imported Fill placement areas, and at the end of any unfinished transition sections, shall not be steeper than four horizontal to one vertical, unless otherwise accepted by the Contract Administrator. Prior to placement of fill to close the openings, all loose, dried or altered fill shall be removed to a suitable subgrade. Additional scarification and compaction shall be applied to the contact between the excavated surface and the additional fill. Material that must be removed or replaced as part of temporary slope treatment that is necessary to satisfy the Contractor's access and Work requirements will not be separately measured and paid for.

(g) Imported fill shall be placed in the dry, under dewatered conditions, to the lines and grades shown on the Drawings. The material shall be placed in such a manner to achieve a stable and homogeneous fill which is free of horizontal stratifications and lenses or pockets of pervious materials, and from lumps of materials that do not satisfy the requirements of these Specifications. Care shall be taken during placement to prevent contamination by mixing with granular materials.

(h) Imported fill shall be deposited and spread in approximately horizontally uniform homogenous layers at maximum 0.2 m thick lifts (uncompacted thickness) for the full width of the placement area.

(i) At contacts between the fill and the abutments or concrete structures, the fill shall be sloped at approximately 6H:1V within 4 m of the contact, unless otherwise indicated on the Drawings.

(j) The allowable placement tolerances shall be within 50 mm of the grades and thicknesses shown on the Drawings.

(k) Compaction Requirements:

(i) Each lift shall be thoroughly compacted for its full depth. The density shall not be less than 98% of the maximum Standard Proctor Maximum Dry Density (SPMDD) and shall be within 2% of the optimum moisture content, or as approved by the Contract Administrator.

(ii) Imported fill placed immediately over and adjacent to bedrock and concrete shall be conditioned within 2% wet of optimum to achieve the best possible contact.

(l) Equipment for the scarification and compaction of imported fill shall consist of Discing equipment and Towed-Tamping (Sheepsfoot) Rollers or Self-Propelled Tamping (Sheepsfoot) Rollers.

(m) Portions of the fill which cannot be compacted adequately with sheepsfoot rollers due to inaccessibility shall be compacted to the specified density using power tampers.

(n) Any lift of Imported Fill that has been placed over top of a compacted layer that has not been inspected and approved by the Contract Administrator shall be removed by the Contractor at the expense of the Contractor.

(o) Scarification of each compacted and accepted lift shall be completed to a minimum of 50 mm depth prior to placement of the successive lift. Alternately, the Contractor may use sheepsfoot style roller compactors with tines that can penetrate a minimum of 50 mm into the underlying and previously placed and compacted lift during initial compaction passes of any given lift.

E33.4 Measurement and Payment

(a) The supply and installation of imported shall be measured on a cubic meter basis. The volume to be paid shall be the total number of cubic meters of imported fill as acceptable to the Contract Administrator. Measurement shall be per cubic meter of material in place as measured by survey after compaction.

(b) The supply and installation of imported fill will be paid for at the Contract Unit Price for "Imported Fill Materials", which price shall be payment in full for supplying all materials and performing all operations described and all other items incidental to this work.

E34. SUPPLY AND INSTALL OF STEEL BOLLARDS

E34.1 Description

(a) This specification shall cover the supply and installation of steel bollards.

E34.2 Construction Methods

(a) Supply and install of 8-inch inside diameter steel bollard set in concrete as detailed. The steel bollard shall be filled and capped with concrete. Once the concrete is set the bollard shall be painted yellow as per detail.

E34.3 Measurement and Payment

(a) The supply and installation of steel bollards shall be measured on a per-unit basis. The amount to be paid shall be the total number of steel bollards installed as shown on the Drawings.

(b) The supply and installation of steel bollards will be paid for at the Contract Unit Price for "Supply and Install of Steel Bollards", which price shall be payment in full for supplying all materials and performing all operations described and all other items incidental to this work.

E35. SUPPLY AND INSTALL JERSEY BARRIERS

E35.1 Description

(a) This Specification shall cover the supply and install of precast concrete barriers.

E35.2 Submittals

(a) Product Data: Submit manufacturer's instructions, printed product literature and data sheets for concrete mix and reinforcement and include product characteristics, performance criteria, physical size, finish and limitations.

E35.3 Materials and installation methods shall follow all stipulations of:

(a) Manitoba Infrastructure and Transportation Construction Specification 1080 (I) – Specifications for Fabrication and Delivery of Precast Concrete Barriers [May 2010]

(b) Manitoba Infrastructure and Transportation Construction Specification 1082 (I) – Specifications for Installation, Relocation and Removal of Precast Concrete Barriers [March 2010]

E35.4 Construction Materials and Dimensions

(a) Concrete Strength: 35 Mpa

(b) Mass: 2085 kg

(c) Length: 3048 mm

(d) Bottom Width: 610 mm

(e) Top Width: 150 mm

(f) Reinforcement to CSA G30.18, 400W

(g) Include 2 – 50 mm diameter lift holes, 600 mm inset from ends

(h) Include 254 mm wide, 80 mm deep fork lift block outs along base, 787 mm inset from ends

E35.5 Construction Methods

(a) The Contractor shall supply and install precast concrete barriers at the locations indicated on the drawings. Barriers shall be seated and pinned to the lift station site to the satisfaction of the Contract Administrator.

E35.6 Measurement and Payment

(a) The supply and installation of Jersey Barriers shall be measured on each basis. The quantity to be paid shall be the total number of concrete barriers installed as indicated on the drawings and acceptable to the Contract Administrator.

(b) The supply and installation of Jersey Barriers will be paid for at the Contract Unit Price for “Supply and Install of Jersey Barriers”, which price shall be payment in full for supplying all materials and performing all operations described and all other items incidental to this work.

E36. SUPPLY AND INSTALL EROSION CONTROL BLANKET

E36.1 Description

E36.1.1 This Specification shall cover the supply and placement of erosion control blankets to provide temporary erosion control in localized areas (as directed by the Contract Administrator)

E36.2 Materials

(a) The blanket material shall consist of wheat or barley straw, coconut fibres, or other plants approved by the Contract Administrator. Acceptable products will be S32 BD Double Net Straw Blankets with biodegradable netting or approved alternative in accordance with B8. The blanket material shall be air dried, reasonably light in colour, and shall not be musty, mouldy, caked or otherwise of low quality. The blanket material shall be free of coarse (chaff) material and free of noxious weeds and/or seeds to prevent the introduction of weeds into previously seeded and planted areas.

E36.3 Construction Methods

E36.3.1 General

(a) The Contractor shall supply and place erosion control blankets immediately after final grading is completed and prior to **March 15.**

(b) Erosion control blankets shall be placed as directed, measured and accepted by the Contract Administrator.

(c) Covered areas shall be inspected periodically and after runoff producing storm events. Damaged areas shall be repaired immediately as determined by the Contract Administrator. Areas requiring recovering as directed by the Contract Administrator will be re-measured and additionally paid for at the Contract Unit Price for the Work item.

E36.3.2 Installation

(a) The erosion control blankets shall be installed as per the manufacturer's recommended procedures. Blankets shall be rolled out on smoothed out soils starting from the top of the slope. The Contractor is to start by stapling the blanket at the top of the slope in a 150 mm deep by 150mm wide trench. The trench will be backfilled and compacted so that water will flow evenly onto the blanket.

(b) The Contractor shall roll the blankets down the slope insuring soil blanket contact. Edges are to be overlapped a minimum 50 mm with parallel blankets.

(c) If more than one blanket is need for the run down the slope then adjoining ends must be overlapped a minimum 100 mm shingle style. Overlapped areas are to be stapled with a staggered pattern of staples.

E36.3.3 Removal

(a) Immediately prior to placement of topsoil and sod and/or topsoil and seed all erosion control blankets shall be removed and disposed of off-Site.

E36.4 Measurement and Payment

E36.4.1 Supply, placement and removal of erosion control blankets will be measured on an area basis and paid for at the Contract Unit Price for "Erosion Control Blankets". The area to be paid for shall be the total number of square metres of ground covered by blankets, supplied and placed in accordance with this Specification, accepted and measured by the Contract Administrator.

E37. SUPPLY AND INSTALL SILT FENCE

E37.1 Description

E37.1.1 This specification covers the erection of temporary silt fencing, which shall be installed and maintained at the locations shown on the drawings or as directed by the Contract Administrator, to control runoff and minimize the release of detrimental silt loading to watercourses.

E37.1.2 The scope of Work included in this specification is as follows:

(a) Supply and Install temporary silt fencing at the locations as indicated on the Drawings or as directed by the Contract Administrator, in accordance with the detailed drawing provided, immediately upon completion of the riprap placement and prior to undertaking any other activities on the Site where silt fencing is required.

(b) Maintain the silt fencing in serviceable condition throughout the entire duration of activities at the Site where silt fencing is required, including final restoration and cleanup of the construction Site.

(c) Remove the silt fencing and restore the area where the fencing was installed, without further disturbing the area and without releasing any deleterious substances to the adjacent watercourse.

E37.2 Materials

E37.2.1 Fence Posts

(a) Fence posts shall be 100 mm diameter untreated wood posts or 50 mm diameter steel.

E37.2.2 Filter Fabric

(a) Filter Fabric Shall be a woven geotextile material specifically designed for a silt fence applications, meeting the following minimum requirements:

Property	**Test Method**	**Value**
Grab Tensile Strength	ASTM D 4632	0.55 kN
Grab Tensile Elongation	ASTM D 4632	15%
Mullen Burst	ASTM D 4786	2060 kPa
Puncture	ASTM D 4833	0.285 kN
Trapezoid Tear	ASTM D 4533	0.285 kN
UV Resistance	ASTM D 435	5 80 % @ 500 hrs
Apparent Opening Size (AOS)	ASTM D 4751	0.60 mm
Flow Rate	ASTM D 4491	405 l/min/m2

(b) Acceptable Product: “Amoco 2130 Silt Fence Fabric” or approved equal in accordance with B8.

E37.2.3 Wire Mesh

(a) Wire mesh shall be galvanized or plain metal with wire gauge = 3.0 mm, wire spacing @ 150 mm o/c.

E37.2.4 Fencing Material Fasteners

(a) Staples or wire ties of sufficient strength and spacing to withstand 500 N (100 lbf) pull test at any point on the wire mesh.

E37.3 Construction Methods

E37.3.1 Ensure that no deleterious substances are discharged into the adjacent watercourse at any time during construction activities.

E37.3.2 Silt Fence Installation

(a) Excavate 150 x 150 anchor trench along alignment of silt fence as indicated.

(b) Install fence posts as indicated. Ensure that fence posts are firmly driven into undisturbed soil, or are completely and firmly backfilled if installed via auger methods. Attach wire mesh as support backing for silt fence filter fabric with fasteners as specified in E37.2.4. Attach silt fence filter fabric on top of wire mesh in similar fashion. Overlap any fence seams (wire mesh or filter fabric) by 450 mm minimum. Ensure that wire mesh and filter fabric are installed on the upslope side of the post and are fully laid in anchor trench as shown.

(c) Install and compact impermeable excavated materials into anchor trench and slope as indicated. Compact to 95% of maximum dry density (ASTM D-698).

E37.3.3 Silt Fence Maintenance

(a) Inspect silt fence daily, prior to starting any other construction activities. If fence posts are found loose or not upright, repair in accordance with installation procedure as specified in E37.3.2. If silt fence is found to be loose or torn, repair or replace as necessary to comply with E37.3.2.

(b) If silt deposition at the fence is 300 mm or more in depth, carefully remove and dispose of silt offsite without disturbing silt fence.

E37.3.4 Silt Fence Removal

(a) The silt fence shall remain in place until new vegetation growth has established on the bank, as determined by the Contract Administrator.

(b) Upon authorization of the Contract Administrator, remove all fence posts, wire mesh, fabric, and fasteners from Site.

(c) Restore areas disturbed without releasing any deleterious substances to the adjacent watercourse.

E37.3.5 Measurement and Payment

E37.3.6 The supply, placement, and removal of silt fence shall be measured on a length basis and paid for at the Contract Unit Price per lineal metre for "Silt Fence". The length to be paid for shall be the total number of metres supplied and placed in accordance with this

Specification, accepted and measured by the Contract Administrator. Payment of silt fence shall be in accordance with the following payment schedule:

(a) Sixty percent (60%) of the Contract Unit Price per lineal metre for "Silt Fence" shall be paid following supply and installation.

(b) Forty percent (40%) of the Contract Unit Price per lineal metre for "Silt Fence" shall be paid following final removal.

(c) Removal of accumulated sediment from the silt fence is considered incidental to the Work and no separate measurement or payment will be made

RESTORATION

E38. TEMPORARY SURFACE RESTORATION

E38.1 General

(a) This specification applies to temporary surface restoration Work.

(b) Further to clause 3.3 of CW 1130 where permanent surface restorations cannot be made due to cold weather, the Contractor shall temporarily restore surfaces as follows:

E38.2 Construction Methods

(a) Backfill under Temporary Surface Restoration

(i) Backfill and level boulevards and grassed areas to match existing surface elevations,

(ii) 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.

(iii) Class 2 backfill may be compacted in 600 mm lifts where backhoe operated pneumatic plate compactors are used.

(iv) Jet and flood Class 2, Class 3 and Class 5 backfilled excavations in spring when ground is not frozen prior to permanent restoration.

(b) Temporary Surface Restoration

(i) Cap excavations in concrete pavement with a 100 mm layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310,

(ii) Cap excavations in sidewalk pavement with a 50 mm layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310,

(iii) Insulate temporary concrete as required during 48 hour curing period,

(iv) 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.

(v) Remove all temporary pavements prior to permanent restorations.

(c) Maintenance

(i) The Contractor shall monitor and maintain temporarily restored surfaces as required until permanent restoration is complete.

(ii) 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 the Contractor.

(iii) All costs associated with the maintenance or reconstruction of temporary pavement incurred by the City shall be deducted from future payments to the Contractor.

E38.3 Measurement and Payment

(i) All costs associated with Permanent Restoration as described herein are incidental to the Work items for the Work activity being carried out, including but not limited to Tunnelling, Shaft Construction, and Installation of Manholes.

E39. PERMANENT RESTORATION

E39.1 Description

(a) This specification identifies the requirements for permanent surface restorations.

(b) The specification amends the Surface Restorations defined in CW 2130 and places the cost of permanent surface restorations upon the particular Work item being undertaken.

E39.2 General

(a) The Contractor will follow the City's Street By-law No. 1481/77 and Street Cuts Manual (2017) for all pavement restoration unless otherwise shown on the Drawing or specifications or as directed by the Contract Administrator.

(b) The Street Classification and Surface Type within the project work area are classified as follows:

Street Name	Segment	Pavement Type	Condition
Sturgeon Access	CentrePort Canada Way to Sturgeon Road	Concrete	Good
NOTE: values were obtained from the City of Winnipeg Street Conditions Map available at http://winnipeg.ca/publicworks/maps/streetconditions.asp and may not reflect existing conditions.			

(c) All street segments within the work area impacted by the Work as determined by the Contract Administrator shall be maintained and restored with the following additional requirements.

(i) Review and record the condition of each street segment with the Contract Administrator and a City Representative from Public Works prior to the initiation of Work.

(ii) Review and record the condition of each street segment with the Contract Administrator and a City Representative from Public Works prior to surface restoration. The surface restoration required for each street segment will be agreed upon at this review meeting.

(iii) Pavement Restoration Guidelines can be found in the City of Winnipeg Street Cuts Manual.

E39.3 Methods

(a) The Contractor shall 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. The Contractor shall restore all areas disturbed during construction to existing condition or better, using topsoil and sod at its own cost.

(ii) Asphalt surfaces – match existing base course and asphalt thickness or a minimum of 150 mm of base course and 75 mm 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 CW 3330.

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

(vi) Trees - requiring replacement due to construction activities (as directed by the Contract Administrator) shall be installed in accordance with CW 3510. The Contractor will not be reimbursed under a separate pay item for replacing trees damaged by construction activities. The work will be considered incidental to Site Development and Restoration.

(vii) Topsoil - All Topsoil Work shall be performed in accordance with CW 3510. Topsoil Work shall include all existing grassed areas disturbed by the Contractor during construction. The Contractor shall restore all areas disturbed during construction to existing condition or better, using topsoil and sod at its own cost.

E39.4 Measurement and Payment

(a) This specification amends CW 2130 such that:

(i) All costs associated with Permanent Restoration as described herein are incidental to the Work items for the Work activity being carried out, including but not limited to reinforced concrete approach and force main construction items.

COMMISSIONING

E40. WATER SUPPLY FOR COMMISSIONING WORK

E40.1 Further to Specifications CW 1120, Section 3.1 and CW 2125, water supply for the Work may be taken from City of Winnipeg hydrants or a direct feeder main connection in accordance with the following:

(a) Water for commissioning the lift station may be obtained from the Rouge Road Feeder Main by opening the 750 mm butterfly valve in Offtake Structure 2, as described in Appendix D Water for Commissioning Plan.

(i) Water used for commissioning in this manner shall be metered at the downstream end in OS 3 or via an alternative measurement method approved by the Contract Administrator.

(b) Alternatively, water may be obtained from fire hydrants for all commissioning or general construction activities in accordance with the following:

(i) Only hydrants approved by Water Services Division (WSD) shall be used for water supply.

(ii) The Contractor shall supply and use a Backflow Protection Arrangement as shown on Standard Drawing SD-019 when taking water from City hydrants. Alternatively, the Contractor may rent the Backflow Protection Arrangement from the WSD if available. WSD will supply a meter and locks for the Backflow Protection Arrangement.

(iii) The Contractor is permitted to turn approved hydrants on and off provided the Contractor has received training from the Water Services Division and the turn-ons and turn-offs are done in the presence of the Contract Administrator.

(iv) Hydrants approved for use shall be considered to be “in the Contractor’s control” from the time the City has turned the hydrant on until the Contractor has notified the City the hydrant is no longer being used and the meter box has been removed.

(v) Between November 1 and April 30 of any year, the Contractor shall take all necessary precautions to prevent freezing of hydrants and related appurtenances for hydrants in their control and shall be responsible to pump out hydrants turned off by Emergency Services. Heating and hoarding of hydrants will be required by the

Contractor when the ambient air temperature reaches below 0°C at any time during the period of time under which the hydrant is in the Contractor's Control.

(vi) If a hydrant or appurtenance is damaged due to freezing or improper turn-on or turn-off procedures while in the Contractor's control, WSD will assess the damage and determine if WSD will repair the damage or if the Contractor will be responsible to repair the damage. Costs for repairs completed by WSD will be deducted from payments owing the Contractor. Repairs completed by the Contractor will be at the Contractor's expense.

(vii) Erect and maintain signage (bump signs) warning oncoming traffic of hose crossings to the satisfaction of the Contract Administrator and the Manual of Temporary Traffic Control.

(viii) Direct hook-up of pipeline flushing equipment to a hydrant is not permitted unless approved by the Contract Administrator.

(ix) WSD may instruct the Contractor to make other arrangements for hydrant turn-ons and turn-offs. The Water Services Division of the City's Water and Waste Department will provide and install metering equipment once a permit has been obtained.

E40.2 All water used from City sources must be metered and paid for by the Contractor. Water used will be billed to the Contractor at the most current Water Rate published on the City's website.

E40.3 Disposal of water used for commissioning into the City's sewer system, will be billed to the contractor at the Sewer Rate published on the City website for the metered volume of water usage.

E40.4 Measurements and Payment

(a) There will be no separate measurement or payment for permits or equipment, water usage and water disposal and it will be considered incidental to the Work being done.

E41. FEEDER MAIN DISINFECTION AND TESTING

E41.1 Description

(a) The Contractor will be required to disinfect the entire length (~2.3 km) of the 750 mm diameter feeder main, see Appendix D Water for Commissioning Plan.

(b) Disinfection shall be per CW 2125.

(c) Disinfection feed rates shall be per the table below:

Nominal Diameter					750
Litres of Water per 100 Metre of Pipe					44179
	10 milligrams per litre				0.44
	25 milligrams per litre				1.10
	50 milligrams per litre				2.21
	75 milligrams per litre				3.31
	Milligrams per litre				
	10	25	50	75	Approx Flow Through Time for 100m (hr)
Discharge Rate (L/m)	Feed Rate (kg/day)				
100	1.4	3.6	7.2	10.8	7.36
150	2.2	5.4	10.8	16.2	4.91
200	2.9	7.2	14.4	21.6	3.68

250	3.6	9	18	27	2.95
300	4.3	10.8	21.6	32.4	2.45
350	5	12.6	25.2	37.8	2.10
400	5.8	14.4	28.8	43.2	1.84
450	6.5	16.2	32.4	48.6	1.64

E41.2 Measurement and Payment

(a) Payment for disinfection for the entirety of the feeder main shall be on a lump sum basis.

(b) The cost for bacteriological testing shall be paid for under the Contract Unit Price for "Allowance for Material Sampling and Testing". Costs will be based on actual invoiced costs provided in accordance with the General Conditions.

PROVISIONAL ITEMS

E42. PROVISIONAL ITEMS

E42.1 The Provisional Items listed on Form B: Prices are part of the Contract.

E42.2 The Contractor shall not perform Work included in the Provisional Items without prior authorization from the Contract Administrator. All Work included in the Provisional Items will be carried out within the construction areas shown on the Drawings.

E42.3 Notwithstanding GC:7, the City reserves the right to diminish all or any portion of the items of work listed in the Provisional Items and no claim shall be made for damages on the grounds of loss of anticipated profit or for any other reason.

E43. DISPOSAL OF CONTAMINATED SOILS

E43.1 General

E43.1.1 Description

(a) This specification shall cover the disposal of contaminated materials excavated from within the Site.

(b) Off site disposal of excavated soil materials should generally follow the Manitoba Environment and Climate Change July 2023 guidance "Excess Soil for Reuse as Backfill Material" Information Bulletin.

E43.1.2 Criteria for Classification of Contaminated Material

(a) If excavated materials are found to have concentrations of contaminants that are above the acceptable CCME Industrial standards they must be disposed off at a suitable soil treatment facility as detailed below.

(b) If excavated soil materials are found to have concentrations of contaminants that are above the acceptable CCME Commercial standards and are to be reused at an off-Site location, the contaminant concentrations within the soil to be utilized as backfill materials should not exceed generic or site-specific soil quality guidelines that are applicable to the current or future intended and/or anticipated land use at the receiving location.

E43.1.3 Suitable Soil Treatment Facilities

(a) Soil exceeding applicable guidelines can be disposed of at a soil treatment facility that has the appropriate authorization to accept it. These include Miller Environmental Treatment & Processing Facility (St. Jean Baptiste, Manitoba), the Mid-Canada Environmental Landfill (Ile des Chenes, Manitoba), or an approved equal as confirmed by the Contract Administrator in accordance with B8. Authorization for acceptance may also include approval from Manitoba Environment and Climate Change.

(b) Contaminated materials are to be separated from other soils and hauled to a suitable treatment facility. If stockpiles are not removed in a timely manner then they must be covered with poly sheeting to mitigate erosion and transmission of contaminants into other areas of the Site.

E43.2 Measurement and Payment

E43.2.1 Disposal of Contaminated Materials will be measured on a volumetric basis and will be paid for under the item “Disposal of Contaminated Materials”. The volume to be paid for shall be the total number of cubic metres transported from the Site and disposed of at a suitable landfill in accordance with this Specification and accepted by the Contract Administrator.

(a) Costs for excavation of contaminated soils will be incidental to Excavation