



THE CITY OF WINNIPEG

TENDER

TENDER NO. 246-2020

2020 SEWER INSPECTIONS

TABLE OF CONTENTS

PART A - BID SUBMISSION

- Form A: Bid/Proposal
- Form B: Prices
- Form G1: Bid Bond and Agreement to Bond

PART B - BIDDING PROCEDURES

B1. Contract Title	1
B2. Submission Deadline	1
B3. Site Investigation	1
B4. Enquiries	1
B5. Confidentiality	1
B6. Addenda	2
B7. Substitutes	2
B8. Bid Components	3
B9. Bid	3
B10. Prices	4
B11. Disclosure	4
B12. Conflict of Interest and Good Faith	5
B13. Qualification	6
B14. Bid Security	7
B15. Opening of Bids and Release of Information	8
B16. Irrevocable Bid	8
B17. Withdrawal of Bids	8
B18. Evaluation of Bids	8
B19. Award of Contract	9

PART C - GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

General

D1. General Conditions	1
D2. Scope of Work	1
D3. Definitions	2
D4. Contract Administrator	2
D5. Contractor's Project Manager	2
D6. Notices	2
D7. Furnishing of Documents	3

Submissions

D8. Authority to Carry on Business	3
D9. Safe Work Plan	3
D10. Insurance	3
D11. Contract Security	4
D12. Subcontractor List	4
D13. Equipment List	4
D14. Detailed Work Schedule	4

Schedule of Work

D15. Commencement	5
D16. Working Days	6
D17. Hours of Work	6
D18. Critical Stages	6
D19. Substantial Performance	7
D20. Total Performance	7
D21. Liquidated Damages	7
D22. COVID-19 Schedule Delays	7

Control of Work

D23. Job Meetings	8
D24. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	8
D25. The Workplace Safety and Health Act (Manitoba) – Qualifications	8

Measurement and Payment

D26. Payment	9
--------------	---

Warranty

D27. Warranty	9
---------------	---

Third Party Agreements

D28. Funding and/or Contribution Agreement Obligations	9
Form H1: Performance Bond	11
Form H2: Labour and Material Payment Bond	13
Form J: Subcontractor List	15
Form K: Equipment	16

PART E - SPECIFICATIONS

General

E1. Applicable Specifications and Drawings	1
E2. Confined Space Entry	2
E3. Water Supply	2
E4. Site Conditions	3
E5. Sewer and Associated Manhole Cleaning	3
E6. Miscellaneous Sewer Cleaning	4
E7. Miscellaneous Manhole Cleaning	5
E8. Sewer Inspection	5
E9. Sewer Inspection Equipment	15
E10. Removal of Excessive Grease and/or Roots	17
E11. Traffic Control and Maintenance of Access	17
E12. Notices to Residents	18
E13. Damage to City and Private Property	18
E14. Digital Panoramic Manhole Inspections	19
E15. Project Information Sharing	20
E16. Manholes with Limited Access	20
E17. Project Deliverables	21

PART F - SECURITY CLEARANCE

F1. Security Clearance	1
------------------------	---

APPENDICES

Appendix A Sewer Inspections Work Program	
Appendix B Fugitive Emission Material Safety Data Sheet – Hydrogen Sulphate Gas	
Appendix C As-Built Portage Avenue Siphon	

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2020 SEWER INSPECTIONS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, April 15, 2020.

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

B3. SITE INVESTIGATION

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

B3.2 The Bidder is advised that the sewers may be located in easements through private property or City owned parklands and right-of-ways where a paved access may not exist. It will be the Bidder's responsibility to identify these sewers and arrange for access and to restore any surface to private and City owned property.

B4. ENQUIRIES

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

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

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

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

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

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

B5. CONFIDENTIALITY

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

- (a) was known to the Bidder before receipt hereof; or
- (b) becomes publicly known other than through the Bidder; or
- (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

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

B6. ADDENDA

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

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

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

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

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

B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D4.

B7. SUBSTITUTES

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

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

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

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

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

- B7.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B18.
- B7.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B8. BID COMPONENTS

- B8.1 The Bid shall consist of the following components:
- (a) Form A: Bid/Proposal;
 - (b) Form B: Prices;
 - (c) Form G1: Bid Bond and Agreement to Bond.
- B8.2 Further to B8.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B7.
- B8.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B8.4 The Bid shall be submitted electronically through MERX at www.merx.com.
- B8.4.1 Bids will **only** be accepted electronically through MERX.
- B8.5 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B18.1(a).

B9. BID

- B9.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.
- B9.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

- B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.
- B9.3 In Paragraph 3 of Form A: Bid/Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B9.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers;
 - (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B9.4.1 The name and official capacity of all individuals signing Form A: Bid/Proposal should be entered below such signatures.
- B9.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B10. PRICES

- B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B10.1.1 Notwithstanding C12.2.3(c), prices on Form B: Prices shall not include the Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable.
- B10.1.2 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined in D28. Any such costs shall be determined in accordance with D28.
- B10.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B10.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.
- B10.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).
- B10.5 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.
- B10.5.1 Bidders are advised that the calculation indicated in B18.4 will prevail over the Total Bid Price entered in MERX.

B11. DISCLOSURE

- B11.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.
- B11.2 The Persons are:

(a) N/A

B12. CONFLICT OF INTEREST AND GOOD FAITH

- B12.1 Further to C3.2, Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.
- B12.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:
- (a) other commitments;
 - (b) relationships;
 - (c) financial interests; or
 - (d) involvement in ongoing litigation;
 - (e) 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;
 - (f) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of its participation in the Tender process or the Work; or
 - (g) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.
- B12.3 In connection with its Bid, each entity identified in B12.2 shall:
- (a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;
 - (b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and
 - (c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.
- B12.4 Without limiting B12.3, the City may, in its 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 its 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 its sole discretion, to avoid or mitigate the impact of such Conflict of Interest.
- B12.5 Without limiting B12.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in its sole discretion:
- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of its 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 its sole discretion, determines cannot be avoided or mitigated;

- (c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B12.4 to avoid or mitigate a Conflict of Interest; and
- (d) disqualify a Bidder if the Bidder, or one of its employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.

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

B13. QUALIFICATION

B13.1 The Bidder shall:

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

B13.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B13.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out CCTV inspection 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) upon request of the Contract Administrator, provide the Security Clearances in accordance with PART F - ; and
- (e) have successfully completed over 2000 metres of Laser and Sonar inspections within sewers 900 mm and larger for condition assessment purposes.

B13.4 The Bidder (not including any proposed Subcontractor) shall:

- (a) have successfully completed over 5000 metres of previous closed-circuit television (CCTV) inspection within sewers 1350 mm and larger for condition assessment purposes (CCTV of new infrastructure for acceptance purposes shall not be deemed as representative experience).

B13.5 Further to B13.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) Written confirmation of a safety and health certification meeting SAFE Work Manitoba's SAFE Work Certified Standard (e.g., COR™ and SECOR™) in the form of:
 - (i) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR)

- Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (ii) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>).
- B13.6 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.
- B13.7 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 whereby:
- (a) the Bidder's and its Subcontractors equipment inventory must be substantial and adequate to ensure the continuance of sewer and manhole cleaning and inspection for all crews when mechanical failure occurrences are experienced.
- B13.8 The Bidder shall, within three (3) Business Days of a request by the Contract Administrator, provide quality assurance procedures meeting the requirements outlined in CW2140, CW2145, E5,E8,E9 and E10.

B14. BID SECURITY

- B14.1 The Bidder shall include in its Bid Submission bid security in the form of a digital bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in Form G1: Bid Bond and Agreement to Bond, available on The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/MatMgt/templates/files/eBidsecurity.pdf>.
- B14.2 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 B14.2(b).
- B14.3 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 B18.1(a).
- B14.4 Bonds passing the verification process will be treated as original and authentic.
- B14.4.1 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.

B14.5 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.

B14.6 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.

B15. OPENING OF BIDS AND RELEASE OF INFORMATION

B15.1 Bids will not be opened publicly.

B15.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated and pending review and verification of conformance with requirements) will be available on the MERX website at www.merx.com.

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

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

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

B16. IRREVOCABLE BID

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

B16.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly formed and the contract securities have been furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B17. WITHDRAWAL OF BIDS

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

B18. EVALUATION OF BIDS

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

- (a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation there from (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B13 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B7.

B18.2 Further to B18.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

- B18.3 Further to B18.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is qualified.
- B18.4 Further to B18.1(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.
- B18.4.1 Further to B18.1(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.
- B18.4.2 Bidders are advised that the calculation indicated in B18.4 will prevail over the Total Bid Price entered in MERX.

B19. AWARD OF CONTRACT

- B19.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B19.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be qualified, and the Bids are determined to be responsive.
- B19.2.1 Without limiting the generality of B19.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
 - (b) the prices are materially in excess of the prices received for similar work in the past;
 - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
 - (d) only one Bid is received; or
 - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B19.3 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of D28 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.
- B19.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B18.
- B19.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2020 01 31) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Tender to a section, clause or subclause with the prefix “C” designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of inspections and re-inspections of combined, wastewater, land drainage, storm relief and interceptor sewers and their corresponding manholes and structures located at various districts throughout the City of Winnipeg.

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

- (a) Interceptor Sewer Inspection Work Program
 - (i) CCTV Inspection of all Interceptor sewers
 - (ii) Provisional Laser Inspection of all egg-shaped sewers
 - (iii) Provisional Sonar Inspection of all siphon sewers.
 - (iv) Inspection of all manholes and control structures.
 - (v) Cleaning of all combined sewers smaller than 900mm.
 - (vi) Cleaning of all wastewater sewers smaller than 450mm.
 - (vii) Cleaning of all manhole and structures where the host pipe has been cleaned.
- (b) Land Drainage Sewer Inspection Work Program
 - (i) CCTV Inspection of all sewers.
 - (ii) Provisional Sonar Inspection of sewers 900mm diameter and larger.
 - (iii) Inspection of all manholes and structures.
 - (iv) Cleaning of all Land Drainage sewers smaller than 900mm.
 - (v) Cleaning of all manholes and structures where the host pipe has been cleaned.
- (c) Re-Inspection Work Program
 - (i) CCTV Inspection of all sewers.
 - (ii) Provisional Laser Inspection of all brick built sewers and egg-shaped sewers.
 - (iii) Inspection of all manholes and control structures.
 - (iv) Cleaning of all combined sewers smaller than 900mm.
 - (v) Cleaning of all wastewater sewers smaller than 450mm.
 - (vi) Cleaning of all manhole and structures where the host pipe has been cleaned.
- (d) Storm Relief Sewer Inspection Work Program
 - (i) CCTV Inspection of all sewers.
 - (ii) Provisional Sonar Inspection of all sewers 900mm diameter and larger.
 - (iii) Inspection of all manholes and control structures.
 - (iv) Cleaning of all Storm Relief sewers smaller than 900mm.
 - (v) Cleaning of all manhole and structures where the host pipe has been cleaned.
- (e) Wastewater Inspection Work Program
 - (i) CCTV Inspection of all sewers.
 - (ii) Inspection of all manholes and control structures.
 - (iii) Cleaning of all wastewater sewers smaller than 450mm.
 - (iv) Cleaning of all manhole and structures where the host pipe has been cleaned.

D3. DEFINITIONS

D3.1 When used in this Tender:

- (a) " **NASSCO** " means "National Association of Sewer Service Companies" which is the accepted North American standard for sewer condition coding and assessment.

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is AECOM Canada Ltd. , represented by:
Christopher Mitchell, BSc. (hons)
Asset Management Specialist

Telephone No. 204 928 9259
Email Address chris.mitchell@aecom.com

D4.2 At the pre-construction meeting, Mr. Mitchell will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D5. CONTRACTOR'S PROJECT MANAGER

D5.1 At commencement of the Project, the Contractor shall provide the Contract Administrator, the experience and qualifications of the following Key Personnel assigned to the Work for the duration of the Contract, for projects of similar complexity, scope and value. Include educational background, professional recognition, job title, years of experience in current position with existing employer:

- (a) Project Manager
- (b) Site Superintendent

D5.2 As per D5.1, at the pre-construction meeting, the Contractor shall identify his/her designated Project Manager and Site Superintendent and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D5.3 The Contractor must communicate in writing to the Contract Administrator all personnel changes during the Work to meet the requirements of D5.1.

D5.4 As per D5.1 the Contractor's Project Manager shall maintain a physical site presence for the duration of the Work and provide coordination and support for all crews and Subcontractors unless written authorization has been given by the Contract Administrator.

D6. NOTICES

D6.1 Except as provided for in C22.4, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid/Proposal.

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D4.

D6.3 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

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

Facsimile No.: 204 947-9155

D7. FURNISHING OF DOCUMENTS

- D7.1 Upon award of the Contract, the Contractor will be provided with five (5) complete sets of the Tender and drawings, of Architectural E (36" x 48") size, detailing sewer inspection and flow types, asset numbers with upstream and downstream manholes and nodes. Flow types will not be separated out onto separate drawings. If the Contractor requires additional sets of the Tender or drawings, they will be supplied to him/her at cost. Electronic Portable Document Format (PDF) Drawings will also be supplied to the Contractor upon award via the SharePoint site.
- D7.2 Appendix C contains As-Built records of the Portage Avenue and Century Street triple barrel siphon however all further associated or pertinent As-Built records shall be furnished to the Contractor upon request to the Contract Administrator.

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

- D8.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D9. SAFE WORK PLAN

- D9.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.
- D9.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Safety/default.stm>
- D9.3 Notwithstanding B13.5 at any time during the term of the Contract, the City may, at its 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.

D10. INSURANCE

- D10.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
 - (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.

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

D10.2 Deductibles shall be borne by the Contractor.

D10.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, as applicable.

D10.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D11. CONTRACT SECURITY

D11.1 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.

D11.2 The Contractor shall provide the City Solicitor 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.

D11.3 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 D11.1(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.

D12. SUBCONTRACTOR LIST

D12.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D13. EQUIPMENT LIST

D13.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D14. DETAILED WORK SCHEDULE

D14.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents if applicable.

- D14.2 The detailed work schedule shall consist of the following:
- (a) a critical path method (C.P.M.) schedule for the Work;
 - (b) a Gantt chart for the Work based on the C.P.M. schedule;
 - (c) a Traffic Control Plan that identifies locations and approximate timing locations and approximate timing of proposed lane closures and parking restrictions; and
 - (d) a detailed deployment schedule for all crews for the Work at each site.
- all acceptable to the Contract Administrator.
- D14.3 Further to D14.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:
- (a) Reinspection CCTV and laser Inspections
 - (b) Critical Stage 1 Milestone
 - (c) Interceptor CCTV, Laser and Sonar Inspections
 - (d) LDS CCTV and Sonar Inspections
 - (e) SRS CCTV and Sonar Inspections
 - (f) WWS CCTV Inspections
 - (g) Substantial Performance Milestone
 - (h) Total Performance Milestone.
- D14.4 Further to D14.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D15. COMMENCEMENT

- D15.1 The Contractor shall not commence any Work until he/she is in receipt of an award letter from the Award Authority authorizing the commencement of the Work.
- D15.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D8;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the Safe Work Plan specified in D9;
 - (iv) evidence of the insurance specified in D10;
 - (v) the contract security specified in D11;
 - (vi) the Subcontractor list specified in D12;
 - (vii) the equipment list specified in D13; and
 - (viii) the detailed work schedule specified in D14.
 - (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.
- D15.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the award letter.

D16. WORKING DAYS

- D16.1 Further to C1.1(tt), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.
- D16.2 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.
- D16.3 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.
- D16.4 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.
- D16.5 Further to D18, D19 and D20, the Contractor will be permitted one (1) suspension of on-site construction, agreed with the Contract Administrator, after the completion of all Critical Stages to allow a delay within the Contract until a period after Fall Drawdown of the Red River at St. Andrew's Lock and Dam, as necessary. This delay is to allow a return to Site where conditions are conducive to facilitate maximum exposure and inspection that meets the intent of the Contract and CW2145 for the Storm Relief System that is directly attributed to the River. Working Days will not be charged during site suspension period where the Site must be made secure, roadways completely operational, and all existing facilities and work in progress be protected from weather or other potentially harmful effects. Changes to Contract Critical Stages or completion dates resulting from suspension of Working Days, will not be considered.
- D16.5.1 Working Days will be assessed for every day except for the following:
- (a) As per D15.3, Days prior to the Contractor starting work on a stage of the Contract. Failure of the Contractor to commence work as indicated, in the opinion of the Contract Administrator, may result in the assessment of Working Days equivalent to the estimated costs incurred to the City;
 - (b) Days not worked due to Force Majeure.

D17. HOURS OF WORK

- D17.1 All Work shall be carried out between the hours of 07:00 and 22:00 Monday to Friday and between 09:00 and 21:00 Saturday.
- D17.2 No Work shall be performed outside the hours stated in D17.1 or on Sunday or Statutory or Civic holidays without written permission from the Contract Administrator. Approval will only be granted if it is in the best interests of the City to do so. Any Work for Saturday, Sunday or holidays will be counted as a Working Day.

D18. CRITICAL STAGES

- D18.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) Critical Stage 1 – CCTV video and Laser inspections for the Re-Inspection sewers and all corresponding Panoramio Manhole inspections shall be completed within Fifty (50) consecutive Working Days of the commencement of the Work as specified in D15 having all post processed data and corresponding sewer and manhole defect coding completed

and submitted to the Contract Administrator within Fifty-Five (55) Working Days of the commencement of the Work as specified in D15.

D19. SUBSTANTIAL PERFORMANCE

- D19.1 The Contractor shall achieve Substantial Performance within one hundred and five (105) consecutive Working Days of the commencement of the Work as specified in D15.
- D19.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D19.3 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.

D20. TOTAL PERFORMANCE

- D20.1 The Contractor shall achieve Total Performance within one hundred and fifteen (115) consecutive Working Days of the commencement of the Work as specified in D15.
- D20.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D20.3 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.

D21. LIQUIDATED DAMAGES

- D21.1 If the Contractor fails to achieve Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:
- (a) Critical Stage 1 - three hundred fifty dollars (\$350);
 - (b) Substantial Performance - two thousand one hundred dollars (\$2,100);
 - (c) Total Performance - eight hundred dollars (\$800).
- D21.2 The amounts specified for liquidated damages in D21.1 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.
- D21.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D22. COVID-19 SCHEDULE DELAYS

- D22.1 The City acknowledges that the schedule for this Contract may be impacted by the COVID-19 pandemic. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the health and safety of workers and the public and directives from health authorities and various levels of government, and in close consultation with the Contract Administrator.

- D22.2 If the Contractor is delayed in the performance of the Work by reason of the COVID-19 pandemic, 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.
- D22.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether COVID-19 will affect the start date. If the Contractor declares that COVID-19 will affect the start date, the Contractor shall provide sufficient evidence that the delay is directly related to COVID-19, including but not limited to evidence related to availability of staff, availability of Material or work by others.
- D22.4 For any delay related to COVID-19 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 D22.3. Failure to provide this notice will result in no additional time delays being considered by the City.
- D22.5 The Work schedule, including the durations identified in D18 to D20 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.
- D22.6 Where Work not previously identified is being carried over solely as a result of delays related to COVID-19, 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 COVID-19, a partial consideration of the cost of temporary works will be considered by the Contract Administrator.
- D22.7 Any time or cost implications as a result of COVID-19 and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

CONTROL OF WORK

D23. JOB MEETINGS

- D23.1 Regular bi-weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.
- D23.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D24. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

- D24.1 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).

D25. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

- D25.1 Further to B13.5, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B13.5.

MEASUREMENT AND PAYMENT

D26. PAYMENT

D26.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D27. WARRANTY

D27.1 Warranty is as stated in C13.

D27.2 The Contractor shall maintain backup copies of all video and inspection data for the duration of the Warranty Period.

THIRD PARTY AGREEMENTS

D28. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D28.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.

D28.2 Further to D28.1, in the event that the obligations in D28 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.

D28.3 For the purposes of D28:

- (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.

D28.4 Modified Insurance Requirements

D28.4.1 If not already required under the insurance requirements identified in D10, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all sub-contractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and its Ministers, officers, employees, and agents shall be added as additional insureds.

D28.4.2 If not already required under the insurance requirements identified in D10, the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.

D28.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars (\$2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.

D28.4.4 Further to D10.3, insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the

insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.

D28.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

D28.5 Indemnification By Contractor

D28.5.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.

D28.6 Records Retention and Audits

D28.6.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D28.6.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D28.6.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

D28.7 Other Obligations

D28.7.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.

D28.7.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.

D28.7.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.

D28.7.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

_____ ,
(hereinafter called the "Principal"), and

_____ ,
(hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), in the sum of

_____ dollars (\$_____.)

of lawful money of Canada to be paid to the Obligee, or its successors or assigns, for the payment of which sum the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

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

TENDER NO. 246-2020

2020 SEWER INSPECTIONS

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 D11)

KNOW ALL MEN 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. 246-2020

2020 SEWER INSPECTIONS

which is by reference made part hereof and is hereinafter referred to as the "Contract".

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

- (a) A claimant is defined as one having a direct contract with the Principal for labour, service and material, or any of them, used or reasonably required for use in the performance of the contract, labour, service and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rent of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract;
- (b) The above-named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work, labour or service was done or performed, or materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon;
- (c) No suit or action shall be commenced hereunder by any claimant
 - (i) unless claimant shall have given written notice to the Principal and the Surety above-named, within one hundred and twenty (120) days after such claimant did or performed the last of the work, labour or service, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work, labour or service was done or performed. Such notice shall be served by mailing the same by registered mail to the Principal, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the Province of Manitoba;

- (ii) after the expiration of one (1) year following the date on which Principal ceased work on said Contract; including work performed under the guarantees provided in the Contract;
 - (iii) other than in a court of competent jurisdiction in the Province of Manitoba.
- (d) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.
- (e) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

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

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

_____ day of _____, 20____.

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

By: _____ (Seal)
(Attorney-in-Fact)

FORM K: EQUIPMENT
(See D13)

2020 SEWER INSPECTIONS

<p>1. Category/type: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>2. Category/type: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>3. Category/type: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

FORM K: EQUIPMENT
(See D13)

2020 SEWER INSPECTIONS

<p>4. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>5. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>6. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm> .
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Tender shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B7. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B7.
- E1.4 The following are applicable to the Work:

<u>Specification No.</u>	<u>Specification Title</u>
	Table of Contents
A	Sewer Inspections Work Program
B	Fugitive Emission Material Safety Data Sheet – Hydrogen Sulphate Gas
C	As-Built Drawings for Portage Av and Century St Triple Barrel Siphon

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
	Cover Sheet
	2020 Sewer Inspections - Key Plan
SI-01	2020 Sewer Inspections - Map 1
SI-02	2020 Sewer Inspections - Map 2
SI-03	2020 Sewer Inspections - Map 3
SI-04	2020 Sewer Inspections - Map 4
SI-05	2020 Sewer Inspections - Map 5
SI-06	2020 Sewer Inspections - Map 6
SI-07	2020 Sewer Inspections - Map 7
SI-08	2020 Sewer Inspections - Map 8
SI-09	2020 Sewer Inspections - Map 9
SI-10	2020 Sewer Inspections - Map 10
SI-11	2020 Sewer Inspections - Map 11
SI-12	2020 Sewer Inspections - Map 12
SI-13	2020 Sewer Inspections - Map 13
SI-14	2020 Sewer Inspections - Map 14
SI-15	2020 Sewer Inspections - Map 15
SI-16	2020 Sewer Inspections - Map 16
SI-17	2020 Sewer Inspections - Map 17
SI-18	2020 Sewer Inspections - Map 18
D-8211	Water Supply Hose Traffic Ramp
SD-019	Backflow Protection Arrangement

E2. CONFINED SPACE ENTRY

- E2.1 The Contractor shall be aware that Hydrogen Sulphide Gas is present in all underground structures connected to the City's sewer systems and has been known to accumulate in concentrations sufficient to cause serious harm or death to personnel who are not using adequate Personal Protective Equipment.
- E2.2 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 assessments and providing personal protective equipment (PPE).
- E2.2.1 Further to E2.2, the Contractor shall use an approved and properly maintained Supplied Air Breathing Apparatus when entering and working in sewers, manholes and catch basins.

E3. WATER SUPPLY

- E3.1 Further to specifications CW 1120, section 3.1, CW 2140 and CW 2145, water supply for the Work may be taken from City of Winnipeg hydrants in accordance with the following:
- (a) Water shall be taken from "white-cap" hydrants only. The location of "white-cap" hydrants are shown on the drawings and labelled "WCH".
 - (b) Submit a list of proposed "white-cap" hydrant locations to the City of Winnipeg Water Services Division (WSD) for approval. If a proposed hydrant location is not approved, the Contractor shall submit an alternate hydrant location for approval.
 - (c) Only hydrants approved by WSD shall be used for water supply.
 - (d) 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 Water Services Division (WSD) if available. All costs associated with the supply of the Backflow Protection Arrangement or rental of same from WSD will be included in the cost of sewer and manhole cleaning. WSD will supply a meter and locks for the Backflow Protection Arrangement.
 - (e) The Contractor is permitted to turn approved hydrants on and off provided the Contractor has received training by the Water Services Division and the turn-ons and turn-offs are done in the presence of the Contract Administrator.
 - (f) 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.
 - (g) 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. All costs associated with heating and hoarding shall be included in the price of "Sewer Cleaning" and no separate measurement or payment will be made.
 - (h) 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.
 - (i) 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. Construct ramps as shown on attached Drawing D-8211.
 - (j) Direct hook-up of sewer flushing equipment to a hydrant is not permitted unless approved by the Contract Administrator

- (k) WSD may instruct the Contractor to make other arrangements for hydrant turn-ons and turn-offs.

E3.2 Further to Section 3.7 of CW 1120, charges incurred for the permit and water meters shall be paid for by the Contractor when taken out. The Contractor shall forward the invoice to the Contract Administrator for reimbursement. The billing for water usage sent to the Contractor shall be forwarded to the Contract Administrator for payment. The Bid Opportunity number shall be noted on each permit.

E4. SITE CONDITIONS

E4.1 The City of Winnipeg is located near the geographic center of North America. The City's geographical location results in highly variable seasonal temperatures that may affect construction. During the winter, ground freezes to about 2.5 meters depth and the impact of low temperatures must be considered for construction methods, equipment operation and rates of production. It is anticipated that an output of 1,100m of sewer inspections shall be completed in the field, coded and post processed.

E4.2 The Contract Administrator shall communicate to the Bidder, in good time during the Contract, all other City and third-party projects or events that may occur in the area and concurrently to the Work. The successful Bidder will be required to adjust the cleaning and inspection program and operations away from the affected locations as necessary.

E4.3 Further to C16, the Contractor shall notify the Contract Administrator where provisional Multi-Sensor Inspections (MSI) using Sonar and Laser technologies cannot be mobilised or sourced due to the impact of the COVID-19 virus. These inspections could be removed from the Contract as approved by the Contract Administrator.

E5. SEWER AND ASSOCIATED MANHOLE CLEANING

E5.1 This specification amends and supplements specification CW 2140.

E5.1.1 Sewer Inspection Work Program

- (a) Further to Clause 3.5.2, the Contractor shall remove 95% of all loose floating, solid or semi-solid debris for:
 - (i) All Wastewater Sewers smaller than 450mm;
 - (ii) All Land Drainage, Re-Inspection, and Storm Relief Sewers smaller than 900mm.
- (b) Further to Clause 3.5.2, the following sewers shall be inspected without pre-cleaning unless directed otherwise by the Contract Administrator. Where cleaning is required for the completion of the inspections, cleaning will be in accordance to E5:
 - (i) All Wastewater Sewers 450mm and greater;
 - (ii) All Interceptor (WWS) 450mm and greater.
 - (iii) All Land Drainage, Reinspection and Storm Relief Sewers 900mm and greater.

E5.1.2 Further to Section 3.5, the Contractor shall operate the equipment so that the pressurized nozzle continues to move at all times. The pressurized nozzle shall be turned off or reduced anytime it is stationary or delayed in order to prevent damage to the sewer.

E5.1.3 Further to Section 3.5, the Contractor shall remove the upstream manhole cover during sewer cleaning.

E5.1.4 Further to Clause 3.5.3, grease shall be removed and paid for as described in E10.

E5.1.5 Cleaning of sewers and manholes not meeting E5 requirements shall be rejected. The Contract Administrator shall instruct the Contractor to remobilize, reclean and reinspect the asset as per the specifications to the satisfaction of the Contract Administrator unless the Contractor can demonstrate site limitations and conditions that prevent adequate cleaning. Additional costs incurred by the Contractor associated with the recleaning and reinspection

shall be the responsibility of the Contractor. Accepted cleaning and corresponding inspection shall be paid as per E5.1.12.

- E5.1.6 Further to 3.5.7, all manhole cleaning shall commence in the upper chimney component of the manhole moving loose debris, gravel, ragging etc. to the lower cone and wall components and to the benching and channel regardless of the method chosen to clean the sections. Cleaning shall include the trapping and removal of all sediments and residual wastes from the invert of the manhole as the cleaning progresses. Any debris moved into the associated (predominant) mainline sewers shall be subsequently cleaned where:
- (a) The Contractor is wholly responsible for determining if the line is adequately cleaned prior to the manhole scanning inspection.
 - (b) The Contractor shall operate the vacuum hose local to the outgoing channel and pipe in such a manner that solids and debris are trapped and removed. No silts, sand, gravel, debris, etc., shall be allowed to pass into the downstream pipe.
 - (c) The cleaning and inspection submittal shall be rejected if the inspection observes debris within the interconnecting mainline sewers that are identified to be cleaned under this Contract by the Contract Administrator. The Contractor shall be instructed to revisit, re-clean and re-inspect the asset at no additional cost.
 - (d) Under no circumstances shall sewage or solids removed from the manhole be dumped onto streets, catch basins, storm drains, or receiving waters.
- E5.1.7 Further to Clause 3.11.1, roots will not be considered as solid debris and shall be removed and paid for as described in E10.
- E5.1.8 Further to Clause 3.5.4, the Contractor shall be made aware of the locations on the Drawings labelled as Synergen Trouble Spots. These locations are recorded in the City's database as areas which require regular maintenance.
- E5.1.9 Further to Section 3.5, the distance required for the nozzle to travel in the sewer shall be limited to one manhole-to-manhole sewer section unless approved by the Contract Administrator.
- E5.1.10 Further to Clause 3.9.2, no decanting shall occur within 3 sewer sections upstream of a lift station. If decanting is required, it shall be done immediately downstream of the lift station.
- E5.1.11 Replace Clause 3.11.1 with:
- Cut and remove solid debris from the sewers for the limits identified by the Contract Administrator from the post cleaning sewer inspection.
- E5.1.12 Replace Clause 4.4.5 with:
- 75% of the payment will be made upon submittal of the corresponding video inspection. The remaining 25% of the payment will be made upon final acceptance of the sewer cleaning as determined by the review of the corresponding video inspection.

E6. MISCELLANEOUS SEWER CLEANING

- E6.1 Miscellaneous sewer cleaning is deemed additional efforts in excess of the requirements set out in CW2140 and E5; examples may be the removal of hardened concrete or bituminous asphalt found within the sewer pipe. Perform Miscellaneous Sewer Cleaning only as required by the Contract Administrator.
- E6.2 Clean sewers and other unforeseen locations using all equipment, personnel, traffic control and supporting vehicles, activities and operations employed in the performance of the Work.
- E6.3 Miscellaneous sewer cleaning will be measured on a time basis and paid for at the Contract Unit Price for "Miscellaneous Sewer Cleaning". The amount to be paid will be the total number of hours spent cleaning Miscellaneous Sewers and other miscellaneous locations in this Contract, accepted and measured by the Contract Administrator. Time spent for debris disposal

and mobilization/demobilization to and from the site will be included in the Contract Unit Price for “Miscellaneous Sewer Cleaning”.

E7. MISCELLANEOUS MANHOLE CLEANING

- E7.1 For the purpose of the Work, Miscellaneous Manholes include; access manholes, control structures, flush tank and overflow chambers, as identified on the drawings and as listed in Form B: Prices.
- E7.2 Miscellaneous manhole cleaning is deemed additional efforts in excess of the requirements set out in CW2140 and E5; examples may be the removal of hardened concrete or bituminous asphalt found within the manhole channel. Perform Miscellaneous Manhole Cleaning only as required by the Contract Administrator.
- E7.3 Clean manholes using all equipment, personnel, traffic control and supporting vehicles, activities and operations employed in the performance of the Work.
- E7.4 Miscellaneous manhole cleaning will be measured on a unit basis and paid for at the Contract Unit Price for “Miscellaneous Manhole Cleaning”. The amount to be paid will be the total number of Miscellaneous Manholes cleaned in this Contract, accepted and measured by the Contract Administrator. Time spent for debris disposal and mobilization/demobilization to and from the site will be included in the Contract Unit Price for “Miscellaneous Manhole Cleaning”.

E8. SEWER INSPECTION

- E8.1 This specification amends and supplements specification CW 2145.
 - E8.1.1 Replace Section 3.4 with:
 - (a) Ensure each operator is fully trained and certified in all aspects of sewer and manhole inspections and capable of making accurate observations and recording all conditions that may be encountered in the sewers and manholes.
 - (b) Inspection shall be performed by certified operators in accordance with the National Association of Sewer Service Companies (NASSCO) having attained and retained their “Pipeline Assessment Certification Program” (PACP) and “Manhole Assessment Certification Program” (MACP) certification.
 - E8.1.2 Replace Section 3.5 with:
 - (a) Perform sewer condition coding in accordance with the requirements of the NASSCO PACP and to version 7.0.0 of the manual or greater in general accordance with E8.1.1 of this specification and with the following additional requirements.

Pipe Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
General Information	1	Surveyed By (<i>Operator / PACP User Name</i>)	Yes	Yes
	2	Certificate Number	Yes	Yes
	3	Reviewed By	No	No
	4	Reviewer Certificate Number	No	No
	5	Owner	No	Yes
	6	Customer	No	Yes
	7	P/O Number (<i>Contract No.</i>)	No	Yes
	8	Work Order	No	Yes
	9	Media Label	No	Yes
	10	Project	No	Yes

Pipe Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
	11	Date	Yes	Yes
	12	Time	No	Yes
	13	Sheet Number	Yes	Yes
	14	Weather	No	Yes
	15	Pre-Cleaning	Yes	Yes
	16	Date Cleaned	No	No
	17	Flow Control	No	No
	18	Purpose of Survey	No	Yes
	19	Direction of Survey	Yes	Yes
	20	Inspection Technology Used	No	Yes
	21	Inspection Status	Yes	Yes
	22	Consequence of Failure	No	No
	23	Pressure Value	No	No

Location	24	Drainage Area	No	Yes
	25	Pipe Segment Reference (Asset ID)	No	Yes
	26	Street (Name and Number)	Yes	Yes
	27	City	Yes	Yes
	28	Location Code	No	Yes
	29	Location Details	No	Yes

Pipe	30	Pipe Use	Yes	Yes
	31	Height (Diameter)	Yes	Yes
	32	Width	Yes	Yes
	33	Shape	Yes	Yes
	34	Material	Yes	Yes
	35	Lining Method	No	No
	36	Coating Method	No	No
	37	Pipe Joint Length	No	Yes
	38	Total Length (Steel Tape Measurement)	No	Yes
	39	Length Surveyed	No	Yes
	40	Year Constructed	No	No
	41	Year Renewed	No	No

Measurements	42	Upstream MH No.	Yes	Yes
	43	Upstream MH Rim to Invert	No	No
	44	Upstream MH Rim to Grade	No	Yes
	45	Upstream MH Grade to Invert	No	No
	46	Upstream MH Northing	No	No
	47	Upstream MH Easting	No	No
	48	Upstream MH Elevation	No	No

Pipe Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
	49	Downstream MH No.	Yes	Yes
	50	Downstream MH Rim to Invert	No	Yes
	51	Downstream MH Rim to Grade	No	No
	52	Downstream MH Grade to Invert	No	No
	53	Downstream MH Northing	No	No
	54	Downstream MH Easting	No	No
	55	Downstream MH Elevation	No	No
	56	MH Coordinate System	No	No
	57	MH Vertical Datum	No	No
	58	GPS Accuracy	No	No
	59	Additional Information	No	Yes*

Yes* - when required.

(b) Record place names in accordance with Clause 3.9.4 of the CW 2145.

E8.1.3 Further to Section 3.7.4, operators failing to provide copies of their NASSCO certification and / or meet the accuracy requirements on two occasions will not be permitted to code on the remainder of the Contract until they can demonstrate to the Contract Administrator that they can code in accordance with the requirements of the NASSCO PACP and MACP version 7.0.0 of the manual or greater.

E8.1.4 Further to Section 3.13, a paper or “hard copy” of the inspection reports are not required and the following digital format submissions shall be provided:

- (a) The Contractor shall maintain backup copies of all digital video and inspection data submissions for the duration of the Warranty Period as stated in C13.
- (b) The Contractor shall provide at least three (3), 2.5 inch portable hard disk drives (HDD) , complete with all operating software, power adaptors and USB cables, delivered on a weekly rotation exchange that contains completed sewer and manhole inspection video with viewing software and sewer and manhole condition coding data to the Contract Administrator. Sewer and manhole condition coding shall be submitted as a PACP.mdb and MACP.mdb files accordingly. Retained HDD’s will be returned at the bi-weekly meeting.
- (c) The Contractor shall supply separately two (2) duplicated, 2.5 inch portable HDD’s, complete with all operating software, power adaptors and USB cables, containing all video inspections, post processed Multi-Sensor inspection data, inspection PACP and MACP defect coded reports and coding data to the City upon completion of the project.
- (d) The Contractor shall supply separately one (1) set of archival grade digital versatile discs, DVD-R format in accordance with E8.1.7 to the City upon completion of the project.
- (e) All HDD’s shall be sized appropriately to accommodate all above mentioned files and have dual USB 3.0 (preferable) and (a minimum) USB 2.0 compatibility with a minimum data transfer rate of 480 MB/s.

E8.1.5 The Contract drawings are based on information contained in the City’s GIS database. If the Contractor has trouble interpreting the drawings, or if they believe them to be wrong, the Contract Administrator shall be approached for assistance/clarification.

- (a) The Contractor shall assist the Contract Administrator in making any required measurements for the correction of errors found on the Drawings.

E8.1.6 Replace Clause 3.8.1 with:

Provide a minimum of 400 lines of resolution around the periphery of the picture for digital MPEG video playback.

E8.1.7 Replace Clause 3.11.1 with:

Capture the inspections in digital format in colour from the live video source on archival grade digital versatile discs, DVD-R format and HDD to the following minimum requirements. Adjust requirements as required to achieve 400 lines of resolution specified in Clause E8.1.6 of this Specification.

- .1 XDVD MPEG-2 or MPEG-4 format (MPEG-4 preferred).
- .2 Picture Size: NTSC 720 x 480 @ 29.97 frames per second.
- .3 Data/Bit Rate: 6.0 Mbit/sec.

E8.1.8 Replace Clause 3.16.1 with:

Measure the distance between the centre of the start and finish manholes on the ground surface above the sewer to the nearest 0.01 of a metre using a survey grade ISO 16331-1:2012(E) approved outdoor laser distance measurer capable of attaining 150m minimum steel tape distance, or alternative measuring methods approved by the Contract Administrator, before beginning the sewer inspection. The centre of the manhole will be based on the centre of the manhole cover regardless of the manhole configuration. If bends are identified to exist within the sewer segment, the Contractor shall approximate the measurement on the ground surface using incremental distances to the approximate alignment of the sewer between the start and finish manholes, to the approval of the Contract Administrator's Site Inspector.

E8.1.9 Further to Clause 3.17.7.8:

Tap observation distances must occur at the centre of the tap and the side periphery. To determine use and deficiencies of the tap, the camera must continue to travel, camera centred in the perspective view (to capture other observations), to stop perpendicular to the tap and pan so that the camera can view directly into the barrel of the lateral, to enable the inspector to apply modification and descriptor codes to the tap as per NASSCO PACP standards as necessary.

E8.1.10 Replace Clause 3.6 with:

- (a) Perform NASSCO MACP V7.0.0 or greater manhole condition Level 2 inspection and coding in general accordance with E8.1.1 of this specification and with the following additional requirements.

The following fields shall be used when completing the "Header" details in the manhole inspection header form. By default, Field 5 the "Owner" is City of Winnipeg and Field 6, the "Customer" will be the Contract Administrator for 246-2020 , AECOM.

Field 38 – 43 data shall be collected using a hand-held GPS device to achieve Nearest (N) or sub-meter (M) accuracies dependent upon available satellite coverage.

Manhole Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
General Information	1	Surveyed By (<i>Operator / MACP User Name</i>)	Yes	Yes
	2	Certificate Number	Yes	Yes
	3	Reviewed By	No	No
	4	Reviewer Certificate Number	No	No
	5	Owner	No	Yes
	6	Customer	No	Yes
	7	P/O Number (<i>Contract No.</i>)	No	Yes
	8	Work Order	No	Yes

Manhole Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
	9	Media Label	No	Yes
	10	Project	No	Yes
	11	Date	Yes	Yes
	12	Time	No	Yes
	13	Sheet Number	Yes	Yes
	14	Weather	No	Yes
	15	Pre-Cleaning	Yes	Yes
	16	Date Cleaned	No	No
	17	Purpose of Survey	Yes	Yes
	18	Inspection Level	Yes	Yes
	19	Inspection Status	Yes	Yes
	20	Consequence of Failure	No	No
Location	21	Drainage Area	No	Yes
	22	Manhole/Access Point Number (Asset ID)	Yes	Yes
	23	Street (Name and Number)	Yes	Yes
	24	City	Yes	Yes
	25	Location Code	Yes	Yes
	26	Surface Type	Yes	Yes
	27	Inflow Potential from Runoff	No	No
	28	Location Details	No	Yes
Manhole	29	MH Use (Use of Access Point/Structure)	Yes	Yes
	30	Access Type	Yes	Yes
	31	Year Constructed	No	No
	32	Year Renewed	No	No
	33	Evidence of Surcharge	Yes	Yes
Measurements	34	Rim to Invert (Outgoing)	Yes	Yes
	35	Rim to Grade (Outgoing)	Yes	Yes
	36	Grade to Invert (Outgoing)	Yes	Yes
	37	Rim to Grade Exposed	No	No
	38	Northing (Y Coordinate)	No	Yes
	39	Easting (X Coordinate)	No	Yes
	40	Elevation (Z Coordinate)	No	Yes
	41	Coordinate System (Nearest Meter)	No	Yes
	42	Vertical Datum (Elevation)	No	Yes
	43	GPS Accuracy	No	Yes
	44	Additional Information	No	No

The following fields shall be used when completing the “Manhole Component Observation Section” details in the manhole component observation form.

Manhole Component Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
Cover	45	Cover Type	Yes	Yes
	46	Cover Shape	Yes	Yes
	47	Cover Size	Yes	Yes
	48	Centre Cover Size	No	No
	49	Cover Size Width	Yes	Yes
	50	Cover Material	Yes	No
	51	Hole Diameter (Vent)	Yes	No
	52	Hole Number (Number of Vent Holes)	Yes	No
	53	Cover Bearing Surface Diameter	Yes	No
	54	Cover Bearing Surface Width	Yes	No
	55	Cover/Frame Fit	Yes	Yes
	56	Cover Condition	Yes	Yes
Cover Insert	57	Insert Type	Yes	No
	58	Cover Insert Condition	Yes	No
Manhole Cover Adjustment Ring	59	Adjustment Ring Type	Yes	Yes
	60	Adjustment Ring Material	Yes	Yes
	61	Ring Condition (Adjustment Ring)	Yes	Yes
	62	Adjustment Ring Height	No	No
Frame	63	Frame Material	Yes	Yes
	64	Frame Bearing Surface Width	Yes	No
	65	Frame Bearing Surface Depth	Yes	No
	66	Frame Clear Opening Diameter	Yes	No
	67	Frame Clear Opening Width	Yes	No
	68	Frame Condition	Yes	Yes
	69	Seal Condition	Yes	Yes
	70	Frame Offset Distance	Yes	Yes
	71	Frame Seal Inflow	Yes	Yes
	72	Frame Depth	No	No
Chimney	73	Chimney Present	Yes	Yes
	74	Chimney First Material	Yes	Yes
	75	Chimney Second Material	No	No
	76	Chimney I/I	No	No
	77	Chimney Clear Opening	No	No
	78	Chimney Depth	Yes	Yes
	79	Chimney Lining Interior (Coating)	No	No
	80	Chimney Lining Exterior (Coating)	No	No
	81	Chimney Condition	Yes	Yes
Cone	82	Cone Type	Yes	Yes

Manhole Component Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
	83	Cone Material	Yes	Yes
	84	Cone Depth	Yes	Yes
	85	Cone Lining Interior	No	No
	86	Cone Lining Exterior	No	No
	87	Cone Condition	Yes	Yes
Wall	88	Wall Diameter (Length)	No	No
	89	Wall by Size (Width)	No	No
	90	Wall Material	Yes	Yes
	91	Wall Depth	Yes	Yes
	92	Wall Lining Interior (Coating)	No	No
	93	Wall Lining Exterior (Coating)	No	No
	94	Wall Condition	Yes	Yes
Bench	95	Bench Present	Yes	Yes
	96	Bench Material	Yes	Yes
	97	Bench Lining (Coating)	No	No
	98	Bench Condition	Yes	Yes
Channel	99	Channel Installed	Yes	Yes
	100	Channel Material	Yes	Yes
	101	Channel Type	Yes	Yes
	102	Channel Exposure	Yes	Yes
	103	Channel Condition	Yes	Yes
Manhole Steps	104	Step Number	Yes	Yes
	105	Step Material	Yes	Yes
Additional Component Information	106	Additional Component Information	No	Yes*
Pipe Connections	107	Pipe Number	Yes	Yes
	108	Clock Position	Yes	Yes
	109	Rim to Invert	Yes	Yes
	110	Direction	Yes	Yes
	111	Material	Yes	Yes
	112	Shape	Yes	Yes
	113	Height (Diameter)	Yes	Yes
	114	Width	Yes	Yes
	115	Pipe Condition	Yes	Yes
	116	Pipe Seal Condition	Yes	Yes
	117	Pipe Type	Yes	Yes
	118	Structure ID (Pipe/Lateral Segment Reference)	No	No
119	Pipe Comments	No	No	

Yes* - when required.

(b) Record place names in accordance with Clause 3.9.4 of CW2145.

- E8.1.11 The sewer inspected distance shall represent the distance from the center of the start to the center of the end manhole, access or control structure unless incomplete as per Section 3.19.2.
- E8.1.12 Further to Section 3.19.2, incomplete inspections for sewer and manhole inspections shall be communicated via the SharePoint Site under the "Incomplete Inspections" page, indicating the date and time of the attempt, reasoning, efforts and actions set out by Section 3.19. This will be reviewed with the Contract Administrator on a weekly basis for City, Contract Administrator and/or Contractor action to remedy the incompleteness for the goal of completing a full inspection.
- E8.1.13 Further to Section 3.19.2, incomplete Surveys that are due to GIS error reporting shall also be communicated via the SharePoint Site under the "GIS Error - Merged Assets" and "GIS Error – All Others" indicating which host sewer was used for the inspection, detailing all other assets that are merged into the host inspection.
- E8.1.14 Further to Section 3.19.2, manholes identified being in a surcharged environment (standing water) or in imminent failure shall be communicated via the SharePoint Site under the "Manholes of Concern" page, indicating the issues observed in the inspection. Incomplete manhole inspections will not be communicated within the "Manholes of Concern" page.
- E8.1.15 Further to Section 3.22.1, clear water infiltration observations shall also be communicated via the SharePoint Site under the "Water Infiltration" page, providing asset number, location, date and time of the observation, description with attached screen captures to help facilitate Section 3.19.
- E8.1.16 Submittals
- (a) In-pipe Inspection Emergency Plan
- (i) The Contractor shall submit an Emergency Plan that outlines proposed methods for recovering in-line inspection equipment that has become lodged, lost or uncontrollable within the sewer network. For information, the Contractor's attention is called to Clauses 3.2.1 and 4.7 of CW 2145.
- E8.1.17 Further to Section 3.17 and subject to E9.2.1 a hand held waterproof "Go Pro" © or alternative approved by the Contract Administrator may be used to perform inspections within the large diameter (1500mm in height or larger) Land Drainage System (LDS) Inspections where current debris levels exceed E9.2.1 inhibiting traditional CCTV inspections in accordance with the following:
- (a) Camera to be waterproof and of similar quality or better as per Section 3.11;
- (b) Hand held adequate intrinsically safe even lighting shall be used and panned simultaneously with the camera as necessary;
- (c) A measuring device shall be used in accordance with E8.1.8 to facilitate defect positioning. The laser pointing device with paint sprayed chainage distances shall be applied above the spring line at 2m intervals on the interior pipe wall face for distance correlation.
- (d) Operator shall attempt to maintain a camera position center to the pipe, walking downstream, pausing to pan observed defects and cross referenced with the distance attained using zoom functions as necessary, centering the camera back to the forward observing position to continue the survey; and
- (e) Attempt to complete the inspection for the entire LDS pipe to the downstream node.
- E8.1.18 Hand held Inspections will be measured on a length basis for each LDS and paid for at the Contract Unit Price for the pipes corresponding diameter range within the "Sewer Inspections" section. Length to be paid for will be the total steel tape measured length of Sewer inspected in accordance with this specification, accepted and measured by the Contract Administrator.

E8.2 Existing Conditions

E8.2.1 Interceptor Inspections – West Branch to the Main Interceptor and Associated Secondary Interceptor Sewers:

- (a) Inspection of approximately 8,380 m of the west branch to the main interceptor and associated secondary interceptors from the combined sewer districts.
- (b) Hydraulic analysis has not been undertaken for these sewers at this time, but it is expected that in-line inspections are feasible under dry weather flow conditions. The Contractor shall carry out inspections, however, at times that facilitate obtaining the maximum visible image above the flow surface which are typically at the diurnal low flow periods each day or night.
- (c) The Interceptor sewers shall require CCTV inspection with a portion having Sonar or Laser inspection required as identified within
- (d) Three (3) steel pipe Siphons having diameters of 300, 450 and 500mm are located at the underpass of Portage Avenue and Century Street, accessible from one upstream and one downstream inspection chamber will require Sonar Inspection.
- (e) 45% of the Interceptor inventory is located on Regional streets where inspection operations shall be governed by the time restrictions imposed by E11.2.
- (f) Approximately 470m of cleaning shall only be undertaken on the Interceptor sewers.
- (g) The sewers are mostly located within City of Winnipeg right-of-ways, although some are located on private property.

E8.2.2 LDS:

- (a) The 20,340 m of identified sewers to be inspected are located in the Riviera, Crescent, Crane (Fort Garry), Lemay Ave Area, Beaujolais Coulee (St. Norbert) areas of the City is under the influence of the Red River. A small area in the Western and Southern part of St. Norbert will be under the influence of the La Salle River (Rue Lemaire, Campeau, St. Therese/St. Pierre behind St. Norbert Collegiate). These systems are all gated.
- (b) The sewers are mostly located within City of Winnipeg right-of-ways, although some are located on private property.
- (c) The LDS sewers shall require CCTV inspection with a portion having Sonar inspection required as identified within Appendix A.
- (d) 23% of the Interceptor inventory is located on Regional streets where inspection operations shall be governed by the time restrictions imposed by E11.2.
- (e) Cleaning of 84% LDS assets shall take place.
- (f) The LDS exhibit markedly different flow patterns relating directly with weather conditions and attenuated flow levels from local ditches or watercourses that will present potential water level and flow issues, but it is expected that in-line inspections are feasible under dry weather flow conditions but are under the influence of river levels and are not likely gated. The Contractor shall carry out CCTV inspections at times that facilitate obtaining the maximum visible image above the flow surface.
- (g) The LDS system services road and ditches, conveying rainfall and snow melt runoff and, as with all other pipe conveyance flow types, is subjected to infiltration and exfiltration. Operational issues will see debris runoff from the highway and other environments that will lead to inconsistent debris build up having obstructions or blockages of foreign objects that could be hard to clean or traverse. Cleaning shall however take place for 84% of the LDS inventory and for the remaining 16%, for sewers 900mm diameter and larger, will not be cleaned and shall require traversing over existing debris levels.

E8.2.3 Re-Inspection:

- (a) Inspections for 50,770 m of combined sewers located predominantly within the Colony, Cornish and Metcalfe districts and is the full inventory of Critical Stage 1.

- (b) The sewers are mostly located within City of Winnipeg right-of-ways, although some are located on private property.
- (c) The Re-Inspection sewers shall require CCTV inspection with a portion having Laser inspection required within the large diameter brick and all egg shaped sewers as identified within Appendix A.
- (d) Cleaning of 90% Re-Inspection assets shall take place.
- (e) 62% of these assets were inspected between 10 and 20 years ago.
- (f) 47% of the Re-inspection inventory is located on Regional streets where cleaning and inspection operations shall be governed by the time restrictions imposed by E11.2.
- (g) Forty-One (41) flush tank chambers have been identified to be inspected however flush tank leads locations have been identified for inspection. Due to their inherent configuration, weirs and apparatus additional effort will be required to inspect as downstream of the chambers have limited access and are configured usually having 90° bends that may only allow push camera technologies to facilitate a complete inspection. Limited, to no access from the downstream location is available due to the tee configurations, thus presenting a challenging inspection and as such are itemised separately.

E8.2.4 Storm Relief Sewers (SRS):

- (a) Inspection of 15,730 m SRS having no prior inspection on record, are located within the Munroe, Munroe Annex and Parkdale service areas of the City. The SRS system is deep and below typical river elevations seen during recent summers. Unlike the combined and wastewater sewer systems, most of the SRS system is not regularly dewatered and therefore shall require CCTV and some Sonar Inspections; no Laser inspections are required.
- (b) The sewers convey storm flows from the combined sewer network for storage and in turn spill diluted flows either back into the combined sewer network or to the local watercourse.
- (c) 10% of the inventory will not be cleaned due to its diameter.
- (d) The sewers are mostly located within City of Winnipeg right-of-ways, although some are located on private property.
- (e) 23% of the Re-inspection inventory is located on Regional streets where cleaning and inspection operations shall be governed by the time restrictions imposed by E11.2.
- (f) Hydraulic analysis has not been undertaken for these sewers, but it is expected that in-line inspections will have to be determined when river levels are at their lowest and under dry weather flow conditions such as after Fall draw-down of the Red River or during Winter ice level conditions. The Contractor shall carry out inspections in accordance with D16.5 at times that facilitate obtaining the maximum visible image above the flow surface.
- (g) Options to involve City Operations to pump SRS levels down may be requested though subject to crews' availability.

E8.2.5 Waste Water Sewers (WWS):

- (a) CCTV only inspections for 17,300 m of the WWS located within Riverbend Park district.
- (b) 4% of the inventory will not be cleaned due to its diameter. The average age of the assets are approximately 30 years old for these previously uninspected Sanitary sewers.
- (c) 7% of the WWS inventory is located on Regional streets where inspection operations shall be governed by the time restrictions imposed by E11.2.
- (d) The sewers are mostly located within City of Winnipeg right-of-ways, although some are located on private property.

E9. SEWER INSPECTION EQUIPMENT

E9.1 Sewer Inspection Equipment

E9.1.1 In-Line sewer inspection equipment shall be comprised of a self-propelled track-mounted platform bearing multiple inspection sensors / technologies that can undertake simultaneous remote inspection in sewers of all diameter ranges.

E9.1.2 In areas where a self-propelled track-mounted platform is not possible to use during the inspections, the inspections shall be performed using a float or skid system. The Contractor shall notify the Contract Administrator prior to the use of a float or skid platform, tethered by use of flusher hosing capable at distances stated in E9.2.1(b).

E9.2 In-Line Inspection Platform

E9.2.1 Minimum requirements of the in-line inspection platform that meets the intent of B13.7, that include:

- (a) Independently controlled drive tracks that enable the platform to manoeuvre around bends and climb over debris up to 300mm in height.
- (b) Operable under partially or fully submerged flow conditions, for distances up to 700m upstream or downstream from a single access point.
- (c) Operable in sewers of various cross-section, and constructed of standard pipe materials including brick, clay, concrete, PVC, HDPE, and steel.
- (d) Tethered to facilitate the conveyance and extraction of the platform from the sewer, without causing damage to the sewer infrastructure, in the event the equipment fails or otherwise becomes uncontrollable within the sewer.
- (e) Equipped with sufficient high intensity lighting to illuminate the sewer for visual inspection at the widest horizontal viewing angle and the pipe's side periphery.

E9.3 MSI - In-Line Inspection Sensors / Technologies

E9.3.1 Minimum requirements of the inspection sensors / technologies that meets the intent of B13.7, that include:

- (a) CCTV Video Inspection
 - (i) Equipment shall conform to CW 2145, except as modified herein.
 - (ii) Equipment shall be capable of continuously capturing digital video from first generation recordings with no frame loss, regardless of the progression of the inspection.
 - (iii) Equipment shall be used to acquire continuous digital video images of the sewer for the entire length being inspected.
 - ◆ Perform sewer condition coding in accordance with the requirements of the NASSCO PACP V7.0.0 or greater.
 - ◆ Perform condition coding using operators who are certified in accordance with the National Association of Sewer Service Companies (NASSCO) having attained and retained their "Pipeline Assessment Certification Program" (PACP) certification.
 - ◆ Ensure each operator is fully trained in all aspects of sewer inspection and capable of making accurate observations and recording all conditions that may be encountered in the sewers.
 - ◆ Operators failing to meet the accuracy requirements on two occasions will not be permitted to code on the remainder of the contract until they can demonstrate to the Contract Administrator that they can code in accordance with the requirements of the NASSCO PACP V7.0.0 manual or greater.

- ◆ Incorporate a suitable distance-reading device to measure the location of the equipment in the pipe, to an accuracy of $\pm 0.5\%$ of the length of the inspection.
- (b) Three Dimensional (3D) LASER Scanning Inspection
- (i) “Three Dimensional (3D) Light Amplification by Stimulated Emission of Radiation Scanning” (LASER) is a technique to determine the surface profile of mainline pipes using a three dimensional (3D) LASER on the entire circumference above fluid level of the pipe which does not need to be attached to the CCTV inspection equipment.
 - (ii) LASER scanning equipment shall provide an accurate determination of pipe geometry (features and defects) above the fluid level.
 - (iii) Minimum equipment requirements are:
 - ◆ The provision of LASER scanning Internal Diameter and Deflection graphs will be used to quantify internal pipe wall material loss/gain or deformation (ovality and deflection) at a given location. Pipe cross-sections obtained from high resolution scans will be used to provide quantitative information regarding internal pipe diameter, including ovality. Precision Scans are produced with multi-colour indication depicting deviations from as built conditions as well as localized material gain and/or loss.
 - ◆ The LASER shall be Class 1; eye-safe for operator safety.
 - ◆ Surface corrosion measurements accurate to 5mm at 3 metres in 1220mm (48 inch) pipes and larger.
 - ◆ Precision ovality / deflection detailed range LASER measurement scans accurate to $\pm 1\%$.
 - ◆ LASER scanning shall be conducted on identified Sewer pipe entities and be conducted from access point to access point. LASER equipment shall be moved through the pipeline on a transport vehicle capable of supporting the LASER inspection equipment above the water level.
 - ◆ LASER scans shall produce a point cloud with a maximum distance between points of 10 mm in the transverse direction and 40 mm in the longitudinal direction. The rate of scan shall not exceed 9 m / minute.
- (c) SONAR Scanning Inspection
- (i) Sound Navigation and Ranging (SONAR) scanning equipment shall accurately measure the depth to sediment or pipe surface below the fluid level at regular intervals throughout the inspection.
 - (ii) SONAR scanning shall be conducted on identified Sewer pipe entities and be conducted from access point to access point.
 - (iii) Minimum equipment requirements are:
 - ◆ SONAR equipment must be programmable multi-frequency profiling SONAR specifically adapted to using sound waves to locate and map subaqueous sewer irregularities by creating continuous SONAR images recorded in “real time” mode.
 - ◆ SONAR equipment shall be digital, and support a range of frequencies from 600 kHz to 2.25 MHz to minimize noise.
 - ◆ The range resolution measurement error shall be no greater than 2.0mm from distances of 1 to 4m, and no greater than 10.2mm from distances of beyond 5m.
 - ◆ The minimum detectable range for the SONAR unit shall be 150mm.
 - ◆ SONAR range resolution measurement error no greater than 2mm from a distance of 1 to 4m and no greater than 10mm from distances of beyond 5m.

E10. REMOVAL OF EXCESSIVE GREASE AND/OR ROOTS

- E10.1 Grease and or roots that cannot be removed through typical cleaning efforts shall be cut and removed from the sewer as directed by the Contract Administrator.
- E10.2 Use hydraulically driven saw or blade cutters to remove grease and roots. Flushing the sewer or the use of “spin nozzles” to remove grease will not be permitted.
- E10.2.1 Remove grease and or roots to within 15 millimetres of the inside surface of the sewer.
- E10.2.2 Monitor the entire removal operation and while the removal equipment is travelling within the pipe to reach the work area by closed circuit television (CCTV).
- E10.3 The removal of grease and or roots from within a single manhole-to-manhole sewer segment will be considered as one (1) pay item regardless of the amount of grease and or roots removed from within that sewer segment.
- E10.3.1 Measurement will be on a unit basis and paid for at the Contract Unit Price for “Removal of Excessive Grease and or Roots per Sewer Segment”. The number of units to be paid for will be the total amount of manhole-to-manhole sewer segments in which grease and or roots have been removed in accordance with this Specification, accepted and measured by the Contract Administrator.

E11. TRAFFIC CONTROL AND MAINTENANCE OF ACCESS

- E11.1 Further to Section 3.7 of CW 1130 of the General Requirements the Contractor shall be responsible to redirect and maintain traffic with appropriate signing in accordance with The City of Winnipeg, "Manual of Temporary Traffic Control in Work Areas on City Streets" at all times. The "Manual of Temporary Traffic Control in Work Areas on City Streets" can be found online at: (<https://winnipeg.ca/publicworks/transportation/pdf/2019-ManualOfTemporaryTrafficControl.pdf>).
- E11.2 Work shall not be carried out on Regional Streets between 07:00 to 09:00 hours and 15:00 to 18:00 hours Monday to Friday unless approved by the Contract Administrator.
- E11.3 Should the City of Winnipeg require that Work on Regional Streets be carried out at night, on Sundays or on public holidays, the Contractor shall comply without additional compensation being considered to meet these requirements.
- E11.4 Regional Streets are listed in the Appendix of the City's Manual of Temporary Traffic Control which is available at <https://winnipeg.ca/publicworks/transportation/pdf/2019-ManualOfTemporaryTrafficControl.pdf>
- E11.5 Further to Section 3.8 of CW 1130 of the General Requirements parking restriction signing on Regional Streets will be done by The City of Winnipeg, Traffic Services Branch.
- E11.6 The Contractor will be responsible for parking restriction signing required to perform the Work on non-regional and local residential streets. “No Parking” signs will be provided for the Contractor’s use.
- E11.7 Erect signs no sooner than 24 hours before the Work commences at a particular location.
- E11.8 Record the license plate numbers of vehicles already parked within the limits where the parking restriction signs are placed and fax the information to Winnipeg Police Services, Traffic Branch at 986-6998.
- E11.9 Promptly remove parking restriction signs once the Work at that location is completed. Signs shall not be left in place over a weekend if no Work will be done at that location.
- E11.10 Return signs immediately upon completion of the Work.

- E11.11 Further to Section 3.6 of CW 1130 of the General Requirements, maintain safe pedestrian crossing at intersections at all times. Only one pedestrian crossing at an intersection is to be blocked at any one time. If more than one pedestrian crossing is blocked at an intersection at the same time the Contractor shall provide flag persons to safely escort pedestrians across the intersection.
- E11.12 Do not park company or private vehicles inside the signed work zone in a manner that will block sightlines for vehicles and pedestrians approaching and crossing intersections.
- E11.13 If, in the opinion of the Contract Administrator, the placement of the Contractor's equipment creates an inordinate effect on pedestrian and (or) vehicular traffic, the Contractor shall relocate equipment until favourable traffic conditions return.

E12. NOTICES TO RESIDENTS

- E12.1 Further to CW 2140 Section 3.5 and CW 2145, the Contractor shall deliver notices provided by the Contract Administrator to residents on the affected sewer lines by 16:00 hours 2 days prior to the use of flushing equipment for either sewer cleaning or sewer inspection.
- E12.2 The notices will be in effect for a 3-day period which the Contractor will indicate with dates stamped on the envelope. The Contractor shall make every effort to complete the affected sewer lines within the notification window.
- E12.3 The Contractor shall update the project SharePoint site, under the "Notices to Residents" page, for each day on which letters to residents were delivered. Access and initial training to the project SharePoint site will be provided by AECOM. SharePoint will be used for project information sharing purposes as specified in E15.
- E12.4 All costs associated with delivering notices shall be included in the price bid for "Sewer Cleaning" and "Sewer Inspection" and no separate measurement or payment will be made.

E13. DAMAGE TO CITY AND PRIVATE PROPERTY

- E13.1 All damage to City and private property caused by cleaning or inspection operations is the responsibility of the Contractor. The Contractor shall repair all damaged property to the satisfaction of the Contract Administrator. All costs associated with these repairs shall be at the Contractors own expense.
- E13.2 Notify the Contract Administrator immediately when damage to property occurs.
- E13.3 The Contractor shall provide written reports to the Contract Administrator for each property attended for investigation of damage. Reports shall include photographs of all damage, dates and times, verbal or written agreements with property owner and all actions taken or proposed to rectify the damage. Reports shall be submitted to the Contract Administrator within 24 hours of attending the property.
- E13.4 Sewers may be located in easements through private property or City owned parklands and right-of-ways where no paved access may exist. It will be the Contractors responsibility to identify these sewers and arrange for access and to restore any surface damage to private and City owned property to the satisfaction of the Contract Administrator
- E13.5 Sewer backup or "blow-back" on private property resulting from cleaning or inspection activities is not acceptable and shall be avoided at all costs. It is expected that where this possibility exists the Contractor shall take appropriate measures such as making modifications to cleaning equipment and/or taking additional time to clean such sewers.
- E13.5.1 Clean-up of affected residences shall be done by cleaning professionals. Under no circumstances are cleaning equipment operators to enter residences unless they are neat and presentable, and the Contract Administrator has received a Criminal Record Search for that individual.

- E13.5.2 Where actual sewage or “grey water” has flooded private property, the Contractor shall immediately clean and disinfect all affected areas as well as flush all weeping tile. The Contractor shall immediately hire an independent IICRC certified water damage or flood restoration contractor to assess any damage to contaminated building materials such as drywall, insulation, carpets, weeping tile or sub-floors, and immediately make any required repairs.
- E13.5.3 If a residence is uninhabitable as a result of a sewer back-up the Contractor shall pay for reasonable hotel accommodations and meals for all affected residents.
- E13.6 The Contractor shall provide the Contract Administrator with a local 24-hour contact number to arrange for immediate clean-up and repair of private property.

E14. DIGITAL PANORAMIC MANHOLE INSPECTIONS

- E14.1 Notwithstanding CW 2145, inspect manholes using digital panoramic manhole inspection system such as the IBAK PANORAMO SI, or equivalent meeting the following criteria:
- (a) The inspection camera system must be 100% digital. Any analog or NTSC video camera will be deemed unacceptable.
 - (b) Perform manhole condition coding in accordance with the requirements of the NASSCO MACP V7.00 or greater.
 - (c) Perform condition coding using operators who are certified in accordance with the National Association of Sewer Service Companies (NASSCO) having attained and retained their “Manhole Assessment Certification Program” (MACP) certification.
 - (d) Operators failing to meet the accuracy requirements on two occasions will not be permitted to code on the remainder of the contract until they can demonstrate to the Contract Administrator that they can code in accordance with the requirements of the NASSCO MACP V7.0.0 manual or greater.
 - (e) The inspection camera system must have two independently or simultaneously controlled digital cameras, one facing in the downward direction and one facing in the upward direction. Each camera must have a minimum of 185 degree field of view.
 - (f) The inspection camera system must provide sufficient illumination of the interior of the manhole to obtain proper exposure without introducing any motion blur. The light shall be positioned to distribute the light evenly onto the structure walls. The lighting must be able to illuminate manholes without the need of any auxiliary lighting having a recommended contrast set to less than 1.5.
 - (g) The inspection system shall produce individual images or frames with no more than 0.001 inches (0.025mm) of movement during image or frame exposure to produce crisp, clear images. Inspections showing evidence of corrupt or erroneous imagery, scratched lenses or protective glass plate or similar due to poor handling and application shall be rejected.
 - (h) The inspection camera must provide a minimum of 3000 line of vertical resolution in the side view and a minimum of 500 lines in the perspective view.
 - (i) Contractor is responsible for reviewing collected data, coding observations, however the City must have the ability to view the digital film file in the way that the contractor can view them, including full control of the virtual pan and tilt.
 - (j) The digital film files will be captured to a “High Quality” setting that must include an unfolded view of the manhole with a minimum of 3000 lines of vertical resolution, providing all front, back and wrapped images that will be, at a minimum height and width of 1040x1040 pixels, to a resolution of 96 dots per inch. Latest 4k technologies will also be reviewed for acceptance.
 - (k) The digital film files must include the capability to produce a three dimensional representation of the manhole structure. This data shall be used to perform geometric measurements. This file shall be exportable to common CAD programs for further analysis.

- (l) The digital file files must include a distortion-free virtual pan and tilt allowing the review of the manhole structure from any angle from any depth. The virtual pan and tilt must be able to view 360 degrees in any direction. The virtual pan and tilt must consist of views from the top and bottom camera, any virtual pan and tilts that artificially create this view from a single camera will be deemed unacceptable due to distorted images on the direct side view.
- (m) The virtual pan and tilt and unfolded views must be able to be viewable by the City with all the required executable software included for each disc and HDD.
- (n) The Contractor shall provide the database.
- (o) All chambers that exhibit weir wall or spill pipe weir levels as observed within the field or identified, but not limited to control structures or manholes identified within the Construction Drawings, must be recorded as an MGO and its measurement from manhole rim to weir crest recorded within the remarks field.
- (p) Further to Clause 3.11.5 provide file names within the 360Player.exe software, manholes to be in alpha numeric order to ensure efficient reference.
- (q) Manhole condition coding shall be submitted to the Contract Administrator as per E8.1.4(b).

E15. PROJECT INFORMATION SHARING

- E15.1 Project information sharing will be done using Microsoft SharePoint 2013, referred to herein as SharePoint. SharePoint is a web-based collaboration tool that allows designated users to view, upload, and edit information depending on permissions granted.
- E15.2 SharePoint will be used by all stakeholders (WWD, AECOM, and the Contractor) to effectively centralize and manage project information such as, but not limited to; Daily Reports, Weekly Reports, Progress Payments, Meeting Minutes, Schedule, Construction Progress, Alerts, Site Trouble Spots, Letters to Residents, Complaints Reporting, Urgent Repairs, Hydrant Locations, Notices to Residents, Incomplete Inspection Records, Water Infiltration Notification etc.
- E15.3 Access and permissions will be granted by AECOM as approved by WWD. Initial training and support on the use of SharePoint will be provided by AECOM.

E16. MANHOLES WITH LIMITED ACCESS

- E16.1 Manholes are defined as per E7.1.
- E16.2 Manholes with limited access are those that have different degrees of access issues, ranging from no vehicular access to full vehicular access. In addition, some manholes are located on private property and require coordination with the individual landowners to facilitate establishing access and, in some cases, may be subject to certain regulatory requirements while working on the owner's property (e.g. work within a railway right-of-way).
 - E16.2.1 While the City of Winnipeg has right of entry to all locations along the Sewer Network, the Contractor shall comply with all regulatory requirements associated with work required to be carried out on all property not owned by the City of Winnipeg and all reasonable requests and requirements of private landowners.
 - E16.2.2 All coordination to establish access, for the performance of all Work, and for any restoration required post-inspection to re-establish conditions to a condition equal to or better than their pre-inspection condition shall be provided by the Contractor.
- E16.3 Manholes labelled as having Limited Access include but not limited to the following:

Table E1: Limited Access Manholes

E16.4	MH	E16.5	Location	E16.6	Issue(s) associated with access
E16.7	MH40004847	E16.8	Elmwood Park Path	E16.9	Limited to no vehicular access
E16.10	MH40004054	E16.11	Neil Avenue	E16.12	Behind fence
E16.13	MH70000078	E16.14	Neil Avenue	E16.15	Behind fence
E16.16	MH60014592	E16.17	McGillivray Boulevard	E16.18	Limited vehicular access
E16.19	MH70061876	E16.20	McGillivray Boulevard	E16.21	Limited vehicular access
E16.22	MH70061877	E16.23	McGillivray Boulevard	E16.24	Limited vehicular access
E16.25	MH60014830	E16.26	Lane S of Waller Avenue	E16.27	Limited vehicular access
E16.28	MH60015124	E16.29	Easement N of Crane Avenue	E16.30	Limited to no vehicular access
E16.31	MH60015231	E16.32	Easement N of Crane Avenue	E16.33	Limited to no vehicular access
E16.34	MH60015732	E16.35	Easement N of Chevrier Boulevard	E16.36	Field, grassed area
E16.37	MH60015717	E16.38	Fort Garry Rotary Villa	E16.39	Limited to no vehicular access
E16.40	MH60015729	E16.41	Fort Garry Rotary Villa	E16.42	Limited to no vehicular access
E16.43	MH70032572	E16.44	Cloutier Drive	E16.45	Limited to no vehicular access
E16.46	MH70032573	E16.47	Cloutier Drive	E16.48	Limited to no vehicular access
E16.49	MH60019269	E16.50	Ducharme Park	E16.51	Limited to no vehicular access
E16.52	MH60019403	E16.53	Parc La Salle	E16.54	Limited to no vehicular access
E16.55	MH60019006	E16.56	Easement S of St. Therese Avenue	E16.57	Limited to no vehicular access
E16.58	MH60019007	E16.59	Easement S of St. Therese Avenue	E16.60	Limited to no vehicular access
E16.61	MH70005193	E16.62	Jae Eadie Park	E16.63	Limited to no vehicular access
E16.64	MH70005194	E16.65	Jae Eadie Park	E16.66	Limited to no vehicular access
E16.67	For any questions regarding limited access manholes, please contact AECOM.				

E16.68 Any costs associated with establishing access to manholes (both limited access manholes and others), including any permits or fees associated with acquiring access, shall be the responsibility of the Contractor and shall be included in the Contractor's unit rates for sewer and manhole inspections.

E17. PROJECT DELIVERABLES

E17.1 CCTV Sewer and Panorama Manhole Inspections shall include the following information:

- (a) The Contractor shall submit formal NASSCO PACP and MACP compliant Sewer and Manhole Inspection Reports respectively, in digital (PDF) format, that summarizes all inspection activities and includes all inspection data in their raw format, along with any software viewing packages required to view or utilize the video and raw data as per E9 and E14.

E17.2 The MSI Report shall include the following information:

E17.2.1 LASER Scanning inspection:

- (a) Summaries of pipe corrosion and debris build-up, presented as unrolled colour-coded full-circumference graphical illustrations of pipe condition, over the length of the sewer inspected. Where the presence of fluids in the pipe necessitates interpolation to complete the full circumference view, the method and calculations used to support these assumptions shall be presented.

- (b) Cross-sectional scans, taken at regular intervals along the inspected sewer segment, showing measured pipe cross section superimposed over as-built pipe cross section, and colour highlighted to identify all areas of apparent cross-section loss and gain, construction or defective pipe features in alignment with CCTV payout distances.
- (c) Summaries of pipe ovality and deflection, including:
 - (i) Vertical AND horizontal diameter plots of individual diameter measurements versus pipe length, for each section of sewer inspected.
 - (ii) Ovality plots depicting percent deviation from as-built records.
- (d) LASER data as VRML (Virtual Reality Modeling Language) 3D computer graphic representations, in WRL format, with software viewer that can be used to display and interpret the LASER data.

E17.2.2 SONAR Scanning inspection:

- (a) Graphical summaries of sediment thickness and cumulative sediment volumes in the trough of the pipe below the water line versus pipe location, and pipe capacity depicting actual versus original theoretical storage capacity.
- (b) Statistical average, minimum, and maximum values of sediment accumulation along the sewer, where appropriate, as determined by calculating the portion of the pipe obstructed by sediment and presented as a percentage of the pipe area.
- (c) Cross-sectional scans, taken at regular intervals along the inspected sewer segment, showing sediment and pipe shape to identify all apparent cross-section loss or gain in alignment with CCTV payout distances.
- (d) Video file of SONAR data in AVI file format.

E17.3 Further to E8.1.4 (b), Laser and Sonar deliverables shall be submitted to the Contract Administrator no later than 14 days from completion of sewer inspection activities, or sooner to achieve the requirements set out in D19, D20 or D21. Provision of all hard disk drives as per E8.1.4(c).

PART F - SECURITY CLEARANCE

F1. SECURITY CLEARANCE

- F1.1 Each individual proposed to perform the following portions of the Work:
- (a) any Work on private property;
 - (b) communicating with residents and homeowners in person or by telephone;
- F1.1.1 Each Individual shall be required to obtain a Police Information Check from the police service having jurisdiction at his/her place of residence. Or
- (a) Sterling BackCheck – for existing account holders, log into your account to send individual invitations to employees requiring security clearance. For those that do not have an account, click on the following link to open an account:
<https://forms.sterlingbackcheck.com/partners/platform2-en.php?&partner=winnipegcity>; or
 - (b) Commissionaires (Manitoba Division), forms to be completed can be found on the website at: <https://www.commissionaires.ca/en/manitoba/home>; or
 - (c) FASTCHECK Criminal Record & Fingerprint Specialists, forms to be completed can be found on the website at: <https://myfastcheck.com>
- F1.2 Prior to the award of Contact, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Police Information Check obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform such Work.
- F1.3 Any individual for whom a Police Information Check is not provided, or for whom a Police Information Check indicates any convictions or pending charges related to property offences or crimes against another person will not be permitted to perform any Work specified in F1.1.
- F1.4 Any Police Information Check obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.
- F1.5 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated Police Information Check. Any individual who fails to provide a satisfactory Police Information Check as a result of a repeated Police Information Check will not be permitted to continue to perform any Work specified in F1.1.