THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 368-2009

INKSTER BOULEVARD WIDENING AND REHABILITATION, 2009 LAND DRAINAGE SEWER AND ASSOCIATED WORKS, BROOKSIDE BOULEVARD TO KEEWATIN STREET

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 Inkster Boulevard Widening and Rehabilitation, 2009 Land Drainage Sewer and Associated Works, Brookside Boulevard to Keewatin Street

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 30, 2009.

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

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

B3. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

B3.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.

B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

B4. ADDENDA

B4.1 The Contract Administrator may, at any time prior to the Submission deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.

B4.2 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.

B4.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/bidopp.asp

B4.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B4.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B5. SUBSTITUTES

B5.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.

B5.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B5.3 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.

B5.4 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.

B5.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his 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.

B5.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.

B5.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.

B5.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

B5.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B14.

B5.9 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.

B5.10 Notwithstanding B5.2 to B5.9, in accordance with B6.6, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

B6. BID COMPONENTS

B6.1 The Bid shall consist of the following components:

(a) Form A: Bid;

(b) Form B: Prices, hard copy;

(c) Bid Security;

(i) Form G1: Bid Bond and Agreement to Bond, or
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or
a certified cheque or draft;

B6.2 Further to B6.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B5.

B6.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.

B6.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B6.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder’s Bid.

B6.4.2 A hard copy of Form B: Prices must be submitted with the Bid. If there is any discrepancy between the Adobe PDF version of Form B: Prices and the Microsoft Excel version of Form B: Prices, the PDF version shall take precedence.

B6.5 Bidders are advised not to include any information/literature except as requested in accordance with B6.1.

B6.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B14.1(a).

B6.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B6.8 Bids shall be submitted to:

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

B7. BID

B7.1 The Bidder shall complete Form A: Bid, making all required entries.

B7.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in his own name, his 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 own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B7.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B7.2.

B7.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B7.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;

(b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;

(c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, shall be affixed;

(d) if the Bidder is carrying on business under a name other than his 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.

B7.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B7.5 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.

B8. PRICES

B8.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B8.1.1 For the convenience of Bidders, and pursuant to B6.4.2 and B14.4.3, an electronic spreadsheet Form B: Prices in Microsoft Excel (.xls) format is available along with the Adobe PDF documents for this Bid Opportunity on the Bid Opportunities page at the Materials Management Division website at http://www.winnipeg.ca/matmgt

B8.2 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.

B8.3 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.

B8.4 Prices from Non-Resident Bidders are subject to a Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B9. QUALIFICATION

B9.1 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.

B9.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B9.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

(a) have successfully carried out work similar in nature, scope and value to the Work; and

(b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and

(c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);

B9.4 Further to B9.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

(a) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association or by the Manitoba Heavy Construction Association's Safety, Health and Environment 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)

B9.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B9.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B10. BID SECURITY

B10.1 The Bidder shall provide bid security in the form of:

(a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or

(b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or

(c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.

B10.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B10.1.2 All signatures on bid securities shall be original.

B10.1.3 The Bidder shall sign the Bid Bond.

B10.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B10.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B10.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B10.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B10.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B10.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

B11. OPENING OF BIDS AND RELEASE OF INFORMATION

B11.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B11.1.1 Bidders or their representatives may attend.

B11.1.2 Bids determined by the Manager of Materials, or his designate, to not include the bid security specified in B10 will not be read out.

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

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

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

B12. IRREVOCABLE BID

B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.

B12.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

B13. WITHDRAWAL OF BIDS

B13.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B13.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B13.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B13.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

(a) retain the Bid until after the Submission Deadline has elapsed;

(b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and

(c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.

B13.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B12.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

B14. EVALUATION OF BIDS

B14.1 Award of the Contract shall be based on the following bid evaluation criteria:

(a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation therefrom (pass/fail);

(b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B9 (pass/fail);

(c) Total Bid Price;

(d) economic analysis of any approved alternative pursuant to B5.

B14.2 Further to B14.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

B14.3 Further to B14.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he is responsible and qualified.

B14.4 Further to B14.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

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

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

B14.4.3 The electronic Form B: Prices and the formulas imbedded in that spreadsheet are only provided for the convenience of Bidders. The City makes no representations or warranties as to the correctness of the imbedded formulas. It is the Bidder's responsibility to ensure the extensions of the unit prices and the sum of Total Bid Price performed as a function of the formulas within the electronic Form B: Prices are correct.

B15. AWARD OF CONTRACT

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

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

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

(a) the prices exceed the available City funds for the Work;

(b) the prices are materially in excess of the prices received for similar work in the past;

(c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;

(d) only one Bid is received; or

(e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

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

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

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.

C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm

C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix "**C**" designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of:

(a) Land Drainage Sewers
  (i) Inkster Boulevard from Brookside Boulevard to Keewatin Street

(b) Pavement Widening
  (i) Brookside Bouelvard from Lucas Avenue to Inksbrook Drive

(c) Temporary Paving
  (i) Inkster Boulevard from Brookside Boulevard to Keewatin Street

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

(a) Land Drainage Sewers
  (i) Installation of catchbasins and sewer service pipe
  (ii) Installation of manholes
  (iii) Installation of land drainage sewer pipe
  (iv) Hydrant relocations
  (v) Construction of Feedermain vault
  (vi) Construction of Air release valve manholes

(b) Pavement widening
  (i) Topsoil stripping, excavation, and subgrade compaction
  (ii) Placement of geotextile fabric
  (iii) Subbase and base course construction
  (iv) Construction of 230mm and 250mm plain dowelled concrete pavement (utilizing slip-form paving equipment)
  (v) Construction of full depth concrete joint and slab repairs
  (vi) Construction of separate concrete barrier curB
  (vii) Construction of asphalt overlay (50mm thickness)

(c) Temporary Paving
  (i) Topsoil stripping, excavation and subgrade compaction
  (ii) Subbase and base course construction
  (iii) Construction of asphalt pavement (75mm thick)
  (iv) Construction of dowelled concrete barrier curb on asphalt pavement

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is AECOM, represented by:

Wayne Jaworksi, C.E..T.
Senior Design Technologist
99 Commerce Drive, Winnipeg MB R3P 0Y7

Telephone No. (204) 477-5381
Facsimile No. (204) 284-2040

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

D4. CONTRACTOR'S SUPERVISOR

D4.1 At the pre-construction meeting, the Contractor shall identify his designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

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

D5. NOTICES

D5.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3, D5.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1.

D5.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:

The City of Winnipeg
Chief Financial Officer
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9

Facsimile No.: (204) 949-1174

D5.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:

The City of Winnipeg
Internal Services Department
Legal Services Division
Attn: City Solicitor
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1

Facsimile No.: (204) 947-9155

D6. FURNISHING OF DOCUMENTS

D6.1 Upon award of the Contract, the Contractor will be provided with five (5) complete sets of the Bid Opportunity. If the Contractor requires additional sets of the Bid Opportunity, they will be supplied to him at cost.

SUBMISSIONS

D7. AUTHORITY TO CARRY ON BUSINESS

D7.1 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.

D8. SAFE WORK PLAN

D8.1 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.

D8.2 The Safe Work Plan shall be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/safety/default.stm

D9. INSURANCE

D9.1 The Contractor shall provide and maintain the following insurance coverage:

(a) commercial general liability insurance, in the amount of at least two million dollars ($2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

(b) automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars ($2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;

(c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

D9.2 Deductibles shall be borne by the Contractor.

D9.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in the C4.1 for the return of the executed Contract.

D9.4 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.

D10. PERFORMANCE SECURITY

D10.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

(a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or

(b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in

the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or

(c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.

D10.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D10.2 If the bid security provided in his Bid was not a certified cheque or draft pursuant to B10.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site and in no event later than the date specified in the C4.1 for the return of the executed Contract.

D11. SUBCONTRACTOR LIST

D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at or prior to a pre-construction meeting, or at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the C4.1 for the return of the executed Contract.

D12. DETAILED WORK SCHEDULE

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

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

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

acceptable to the Contract Administrator.

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

SCHEDULE OF WORK

D13. COMMENCEMENT

D13.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

D13.2 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 D7;
  (ii) evidence of the workers compensation coverage specified in C6.15;
  (iii) the twenty-four (24) hour emergency response phone number specified in D4.2.
  (iv) the Safe Work Plan specified in D8;
  (v) evidence of the insurance specified in D9;
  (vi) the performance security specified in D10;
  (vii) the subcontractor list specified in D11;
  (viii) the detailed work schedule specified in D12; and

(b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D13.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D13.4 The City intends to award this Contract by August 14, 2009

D13.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D14. RESTRICTED WORK HOURS

D14.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission forty-eight (48) hours in advance from the Contract Administrator for any work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

D14.2 In accordance with the Manual of Temporary Traffic Control, Sections 2.03, 2.04, 2.05 and 2.06, should the Traffic Management Branch of the Public Works Department require that work on Regional Streets be carried out at night or on Sundays or on public holidays, where permitted by the City of Winnipeg Police Department, or that work be restricted or suspended during peak traffic hours, no additional compensation will be considered to meet these requirements

D15. SCHEDULE RESTRICTIONS

D15.1 Feedermain Shutdowns

(a) Feedermain shutdown periods are based on a number of factors including routine maintenance and repair work along the Feedermain and adjacent regional water distribution system, water demand, weather, reservoir operation and other factors. The City shall endeavour to make the specified time periods available to the Contractor to schedule his work requiring removal of the Feedermain from service, without limiting the City's control over the operation of the Feedermains and the regional water infrastructure system, to complete other work, maintain adequate water supply and storage of water and maintain the integrity of the infrastructure. The City shall reserve the right to cancel and/or delay these schedule dates at any time, due to any circumstances that could adversely affect the water supply, including but not limited to high water demand, abnormal weather, failures of related water system components and/or security concerns.

(b) The bidder shall note that it is intended to allow for depressurization of the Feedermain during the construction period, for installation of land drainage sewer components, to safeguard against a catastrophic failure of the pipeline. During normal summer demands, it is anticipated that the Feedermain can be taken out of service, with minimal disruption to water service levels. However, it is noted that during high water demand season, typically between June 1 and September 15, the risk of an emergency reinstatement of the Feedermain is elevated.

(c) The Bidder shall note that short term shutdown periods of less than eight (8) hours in duration that do not require drainage of the Feedermain will be permitted, subject to receipt of specified notification to the Contract Administrator. Such shutdowns may be limited to off-peak periods of the day.

(d) The Bidder shall note that longer term shutdown periods of greater than eight (8) hours in duration that require drainage of the Feedermain will only be permitted during periods of low water demands, typically between September 15 and June 1. Scheduling of work outside of this window may be permitted by the Contract Administrator, subject to review of demand forecasts, approval of the Water and Waste Department, receipt of detailed work planning and contingency plan.

(e) The Bidder shall note that during portions of the Work involving removal of Feedermain from service, including depressurization or draining of the Feedermain, the Bidder shall be prepared to take immediate actions to be prepared to return the Feedermain to service, upon receipt of notification from the Contract Administrator. This work may include, but is not limited to backfill of adjacent trenches in close proximity to the Feedermain, re-installation of and piping or appurtenances removed for construction and installation of bracing as directed.

D16. WORK BY OTHERS

D16.1 Work by others on or near the Site will include but not necessarily be limited to:

(a) Manitoba Hydro – relocating poles;

(b) City of Winnipeg Traffic Services – traffic signage and line painting.

(c) City of Winnipeg Traffic Signals – temporary and permanent signals work.

(d) City of Winnipeg Geomatics Branch – various works on survey monuments.

D17. SEQUENCE OF WORK

D17.1 Further to C6.1, the recommended sequence of work is provided in Appendix B.

D18. CRITICAL STAGES

D18.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

(a) Pavement Widening work as described in D2 shall be completed by October 16, 2009

D18.2 When the Contractor considers the Work associated with pavement widening to be completed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Completion. 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.

D18.3 The date on which the pavement widening Work has been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of pavement widening has been achieved.

D19. SUBSTANTIAL PERFORMANCE

D19.1 The Contractor shall achieve Substantial Performance by November 6, 2009.

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 by November 13, 2009.

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 Calendar Day for each and every Calendar Day following the days fixed herein for same during which such failure continues:

(a) Pavement Widening – One thousand dollars ($1,000);

(b) Substantial Performance – Three thousand dollars ($3,000);

(c) Total Performance – One thousand dollars ($1,000).

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.

CONTROL OF WORK

D22. JOB MEETINGS

D22.1 Regular weekly job meetings will be held at 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.

D22.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

D23. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D23.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

WARRANTY

D24. WARRANTY

D24.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D24.2 Notwithstanding C13.2 or D24.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:

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

(b) Substantial Performance has been achieved

D24.2.1 In such case the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

FORM H1: PERFORMANCE BOND
(See D10)

KNOW ALL MEN BY THESE PRESENTS THAT

_____
(hereinafter called the "Principal"), and

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

_____

_____ dollars ($_____.____)

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

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

BID OPPORTUNITY NO. 368-2009

Inkster Boulevard Widening and Rehabilitation, 2009 Land Drainage Sewer and Associated Works, Brookside Boulevard to Keewatin Street
which is by reference made part hereof and is hereinafter referred to as the “Contract”.

NOW THEREFORE the condition of the above obligation is such that if the Principal shall:

(a) carry out and perform the Contract and every part thereof in the manner and within the times set forth in the Contract and in accordance with the terms and conditions specified in the Contract;
(b) perform the Work in a good, proper, workmanlike manner;
(c) make all the payments whether to the Obligee or to others as therein provided;
(d) in every other respect comply with the conditions and perform the covenants contained in the Contract; and
(e) indemnify and save harmless the Obligee against and from all loss, costs, damages, claims, and demands of every description as set forth in the Contract, and from all penalties, assessments, claims, actions for loss, damages or compensation whether arising under "The Workers Compensation Act", or any other Act or otherwise arising out of or in any way connected with the performance or non-performance of the Contract or any part thereof during the term of the Contract and the warranty period provided for therein;

THEN THIS OBLIGATION SHALL BE VOID, but otherwise shall remain in full force and effect. The Surety shall not, however, be liable for a greater sum than the sum specified above.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable as Principal, and that nothing of any kind or matter whatsoever that will not discharge the Principal shall operate as a discharge or release of liability of the Surety, any law or usage relating to the liability of Sureties to the contrary notwithstanding.

IN WITNESS WHEREOF the Principal and Surety have signed and sealed this bond the

_____ day of _____ , 20____ .

SIGNED AND SEALED
in the presence of:

_____
(Witness as to Principal if no seal)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

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

FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)
(See D10)

_____
(Date)

The City of Winnipeg
Internal Services Department
Legal Services Division
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 368-2009

Inkster Boulevard Widening and Rehabilitation, 2009 Land Drainage Sewer and Associated Works, Brookside Boulevard to Keewatin Street

Pursuant to the request of and for the account of our customer,

_____ ,
(Name of Contractor)

_____
(Address of Contractor)

WE HEREBY ESTABLISH in your favour our irrevocable Standby Letter of Credit for a sum not exceeding in the aggregate

_____

_____ Canadian dollars.

This Standby Letter of Credit may be drawn on by you at any time and from time to time upon written demand for payment made upon us by you. It is understood that we are obligated under this Standby Letter of Credit for the payment of monies only and we hereby agree that we shall honour your demand for payment without inquiring whether you have a right as between yourself and our customer to make such demand and without recognizing any claim of our customer or objection by the customer to payment by us.

The amount of this Standby Letter of Credit may be reduced from time to time only by amounts drawn upon it by you or by formal notice in writing given to us by you if you desire such reduction or are willing that it be made.

Partial drawings are permitted.

We engage with you that all demands for payment made within the terms and currency of this Standby Letter of Credit will be duly honoured if presented to us at:

_____
(Address)

and we confirm and hereby undertake to ensure that all demands for payment will be duly honoured by us.

All demands for payment shall specifically state that they are drawn under this Standby Letter of Credit.

Subject to the condition hereinafter set forth, this Standby Letter of Credit will expire on

_____ .
(Date)

It is a condition of this Standby Letter of Credit that it shall be deemed to be automatically extended from year to year without amendment from the present or any future expiry date, unless at least 30 days prior to the present or any future expiry date, we notify you in writing that we elect not to consider this Standby Letter of Credit to be renewable for any additional period.

This Standby Letter of Credit may not be revoked or amended without your prior written approval.

This credit is subject to the Uniform Customs and Practice for Documentary Credit (1993 Revision), International Chamber of Commerce Publication Number 500.

_____
(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST
(See D11)

Inkster Boulevard Widening and Rehabilitation, 2009 Land Drainage Sewer and Associated Works, Brookside Boulevard to Keewatin Street

Portion of the Work	Name	Address
SURFACE WORKS:		
Supply of Materials:		
Concrete		
Asphalt		
Base Course & Sub-Base		
Geotextile		
Installation/Placement:		
Concrete		
Asphalt		
Base & Subbase		
Excavation		
UNDERGROUND WORKS:		
Supply of Materials:		
Catchbasins and Manholes		
Frames and Covers		
Land Drainage Sewer Pipe		
Sewer Service Pipe		
Corrugated Steel Pipe		
Installation/Placement:		
Catchbasins and Manholes		
Land Drainage Sewers		
Corrugated Steel Pipe		
OTHERS:		

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 These Specifications shall apply to the Work.

E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.

E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/Spec/Default.stm

E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.

E1.2.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.

E1.3 The following are applicable to the Work:

Drawing No.	Drawing Name/Title	Drawing (Original) Sheet Size
P-3301-0	Cover Sheet	A1
P-3301-1	Key Plan, Drawing List, Horizontal and Vertical Control	A1
P-3301-2	Horizontal Geometry Brookside Boulevard to STA 1+970NM	A1
P-3301-3	Horizontal Geometry STA 1+970NM to STA 2+530NM	A1
P-3301-4	Horizontal Geometry STA 2+530M to STA 3+040NM	A1
P-3301-5	Horizontal Geometry STA 3+040 to STA 3+560M & King Edward Street N/Inkster Blvd.	A1
P-3301-6	Horizontal Geometry STA 3+560NM to Keewatin Street	A1
P-3301-7	Horizontal Geometry Brookside Boulevard S/Inkster Boulevard	A1
P-3301-8	Horizontal Geometry Brookside Boulevard N/Inkster	A1
P-3301-9	Horizontal and Vertical Alignment Brookside Boulevard to STA 1+740NM	A1
P-3301-10	Horizontal and Vertical Alignment Brookside Boulevard- STA 1+000EG to STA 1+180EG	A1
P-3301-11	Horizontal and Vertical Alignment Brookside Boulevard-STA 1+080EG to STA 1+370EG	A1
P-3301-12	Horizontal and Vertical Alignment Brookside Boulevard-STA 1+490EG to STA 1+690EG	A1
P-3301-13	Horizontal and Vertical Alignment Brookside Boulevard- STA 1+690EG to STA 1+850EG	A1
P-3301-14	Horizontal and Vertical Alignment King Edward Street N/Inkster Boulevard	A1
P-3301-15	Cross Sections A & B	A1
P-3301-16	Land Drainage System Brookside Boulevard to STA 1+740NM	A1
P-3301-17	Land Drainage System STA 1+740NM to STA 1+970NM	A1
P-3301-18	Land Drainage System STA 1+970NM to STA 2+250NM	A1
P-3301-19	Land Drainage System STA 2+250NM to STA 2+530NM	A1
P-3301-20	Land Drainage System STA 2+530NM to STA 2+780NM	A1
P-3301-21	Land Drainage System STA 2+780NM to STA 3+040NM	A1
P-3301-22	Land Drainage System STA 3+040NM to STA 3+300NM	A1
P-3301-23	Land Drainage System STA 3+300NM to STA 3+560NM	A1
P-3301-24	Land Drainage System STA 3+560NM to STA 3+820NM	A1
P-3301-25	Land Drainage System STA 3+820NM to Keewatin Street	A1
P-3301-26	Land Drainage System Miscellaneous Details	A1

Drawing No.	Drawing Name/Title	Drawing (Original) Sheet Size
P-3301-27	New Air Release Manholes & Modifications to the Existing Feedermain Off-take Chamber	A1
P-3301-28	Structure and Location Schedules 1	A1
P-3301-29	Structure and Location Schedules 2	A1
P-3301-30	Structure and Location Schedules 3	A1
P-3301-31	Structure and Location Schedules 4	A1

E1.4 The following figures contained in Appendix "B" are applicable to the Work:

Figure No.	Figure Name/Title	Drawing (Original) Sheet Size
Stage 1		
Fig. 1-1	W Limit to STA 1+680	A1
Fig. 1-2	STA 1+680 to STA 2+910	A1
Fig. 1-3	STA 2+910 to E Limit	A1
Stage 2		
Fig. 2-1	W Limit to STA 1+680	A1
Fig. 2-2	STA 1+680 to STA 2+910	A1
Fig. 2-3	STA 2+910 to E Limit	A1

E2. GEOTECHNICAL REPORT

E2.1 Further to C3.1, geotechnical reports are provided to aid the Contractor's evaluation of the pavement structure and/or existing soil conditions. The geotechnical reports are contained in Appendix 'A'.

E3. OFFICE FACILITIES

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

(a) The field office shall be for the exclusive use of the Contract Administrator.

(b) The building shall be conveniently located near the site of the Work.

(c) The building shall have a minimum floor area of 25 square metres, a height of 2.4m with two windows for cross ventilation and a door entrance with a suitable lock.

.

(d) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18^{o}C or 24-25^{o}C.

(e) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.

(f) The building shall be furnished with one desk, one drafting table, table 3m X 1.2m, one stool,, one four drawer legal size filing cabinet, and a minimum of 12 chairs.

(g) A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City.

(h) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each site meeting. The Contract Administrator may request additional cleaning when he deems it necessary.

E3.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E3.3 The office facilities will be provided from the date of the commencement of the Work to the date the Contract is completed.

E4. PROTECTION OF EXISTING TREES

E4.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:

(a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.

(b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.

(c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.

(d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.

(e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E4.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.

E4.3 No separate measurement or payment will be made for the protection of trees.

E4.4 Except as required in clause E4.1(c) and E4.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E5. TRAFFIC CONTROL

E5.1 Further to clauses 3.6 and 3.7 of CW 1130-R1:

(a) Where directed, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. Payment shall be in accordance with CW3410.

(b) In accordance with the Manual of Temporary Traffic Control, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Section of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Section of the City of Winnipeg in connection with the works undertaken by the Contractor.

E6. TRAFFIC MANAGEMENT

E6.1 Further to clause 3.7 of CW 1130-R1:

E6.1.1 Maintain a minimum of one lane of traffic eastbound and one lane of traffic westbound at all times during construction; and

E6.1.2 Where left turn lanes exist, an additional lane to accommodate the left turn storage lane shall be maintained at all times.

E6.1.3 North/South traffic at intersections must be maintained during construction to allow for one lane of traffic in each direction to go straight through and another lane in each direction to turn left. When no work is being performed in the intersection and providing it is safe for vehicles, north and south lane closures in the intersection will not be permitted.

E6.1.4 Where possible, two north/south lanes shall be maintained for through traffic on Brookside Boulevard between 07:00 – 09:00 and between 15:00 – 17:00, Monday to Friday.

E6.1.5 Intersecting street and private approach access shall be maintained at all times.

E6.1.6 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.

E6.1.7 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

E7. WATER USED BY CONTRACTOR

E7.1 Further to clause 3.7 of CW 1120-R1, the Contractor shall pay for all costs associated with obtaining water in accordance with the Waterworks By-law. Sewer charges will not be assessed for water obtained from a hydrant.

E8. SURFACE RESTORATIONS

E8.1 Further to clause 3.3 of CW 1130-R1, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

E9. INFRASTRUCTURE SIGNS

E9.1 The Contractor shall obtain infrastructure signs from the Traffic Services Sign Shop at 421 Osborne Street. The Contractor shall mount each sign securely to a rigid backing material approved by the Contract Administrator. The Contractor shall fasten each sign to a suitable support and erect and maintain two signs at each street as directed by the Contract Administrator. When the Contract Administrator considers the Work on the street complete, the Contractor shall remove and dispose of the signs and supports. No measurement for payment will be made for performing all operations herein described and all other items incidental to the work described

E10. RECYCLED CONCRETE BASE COURSE MATERIAL

DESCRIPTION

E10.1 General

E10.1.1 Further to CW 3110, this specification covers supply and placement of recycled concrete base course material for Full-Depth Partial Slab Patches (Class A, B, C, & D), miscellaneous concrete slabs and sidewalks.

E10.2 Definitions

E10.2.1 Deleterious material – are materials such as vegetation, organic material, wood, glass, plastic, metal, reinforcing steel, building rubble, brick, salvaged asphalt materials, clay, shale, and friable particles.

E10.3 Referenced Standard Construction Specifications

(a) CW 3110 – Sub-Grade. Sub-Base and Base Course Construction.

(b) CW 3230 – Full-Depth Patching of Existing Pavement Slabs and Joints.

(c) CW 3235 – Renewal of Existing Miscellaneous Concrete Slabs.

(d) CW 3325 – Portland Cement Concrete Sidewalk.

MATERIALS

E10.4 Recycled Concrete Base Course Material

E10.4.1 Recycled concrete base course material when used for Full-Depth Partial Slab Patches (Class A, B, C, & D), miscellaneous concrete slabs and sidewalks will be considered equal to granular or limestone base course material specified in Section 2.2 of CW 3110.

E10.4.2 Recycled concrete base course material will be approved by the Contract Administrator.

E10.4.3 Recycled concrete base course material will consist of sound durable particles produced by crushing, screening, and grading of recovered concrete materials, free from soft material that would disintegrate through decay or weathering.

E10.4.4 The recycled concrete base course material will be well graded and conform to the following grading requirements:

Recycled Concrete Base Course Material Grading Requirements

CANADIAN METRIC SIEVE SIZE	PERCENT OF TOTAL DRY WEIGHT PASSING EACH SIEVE
20 000	100%
5 000	40% - 70%
2 500	25% - 60%
315	8% - 25%
80	6% - 17%

E10.4.5 Recycled concrete base course material when subjected to the abrasion test will have a loss of not more than 35% when tested in accordance with grading B of ASTM C131, Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

E10.4.6 The amount of deleterious material will be limited to a maximum of two percent of the total dry weight.

CONSTRUCTION METHODS

E10.5 Placement of Recycled Concrete Base Course Material

E10.5.1 Place and compact recycled concrete base course material as a levelling course to a maximum thickness of 50 millimetres.

E10.5.2 Spread materials uniformly to avoid segregation free of pockets of fine and coarse material.

E10.5.3 Level and compact to the finished elevation. Compact to 100% Standard Proctor Density for Full-Depth Partial Slab Patches (Class A, B, C, & D) and 90% Standard Proctor Density for miscellaneous concrete slabs and sidewalks.

E10.5.4 Maintain the finished material until the pavement or sidewalk is placed.

MEASUREMENT AND PAYMENT

E10.6 Recycled Concrete Base Course Material

E10.6.1 The supplying, placing and compaction of recycled concrete base course material will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for the "Supplying and Placing Base Course Material" as specified in accordance with CW 3110.

E10.6.2 No measurement or payment will be made for material placed as a levelling course under miscellaneous concrete slabs and sidewalks where the costs are included in accordance with CW 3235 and CW 3325.

E10.6.3 No measurement or payment will be made for materials rejected by the Contract Administrator.

E11. INSTALLATION OF CULVERTS

DESCRIPTION

E11.1 General

E11.1.1 This specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3610-R3 "Installation of Culverts", and shall cover supply and installation of culverts.

E11.1.2 Referenced Standard Construction Specifications

(a) CW 2030 – Excavation Bedding and Backfill

(b) CW 3610- Installation of Culverts

E11.1.3 Referenced Standard Detail

(a) SD 002 – Standard Trench and Excavation Backfill Classes.

MATERIALS

E11.2 Bedding and Backfill

E11.2.1 Bedding and initial backfill material shall consist of 20 mm limestone base, as specified in CW 2030, placed on a prepared subgrade and compacted to the thickness and density herein specified.

E11.3 Bar screens

E11.3.1 Bar screens shall be supplied as shown on the Drawings.

CONSTRUCTION METHODS

E11.4 Bevelled Ends

E11.4.1 Further to CW 3610, all CSP culvert ends shall be bevelled as shown on the Drawings.

E11.5 Bedding and Backfill

E11.5.1 The backfilling for culverts installed under proposed pavements and private approaches shall be Class 2 as shown in Standard Detail SD-002 and specified in CW 2030, except as noted below.

E11.5.2 The following revisions for bedding and initial backfill apply to Class 2 and Class 4 backfill:

(a) Limestone base material as previously specified shall be used for bedding and initial backfill as opposed to sand.

(b) A minimum thickness of 225 mm of compacted 20 mm limestone bedding shall be placed on the prepared subgrade. A 75 mm blanket of loose uniform bedding

material shall then be placed on the compacted bedding to provide fill for the corrugations in the invert.

(c) The backfill material shall be placed in layers not exceeding 300 mm. Backfilling shall be carried out in such a manner as to obtain uniform compaction without soft spots. Compaction shall be 95% of the Standard Proctor Density.

(d) Manual placing and compaction of material shall be used to build up the backfill to encompass the lower part of the pipe. Backfill material shall be placed under the haunches by shovel and compacted firmly by power compaction ("jumping jack") equipment. Valleys of the corrugations and the area immediately next to the pipe must be compacted by hand operated methods. At no time shall heavy compaction equipment be brought closer than 1 m from the CSP.

(e) Backfill shall be so placed and mechanically compacted that the fill rises equally and simultaneously on both sides, including handwork next to the pipe. Layers shall be placed with equipment running parallel to the structure.

(f) When the fill on both sides of the pipe approaches the crown of the pipe, the same techniques of spreading shallow layers and compacting thoroughly shall be followed as the backfill covers the pipe. Light tamping equipment shall be used for the initial layers over the pipe.

(g) No distortion of the structure greater than 2% of the span or rise shall be allowed.

(h) No traffic of any sort shall be permitted over the structure until cover of a minimum depth of 300 mm is properly compacted in place. If the Contractor requires crossings by heavy construction equipment, a minimum of 0.6 m of compacted cover over a length of at least 7.3 m of the structure shall be provided at no extra cost to the City.

(i) All compaction equipment used shall be subject to the approval of the Contract Administrator.

E11.6 Bar Screens

E11.6.1 Bar screens shall be installed on culvert ends where shown on the Drawings.

MEASUREMENT AND PAYMENT

E11.7 Bevelled Ends

E11.7.1 There shall be no measurement or payment for bevelled ends. Bevelled ends shall be included in the payment for the supply and installation of CSP culverts.

E11.7.2 The supply and installation of culverts will be measured and paid for in accordance with CW 3610.

E11.8 Bar Screens

E11.8.1 The supply and installation of bar screens will be measured on an unit basis for each size of culvert and paid for at the Contract Unit Price for "Supply and Installation of CSP Bar Screens". The number to be paid for shall be the total number of units supplied and installed in accordance with this specification and accepted by the Contract Administrator.

E12. REMOVAL OF EXISTING CULVERTS

DESCRIPTION

E12.1 General

E12.1.1 This specification covers the removal of existing culverts.

E12.1.2 Referenced Standard Construction Specifications

(a) CW 2030- Excavation Bedding and Backfill

CONSTRUCTION METHODS

E12.2 Removal of Existing Culverts

E12.2.1 The Contractor shall remove and salvage existing culverts designated for removal within the limits of the Contract and as shown on the Drawings.

E12.2.2 The excavation for the removal of existing culverts outside of proposed pavements shall be backfilled to Class 4 standards in accordance with CW 2030. The excavation for removal of existing culverts under proposed pavements shall be backfilled to Class 2 standards in accordance with CW 2030.

E12.2.3 The culverts shall be removed so as not to damage the pipe sections. Where culverts are coupled, the sections shall be separated prior to removal.

E12.2.4 Culverts that are deemed unsalvageable by the Contract Administrator shall be removed and disposed of off site.

E12.2.5 Salvaged culverts shall be stored on site for future (temporary) re-use at a location designated by the Contract Administrator.

MEASUREMENT AND PAYMENT

E12.3 Removal of Existing Culverts

E12.3.1 The removal of existing culverts will be measured on a length basis for each size of culvert and paid for at the Contract Unit Price for “Removal of Existing Culverts”. Length to be paid for will be the total number of linear metres removed, measured horizontally at grade, in accordance with this specification, accepted and measured by the Contract Administrator.

E12.3.2 Salvaging of the culverts shall be included in payment for “Removal of Existing Culverts” and no further payment shall be made.

E13. DITCH INLET GRATES

DESCRIPTION

E13.1 General

E13.1.1 This Specification covers the supply and installation of ditch inlet grates on catchbasins and catchpits.

MATERIALS

E13.2 Ditch Inlet Grate

E13.2.1 All steel shall be supplied in accordance with details on the Drawings. All steel shall be hot dip galvanized and all hardware shall be stainless steel. Ditch Inlet Grates shall be Shopost Iron Works MK-A1 or approved equal.

CONSTRUCTION METHODS

E13.3 Ditch Inlet Grates

E13.3.1 The Contractor shall be required to supply and install ditch inlet grates on drainage inlets shown on the Drawings.

E13.3.2 The ditch inlet grate shall be understood to include the supply and installation of all anchor steel, grate steel, and hardware. All concrete material shall be included in the unit price bid for the catchbasins.

E13.3.3 The ditch inlet grate shall be securely fastened to the drainage inlets as shown on the Drawings and as approved by the Contract Administrator.

E13.3.4 Any galvanized surfaces that are damaged shall be coated with a galvanizing compound approved by the Contract Administrator.

MEASUREMENT AND PAYMENT

E13.4 Ditch Inlet Grates

E13.4.1 The supply and installation of ditch inlet grates will not be measured for payment and shall be included in the payment for catchbasins or catchpits.

E14. CONCRETE PAVEMENT

DESCRIPTION

E14.1 General

E14.1.1 This Specification supplements City of Winnipeg Standard Construction Specification CW 3310- Portland Cement Concrete Pavement Works.

CONSTRUCTION METHODS

E14.2 Dowel Assemblies

E14.2.1 Dowel bars for 250 mm thick plain dowelled concrete pavement shall be 31.8 mm in diameter. Dowel bars for 230 mm thick plain dowelled concrete pavement shall be 28.6 mm in diameter.

E14.2.2 Skewed transverse joints, where shown on the Drawings, shall be constructed on a longitudinal to transverse skew of 1:6. The dowels for the skewed joint shall be centred on the joint, and be placed parallel to the longitudinal joint. All other joints shall be constructed perpendicular to the direction of traffic.

E14.3 Plain Dowelled Concrete Pavement

E14.3.1 The Contractor shall utilize a self-propelled slip form paving equipment capable of paving a width of 3.5 m.

E15. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO FEEDERMAINS

E15.1 Description

E15.1.1 This Section details operating constraints for all work to be carried out in close proximity to the Inkster Feedermain. Close proximity shall be deemed to be any construction activity within a 5 m offset from the centreline of the feedermain.

E15.2 General Considerations for Work in Close Proximity Feedermains

E15.2.1 The Inkster Feedermain is a critical component of the City of Winnipeg Regional Water Supply System and work in close proximity to the pipeline shall be undertaken with an abundance of caution. The pipe cannot be taken out of service for extended periods to facilitate construction and inadvertent damage caused to the pipe would likely have catastrophic consequences.

Work around the Feedermain shall be planned and implemented to minimize the time period that work is carried out in close proximity to the pipe and to ensure that the pipeline is not subjected to excessive construction related loads, including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement.

E15.2.2 The Inkster Feedermain is constructed of Prestressed Concrete Cylinder Pipe conforming to AWWA Standard C301. The Inkster Boulevard Feedermain was installed in two phases, in 1975 from Keewatin Street to King Edward Street and in 1977 from King Edward Street to Brookside Boulevard. The pipe is 600mm Class 12 Lined Cylinder Pipe manufactured by Canron Inc. for both sections.

E15.2.3 AWWA C301 pipe has limited ability to withstand increased earth and live loading. Therefore, every precaution must be undertaken to ensure that applied loading during all phases of construction is within accepted loading parameters.

Loading limitations and calculated loads associated with typical construction equipment is attached to this specification as Appendix C for illustrative purposes. The loading calculations shall be interpreted with caution, however, as many factors can cause applied loads to increase considerably, such as unbalanced loading, variations in wheel base or track width, payload, impact factors due to excessive speed or vibration, etc.

E15.3 Submittals

E15.3.1 Submit proposed construction equipment specifications to the Contract Administrator for review seven (7) days prior to construction. Submittal shall include;

(a) Equipment operating weight and dimensions including wheel or track base, track length or axle spacing, track widths or wheel configurations

(b) Payload weights

(c) Load distributions in the intended operating configuration

E15.3.2 Submit a Construction Method Statement with proposed construction plan including haul routes, excavation equipment locations, loading positioning and base construction sequencing to the Contract Administrator for review seven (7) days prior to construction. Do not commence construction until the Construction Method Statement has been reviewed and accepted by the Contract Administrator.

E15.4 Feedermain Shutdowns

E15.4.1 Provide ten (10) Business Days notification in writing, to the Contract Administrator in advance of requiring Feedermain shutdowns. Shutdowns shall be coordinated with the Water Services Division of the Water and Waste Department.

E15.4.2 For Feedermain shutdowns that require draining of the pipeline, provide access to all facilities for WWD crews, and provide assistance to crews to drain and fill pipelines including operation of drain and blow off valves under direction of WWD crews, and installation of drain hoses and valves as required. Allow a minimum of 24 hours pipe drain time.

E15.4.3 Disinfect all exposed piping and appurtenances as per City of Winnipeg CW 2125 using disinfection by spray or swabbing techniques.

E15.5 Protection of the Feedermain During Construction

E15.5.1 Planning and General Execution

(a) No work shall commence at the site until a Construction Method Statement, has been submitted for review.

(b) The Feedermain location shall be clearly delineated in the field including verification that its datum relative to the proposed pavement are adequately defined. Any deviations from the elevations noted herein shall be reported to the Contract Administrator for review and comment prior to proceeding with proposed construction activities.

(c) Work over the feedermain shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications on the pipe. All proposed construction equipment must be submitted to the Contract Administrator for review prior to construction. The submissions need to include sufficient data on operational weights, dimensions, and payloads to facilitate assessment that the proposed construction equipment is not in excess of the typical construction loading that this assessment was based on.

(d) For transverse crossings of the feedermain, designate crossing locations and confine equipment crossing the pipe(s) to these locations. Reduce equipment speeds to levels that minimize the effect of impact loading.

(e) For construction work activities either longitudinally or transverse to the alignment of the feedermain, work only with equipment and in the manner stipulated in the accepted Construction Method Statement and the supplemental requirements noted herein.

(f) Subgrade, subbase and base construction shall be kept in a rut free condition at all times. Construction equipment is prohibited from crossing pipelines or travelling adjacent to the Feedermain if the grade is insufficient to support the equipment without rutting.

(g) Granular material, construction material, soil or other material shall not be stockpiled on the pipelines or within 3 metres of the pipe centerline.

(h) Construction operations should be staged in such a manner as to limit multiple construction loads at one time, (e.g. offset crossings sufficiently from each other, rollers should remain a sufficient distance behind spreaders to limit loads. A reasonable offset distance is 3m between loads).

(i) Stage construction such that the feedermain is not subjected to significant asymmetrical loading at any time.

(j) Where work is in proximity to the feedermain (any work within a 5 m offset is defined as work within the proximity to this feedermain), utilize construction practices and procedures that do not impart excessive vibration loads on the feedermain or that would cause settlement of the subgrade below the feedermain.

(k) The contractor and all site supervisory personnel and equipment operators have to be formally briefed to ensure that they are fully cognizant of the associated restrictions, constraints, and risks associated with working adjacent to and over this pipeline. New personnel introduced after commencement of the project need to be formally orientated as to the significance and constraints associated with working over the feedermain.

E15.5.2 Feedermain Modifications

(a) Strengthening of Valve Chamber at Burrows

(i) The valve Chamber at Burrow requires strengthening of the base slab as indicated on the Drawings. Prior to construction, offtake valves are required to be closed. During replacement of drain piping, the Feedermain is required to be temporarily shut down.

(ii) The insulation shall be maintained or repaired over the Offtake chamber at Burrows Avenue. Insulation shall consist of 100 mm thick DOW HI 40 insulation over the chamber, and on the sidewalls to a depth of 1.5 m below finish grade. Sidewall insulation may be substituted by extending roof slab insulation an equivalent distance beyond the edge of the structure.

(iii) Construction equipment shall be prohibited from operating over the Offtake chambers at Burrows Avenue while at reduced heights of cover. Final loading at this location is reasonably consistent with existing loading condition; however, during construction the chamber is extremely exposed to inadvertent overloads that would be considerably in excess of the structural capacity of the structure.

(b) Replacement of the Manual Air Release Valves

(i) There are two (2) existing manual air release valves within this Contract boundary. These valves have very little tolerance to accommodate movement without damaging their connection to the feedermain and shall be replaced into a manhole prior to roadway construction, as noted on the Construction Drawings. A temporary Feedermain shutdown is required to facilitate construction of the air release valve manhole.

(ii) Prior to roadway excavation being undertaken, the existing Manual Air Valves at Plan Station 2+108 and 3+226 should be replaced with Manual Air Valve Manholes as detailed on the drawings.

(iii) During the installation of the Manual Air Valves and prior to any construction of the roadway, the integrity of the pipeline physical condition should be confirmed as the condition of the feedermain is integral to this analysis and our recommendations. The exterior of the pipeline should be visually confirmed to be sound and free of any deterioration related defects (e.g. no cracking, no softened mortar, no staining, etc.). The location and elevation should be noted as well and compared to records.

E15.5.3 LDS Sewer Installations in Close Proximity and Adjacent to Feedermain

(a) The joint locations on both sides of the proposed 900 mm LDS crossing beneath the feedermain must be exposed by hand or soft excavation techniques to confirm elevations. The elevation of the downstream manhole must also be verified prior to the installation of any 900 mm LDS. If any of the elevations deviate from the proposed design, the grade of the 900 mm LDS may have to be adjusted to suit. The feedermain must be fully exposed for the installation of the 900 mm LDS crossing beneath the feedermain with a maximum trench width of 2.44 m (8 ft).

(b) The elevation of the feedermain shall be monitored prior to full exposure of the pipe, verified daily and following the installation of the 900 mm LDS beneath the feedermain to ensure there has been no movement of the pipe.

(c) During installation of the LDS sewer, where the Feedermain is within 5 metres of the LDS, and the LDS invert is more than 1 metre deeper than the Feedermain invert, suitable trench shoring or trench shields shall be utilized for LDS installation. Open trench length shall be kept to a minimum. During these installations, the Feedermain will be depressurized. Arrange for service shutdowns as indicated in E15.4.

(d) Excavation spill from LDS installation is not permitted to be stockpiled on or within 3m of the centreline of the Feedermain.

(e) Installation of catchbasins and catchbasin leads shall be carefully executed to ensure the feedermain is not disturbed during construction. Excavations for installation of catchbasins will be within 1 meter horizontally and approximately at or near the invert of the feedermain. Subgrade excavation in the vicinity and over the feedermain should be completed prior to installation of the catchbasins to minimize potential effects of asymmetrical lateral pressures due to differential soil loading. Tight shoring or bracing should also be utilized below subgrade elevation on the feedermain side to prevent loss of sidewall support and/or bedding material adjacent to the feedermain.

(f) Where catchbasin leads are to be installed by open cut methods over the feedermain, use hand or soft excavation techniques when within 1 metre vertically of the pipe. A minimum of 0.3 m of vertical separation between the feedermain top and the bottom of the CB lead should be maintained unless otherwise approved by WWD.

(g) Where trenchless methods are to be used for catchbasin lead installation, verify the elevation of the trenchless pilot hole within 3 m of the centreline of the feedermain. Under no circumstances shall blind coring be permitted in the vicinity of the feedermain. No trenchless methods involving soil displacement (plugs) shall be permitted in the vicinity of the feedermain.

E15.5.4 Roadway Excavation

(a) No demolition of any pavement shall be permitted at any location along the route. Where pipe crosses pavement, it should be sawcut out and removed as opposed to conventional in-place demolition.

(b) In general, any excavation within 2.5 metres of the centreline of the feedermain should be completed by backhoe excavator equipped with a smooth bucket, with the nearest edge of the excavator positioned no closer than 2.5 metres to the centreline

of the feedermain. While the backhoe may cross the feedermain at designated crossing locations, do not operate backhoe directly over feedermain at heights of cover of less than 2.0 m.

(c) Note that additional precaution shall be exercised where construction cover from the bottom of the proposed subgrade profile is less than 1.2 m over the top of the Feedermain, including areas from Plan Station 2+880 to 3+025. The Contractor shall increase the frequency of subgrade verification as well as probe to verify the elevation of the top of the feedermain. The Contractor shall include this information in their Method Statement.

(d) Any over-excavation should be immediately reported and the Water Service Division of the Water and Waste Department should be provided 72 hours notice prior to moving into these areas in order that they may be prepared for an emergency shutdown should over-excavation either occur or be required. The Contractor shall minimize the time period associated with work in these areas and under no circumstances allow unbackfilled subgrade to remain overnight.

(e) When loading of excavated material into trucks, the trucks shall be offset sufficiently from the pipeline to not impart additional load on the pipe. positioned at existing grade in all areas,

E15.5.5 Subgrade Construction

(a) No heavy equipment operations will be allowed on the subgrade prior to completion of granular road base capable of supporting the equipment, and a minimum of 1.2 metres of cover over the Feedermain. There should be no subgrade compaction where there will be less than 1.0 m of cover over the feedermain (Plan station 2+880 to 3+025). In areas where there will be greater than 1.2 m of cover, the use of a non-vibratory self propelled padfoot type compactor may be acceptable, subject to submission of vehicle specifications including operation weights and dimensions prior to use.

(b) Subgrade conditions should be inspected by personnel with competent geotechnical experience. In the event of encountering unsuitable subgrade materials above the feedermain, proposed design revisions shall be submitted to this office for review to obtain approval from the Water and Waste Department relative to any change in conditions.

(c) Construction operations shall be staged to minimize the time period between excavation to subgrade and placement of granular subbase materials. Should bare subgrade be left overnight, measures shall be implemented to protect the subgrade against inadvertent travel over it and to minimize the impact of wet weather.

E15.5.6 Subbase and Base Course Construction

(a) The placement of subbase materials should be bladed into place as opposed to end dumped. Equipment utilized for blading granular subbase into place should be reviewed and approved for use by the Contract Administrator and shall generally work the material with the equipment operating on the granular fill as opposed to the equipment operating off of the subgrade.

(b) In general any subbase compaction will be limited to static rolling within 2.5 metres of the centreline of the feedermain. The use of static (non-impact loading) compaction techniques is subject to vehicle/equipment load review.

(c) Smaller vibratory equipment may be permitted subject to a construction method statement submission and review by the Contract Administrator.

(d) Careful selection of granular material gradation requirements as well will minimize the level of on-site densification that is required. Well graded manufactured materials (e.g. a crushed limestone) with less than 5% fines typically requires very little on site compactive effort after placement to achieve specified densities.

(e) Any changes in pavement cross section or in pavement grades over the feedermain must be reported for further review.

E15.6 Insulating Feedermains

E15.6.1 Install insulation at all catchbasin installations where the cover around the feedermain in all directions is less than 1.0 m. Insulation shall consist of minimum of 100 mm thick extruded polystyrene insulation, DOW HI 40 or approved Equal Pursuant to B5.

MEASUREMENT AND PAYMENT

E15.7 With the exception of the items listed in E19, no measurement or payment will be made for the Works described in this specification. They shall be considered incidental to other items.

E16. EARTHWORK AND GRADING

DESCRIPTION

E16.1 General

E16.1.1 This specification covers all phases of removal and/or placement of all materials necessary for the construction and preparation of embankments, slopes and drainage works.

E16.2 Definitions

E16.2.1 Common Excavation – The excavation of all material encountered within the limits of grading the on-site placement or the stockpiling of suitable site material, and the satisfactory disposal of surplus and unsuitable site material.

E16.3 Referenced Standard Construction Specifications

(a) CW 1130 – Work Site Requirements

(b) CW 3010 – Clearing and Grubbing

(c) CW 3110 – Sub-grade, Sub-base and Base Course Construction

(d) CW 3120 – Installation of Sub Drains

MATERIALS

E16.4 Fill Material

E16.4.1 Fill material for embankment construction, sideslope construction and boulevard fill shall be obtained from site excavation of a type approved by the Contract Administrator.

E16.4.2 Approved clay fill material shall be uniform in texture and suitable for compaction.'

CONSTRUCTION METHODS

E16.5 Clearing and Grubbing

E16.5.1 No earthwork and grading shall commence until clearing and grubbing operations have been completed in accordance with CW 3010 and have been approved by the Contract Administrator.

E16.6 Excavation

E16.6.1 The excavation procedure shall be subject to the approval of the Contract Administrator. Excavation shall continue in as nearly a continuous manner as possible. Excavation at multiple locations at the same time shall be subject to the approval of the Contract Administrator.

E16.6.2 The Contractor shall conduct his excavation procedure in such a manner as to enable the Contract Administrator to inspect the site material and determine which are suitable for reuse or unsuitable and to be disposed of.

E16.6.3 The Contractor shall excavate as required to reach sub-grade levels of pavement and landscaping, and rough grade levels for areas to be graded only.

E16.6.4 During the course of common excavation, the Contractor will be advised by the Contract Administrator as to which areas have an unsuitable sub-grade. In the areas of unsuitable sub-grade, whether in a homogeneous mass or in isolated pockets, extend the excavation to the lower limit of the unsuitable material or to a depth as directed by the Contract Administrator. The transitional longitudinal slope between suitable and unsuitable sub-grade shall not be steeper then 1:15.

E16.6.5 The limits of excavation will be taken as a vertical plane 450 mm beyond the limits of the proposed pavement. Where slip form paving equipment is specified for placement of concrete pavement the limits of excavation will be increased to a vertical plane 750 mm beyond the limits of proposed pavement.

E16.6.6 Utilize equipment of a size and type as required to complete the work in reasonable time as approved by the Contract Administrator.

E16.7 Removal of Existing Pavement

E16.7.1 Removal of existing pavement be done and paid for in accordance with CW 3110.

E16.8 Preparation of Existing Ground Surface

E16.8.1 Before any embankment is placed on original ground having a smooth firm surface, the existing ground shall be scarified or ploughed so as to permit bonding with the new material.

E16.8.2 Where the existing ground surface is slope sufficiently to affect the bond between the old and new materials the original ground on which the embankment is to be placed shall be ploughed deeply or benched before embankment construction is commenced, as directed by the Contract Administrator.

E16.8.3 When embankment is being placed on an existing roadbed, the side slopes of the existing roadbed shall have vegetation removed and then be scarified or ploughed, as directed by the Contract Administrator, to ensure adequate bonding between the new embankment and the existing material.

E16.8.4 Following the excavation and disposal of unsuitable material the surface of the proposed roadbed shall be scarified to a depth of 150 mm, and compacted to the proper density, at the optimum moisture content.

E16.8.5 Where existing roadbeds are being widened and existing embankment extended, the existing slopes shall be stripped of all vegetation and either benched or ploughed as directed by the Contract Administrator so as to form a medium of contact with the new embankment. Vertical cuts for the full depths of embankment shall not be permitted.

E16.8.6 Bench cuts shall consist of excavating horizontal cuts into the slopes of the existing embankment prior to placing widening material thereon. Bench cuts shall be made at vertical intervals of 1.0 m with the base of the first bench being cut approximately 0.3 to 0.5 m above the toe of the existing slope. The base of each bench cut shall extend into the existing slope a minimum width of 2.1 m.

E16.9 Embankment

E16.9.1 Embankment construction shall be understood to mean the placing of suitable site material to obtain the required lines, grades and cross-sections shown on the Drawings.

E16.9.2 Materials shall be deposited and spread in uniform layers of specified thickness, for the full width of the embankment. Each layer shall be shaped to line and cross-section and thoroughly compacted before the succeeding layer is placed.

E16.9.3 Where embankment is being placed on side fill or sloping sections, the lower portion shall be constructed as above, until a full width surface of the specified cross-section is obtained. The embankment shall be completed thereafter with full width layers.

E16.9.4 After the preparation of the sub-grade is complete, trench excavation for sub drain installation can commence in accordance wit CW 3120.

E16.10 Compaction

E16.10.1 All material placed in embankments shall be spread and bladed smooth in successive layers not exceeding 150 mm in compacted thickness to the full width of the cross-section, unless otherwise directed by the Contract Administrator.

E16.10.2 Each layer, including the existing sub-grade, shall be compacted to a minimum of ninety-five (95%) percent of Standard Proctor Density. The material shall be compacted at the optimum moisture content, or up to two (2%) percent higher than optimum, as directed by the Contract Administrator.

E16.10.3 Where the moisture content of the embankment material is too high, the material shall be thoroughly worked until the optimum moisture content is achieved.

E16.10.4 Where the moisture content of the embankment material is too low. The material shall be thoroughly reworked to mix the water throughout the material, prior to commencing compaction operations.

E16.11 Finishing and Maintaining

E16.11.1 The Contractor shall, as soon as practicable, bring the excavations and embankment to the correct widths, lines and grades as shown on the drawings.

E16.11.2 All surfaces shall be maintained to the specified grade and cross-section and to the specified density until the project or that portion of the project is accepted.

E16.12 Quality of Sub-grade and Embankment Material

E16.12.1 The Contract Administrator shall determine the Standard Proctor Density for the Sub-grade and embankment materials at the optimum moisture content in accordance with ASTM Standard D698. The field density of each layer will be a percentage of the applicable Standard Proctor Density, in accordance with Section E16.10 of this specification.

E16.12.2 The Contract Administrator shall carry out compaction testing to determine the acceptability of each layer, as placed and compacted before the succeeding layer may be applied.

E16.12.3 The frequency and number of test will be determined by the Contract Administrator.

E16.12.4 The field density of the compacted layers will be verified by Field Density Tests in accordance with ASTM Standard D698m /standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort, or ASTM Standard D2922, Test of Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

E16.12.5 Fill promptly, holes made by the removal of samples from the layers with appropriate material and thoroughly compact so as to conform in every way with the adjoining material.

MEASUREMENT AND PAYMENT

E16.13 Common Excavation

E16.13.1 Common excavation will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for the “Items of Work” listed here below. The volume to be paid for will be the total number of cubic metres that are excavated in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work:

Common Excavation

(ii) Suitable Site Material

(iii) Unsuitable Site Material

E16.13.2 The volume of common excavation will be measured by cross-sections in its original position and computed by the method of Average End Areas.

E16.13.3 Only material excavated within the limits of excavation will be included in the payment for the "Items of Work" listed for common excavation.

E16.13.4 Disposal of surplus common excavation will be included in the payment for unsuitable site material common excavation.

E16.13.5 Disposal of material and removal of miscellaneous trees and shrubs will be included in the payment for the "Items of Work" listed for common excavation.

E16.13.6 Excavation of solid bedrock, glacial till, boulders, loose rock, concrete rubble and foundations which are located within the limits of excavation and which require the use of additional or unconventional excavation equipment will be measured and paid for in addition to the unit price for the "Items of Work: listed for common excavation.

E16.14 Fill Material

E16.14.1 Fill material will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for the "Items of Work" listed here below. The volume to be paid for will be the total number of cubic metres that are compacted in place in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work:

Fill Material

(i) Suitable Site Material

E16.14.2 The volume of fill material will be measured by cross-sections and computed by the method of Average End Areas.

E16.14.3 Only material placed within the limits of excavation will be included in the payment for the "Items of Work" listed for fill material.

E16.14.4 No measurement or payment will be made for materials rejected by the Contract Administrator.

E16.14.5 Loading, hauling (anywhere within project limits), placing and compaction of suitable site material will be included in the payment for the "Suitable Site Material" listed in the "Items of Work: for fill material.

E16.15 Preparation of Existing Ground Surface

E16.15.1 Preparation of the existing ground surface will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Preparation of Existing Ground Surface". The area to be paid for will be the total number of square metres of existing ground prepared in accordance with this specification, accepted and measured by the Contract Administrator.

E16.15.2 Bench cuts will be paid for directly but will be considered as included in the payment for "Preparation of Existing Ground Surface".

E17. CONCRETE CURBS ON ASPHALT PAVEMENT

DESCRIPTION

E17.1 General

E17.1.1 This specification shall cover the construction of concrete curbs on asphaltic concrete pavements.

E17.1.2 Referenced Standard Construction Specifications

(a) CW 3310 – Portland Cement Concrete Pavement Works

MATERIALS

E17.2 General

E17.2.1 All materials including concrete and reinforcing steel shall conform to Sections 5 and 6 of CW 3310.

CONSTRUCTION METODS

E17.3 General

E17.3.1 All concrete curbs on asphalt pavement shall be constructed as shown on the Drawing in accordance with Section 9 and 10 of CW 3310.

MEASUREMENT AND PAYMENT

E17.4 Concrete Curbs

E17.4.1 Construction of concrete curbs on asphalt pavement will be measured on a length basis and paid for at the Contract Unit Price per metre for the "Items of work" listed here below. The price paid shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the work included in this specification.

Items of Work

(ii) "Construction of Barrier Curbs for Asphalt Pavement (180 mm height)"

E18. CONCRETE SPILLWAYS

DESCRIPTION

E18.1 General

E18.1.1 This Specification covers the supply and installation of concrete spillways complete with curb inlet grates.

E18.1.2 Referenced Standard Construction Specifications

(a) CW 2160 – Concrete Underground Structures and Works;

(b) CW 3110 – Sub-grade, Sub-base and Base Course Construction; and

(c) CW 3210 Adjustment of Pavement and Boulevard Structures.

MATERIALS

E18.2 Concrete Spillway

E18.2.1 Concrete and reinforcing steel shall be supplied and installed in accordance with the Drawings and CW 2160-R7.

E18.2.2 Bedding shall be supplied and installed in accordance with the Drawings and for base course material as described in C 3110-R11.

E18.2.3 Curb inlet grates shall be supplied and installed in accordance with the Drawings and CW 3210-R7.

CONSTRUCTION METODS

E18.3 Concrete Spillway

E18.3.1 Concrete spillways complete with curb inlet grates shall be constructed in accordance with the Drawings.

MEASUREMENT AND PAYMENT

E18.4 Concrete Spillway

E18.4.1 The supply and installation of concrete spillways will be measured on a linear metre basis and paid for at the Contract Unit Price for "Concrete Spillway c/w Curb Inlet Grate". The length to be paid for shall be the total number of metres of concrete spillways supplied and installed in accordance with this Specification as measured and accepted by the Contract Administrator.

E18.4.2 Payment for "Concrete Spillway c/w Curb Inlet Grate" shall include all base course bedding material, concrete, reinforcing steel, curb inlet grate, labour, superintendence and all other incidental items necessary to complete the work described in this Specification.

E18.4.3 Measurement for length of spillway installed will be made horizontally at grade above the centreline of the spillway from the back of curb to the end of the spillway.

E19. FEEDERMAIN VALVE CHAMBERS

E19.1 Materials

E19.1.1 Formwork, Reinforcing Steel and Concrete as per City of Winnipeg CW 2160.

E19.1.2 Concrete Mix Design as per CW 2160, Type A Mix.

E19.1.3 Water Stops

(a) Extrudeable polyurethane waterstop, Sikaswell S by Sika Canada, or Approved Equal pursuant to B5.

E19.1.4 Threaded Valves

(a) Small diameter threaded ball valves (75mm diameter and less) shall be all cast bronze two-piece type with chromium plated ball complete with lever handle rated for minimum 1.0 MPa non-shock cold water service. Bronze material shall conform to ASTM B62. Acceptable product; Apollo, Red-White or Approved Equal pursuant to B5.

E19.1.5 Threaded Piping, Fittings and Flanges

(a) Small diameter brass threaded piping, fittings and flanges (75 millimetre diameter or less) shall be cast red brass conforming to ASTM B43 or cast bronze conforming to ASTM B62. Flange dimension and drilling shall be in accordance with ASME/ANSI B16.24 – 150#.

(b) Small diameter steel threaded fittings and flanges (75 millimetre diameter or less) shall be in accordance with ASME/ANSI B16.5 – Class 150.

(c) Small diameter steel pipe nipples shall be Schedule 80 steel.

E19.1.6 Bolts

(a) Bolts shall be 304 Stainless Steel. Bolt length shall be sufficient to accommodate flanges, gaskets and insulators.

(b) Flange insulator kits shall be Advance Products and Systems or approved equal in accordance with B6, including full faced gasket, hole sleeves and washers.

E19.1.7 Pre-Cast Air Valve Chambers

(a) Pre-cast chambers shall be in accordance to ASTM C478 or ASTM C76 Class 3 pipe.

E19.1.8 Spray Applied Polyurethane Foam Insulation

(a) Polyurethane foam shall be closed cell, less than 1% open cell content to ASTM D-6226.

(b) BASF Wallite CT (Cold temperature grade) or approved equal.

E19.1.9 Paint

E19.1.10 Paint for exposed metal surfaces shall be in accordance with AWWA C210.

Interior coatings shall comply with ANSI/NSF 61 “Drinking Water System Components – Health Effects”. Coating shall be two (2) or more layers (5 mils minimum each coat) Polyamide Epoxy, Amerlock 400, Tnemec Series 140 F Pota-Pox Plus or approved equal.

E19.2 Construction Methods

E19.2.1 Excavation

(a) Complete excavation in accordance to CW 2030 and requirements of E15

(b) Do not excavate around existing manual air release valves until Feedermains are isolated.

E19.2.2 Demolition of Existing thrust Blocks

(a) Do not demolish thrust blocks until Feedermains are depressurized.

(b) Carefully sawcut portions of thrust blocks to be removed to full depth using wire saw, circular saw, chainsaw or other approved methods.

(c) Chip and remove portions of thrust block, taking care not the damage pipelines.

E19.2.3 Cast in Place Concrete

(a) Cast-in-place concrete as per CW 2160.

E19.2.4 Precast concrete Chambers

(a) Install precast concrete as per CW 2130

(b) Install extrudable water stops at all pipe penetrations on both precast manholes and concrete piping as per manufacturers directions.

E19.2.5 Chamber Piping

(a) Replace all small diameter chamber piping, air releases and drains. Install threaded nipples and flanges where indicated. Wrap all threads with a minimum of two wraps of Teflon tape or “pipe dope” containing Teflon. Isolate dissimilar metal flanges with gaskets, insulating bolt sleeves and non-metallic washers.

E19.2.6 Recoating of Existing Valves and Fittings

(a) Where indicated on the Drawings and directed by the Contract Administrator, prepare metal surfaces for recoating by blast cleaning to near-white metal as specified by Joint Surface Preparation Standard NACE No.2/SSPC-SP10. Remove all dust and loose residues from the prepared surfaces and chamber floor. The surface shall be roughened to a degree suitable for the coating system employed. Recoating of existing valves and fittings shall not take place before twinned forcemain has been completed.

(b) Paint prepared surfaces in accordance to AWWA C210.

E19.2.7 Polyurethane Insulation

(a) Apply 100 millimetres of spray applied polyurethane foam to exterior of pre-cast manhole chambers to 1.5 metres below final grade and on existing valve chamners to depth of subcut. Apply 100 millimetres of spray applied polyurethane foam to underside of manhole cover taking care not to obstruct vent holes.

E19.3 MEASUREMENT AND PAYMENT

E19.3.1 Pre-Cast Air Valve Chambers

(a) Construction of Pre-Cast Air Valve Chambers shall be measured on a unit basis, for each chamber constructed in accordance to these specifications, and paid for at the Contract Unit Price for “Construction of Pre-Cast Air Valve Chambers.” The price shall include all items indicated on the drawings and not limited to the excavation, backfill, cast-in-place concrete works, pre-cast manhole, installation of chamber piping, supply and installation of miscellaneous valves, appurtenances, miscellaneous metals,

couplings, interior plumbing, manhole frame and cover and rungs and miscellaneous materials.

E19.3.2 Offtake Chamber Modifications

(a) Offtake Chamber modifications shall be measured on a lump sum basis and paid for at the Contract Lump Sum Price for "Offtake Chamber Modifications". The price shall include all chamber modifications indicated on the Drawings and not limited to any excavation and backfilling required, removal and replacement of the concrete thrust block, construction of the new 250 concrete base slab, modifications to the feedermain drains, repainting the miscellaneous piping and fittings, installing the new support frame and beams and adjusting the frame and cover. The sump pit and sump pit piping shall also be included in the lump sum price to the 150 to 100 PVC reducer. The 150 pipe to the connection point will be paid per meter.

E20. METAL FABRICATIONS

DESCRIPTION

E20.1 General

E20.1.1 This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of metal fabrications.

E20.2 Materials

E20.2.1 All materials shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contractor Administrator.

E20.2.2 Material intended for use in the various assemblies shall be new, straight, clean, with sharply defined profiles.

E20.2.3 Steel Sections and Plates: to CAN/CSA G40.20/G40.21, Grade 300 W, except W, HP and HSS sections, which shall be Grade 350 W.

E20.2.4 Welding materials: to CSA W59.

E20.2.5 Hot dipped galvanized steel repair material: Galvalloy and Gal-Viz.

E20.2.6 Anchor bolts and fasteners: ASTM A325, galvanized bolts, of ample section to safely withstand the forces created by operation of the equipment or the load to which they will be subjected.

CONSTRUCTION METHODS

E20.3 Submittals

E20.3.1 The Contractor shall submit the qualifications of the fabricator and welders to the Contractor Administrator for acceptance.

E20.3.2 Submit shop drawings in accordance with CW1110, clearly indicating materials, core thickness, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and, accessories. Indicate field measurements on shop drawings.

E20.4 Fabrication

E20.4.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured. Assemble work in such a way that no disfigurements will show in the finished work, or impair the strength.

E20.4.2 Confirm measurements for all fabrications before fabricating.

E20.4.3 Pieces shall be of the sizes indicated on the Drawings and shall not be built up from scrap pieces. Confirm sizes with field measurements.

E20.4.4 Where possible, fit work and shop assemble, ready for erection.

E20.4.5 Remove and grind smooth burrs, filings, sharp protrusions, and projections from metal fabrications to prevent possible injury. Correct any dangerous or potentially harmful installations as directed by Contract Administrator.

E20.4.6 All steel welding shall conform to CSA Standard W.59. Fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with CSA Standard W.47.1. Welding shall be done by currently licensed welders only.

E20.4.7 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

E20.4.8 All steel shall be hot-dip galvanizing after fabrication, in accordance with CAN/CSAG164, to a minimum net retention of 600 gm/m^2.

E20.4.9 Seal exterior steel fabrications to provide corrosion protection in accordance with CAN3-S16.1.

E20.5 Erection

E20.5.1 Do steel welding work in accordance with CSA W59 and aluminium welding work in accordance with CSA W59.2

E20.5.2 Erect metalwork in accordance with reviewed shop drawings, square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

E20.5.3 Provide suitable means of anchorage acceptable to Contract Administrator such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles where not specifically indicated on the Drawings.

E20.5.4 Provide components for building in accordance with shop drawings and schedule.

E20.5.5 Make field connections with bolts to CAN/CSA-S16, or weld.

E20.5.6 Touch-up rivets, bolts and burnt or scratched surfaces that are to receive paint finish, with zinc primer after completion of erection.

E20.5.7 Repair damaged galvanized surfaces and field welds with self-fluxing, low temperature, zinc-based alloy rods in accordance with ASTM A780, Repair of Damaged Hot Dip Galvanizing Coatings. The general procedure shall be to allow a small amount of the repair alloy to flow then spread by brushing briskly with a wire brush. Brushing shall be sufficient to obtain a bright finish. Repeat process three times to ensure a proper thickness is achieved. Temperatures shall be kept below 177ºC (350ºF) at all times. All heating of structural steelwork shall be done in the presence of the Contract Administrator.

E20.6 Measurement and Payment

E20.6.1 Supply, fabrication, transportation, handling, delivery and placement of metal fabrications will be not be measured. Their price shall be included in the price paid for the “Offtake Chamber Modifications”.

E21. MAINTAINING EXISTING SEWER FLOWS, FLOW CONTROL, DIVERSIONS AND BYPASS PUMPING

E21.1 Maintaining Existing Sewer Flows, Flow Control, Diversions and Bypass Pumping required to complete the Works in the Contract shall be incidental to the Contract as per Clause 4.16.1 of CW 2130.

E21.2 The Contractor should note that the connections to the existing 900 mm LDS at Groverdale Avenue and the 1050 mm LDS approximately 550 m west of Keewatin Street are below the normal water levels in the pipes. The Contractor shall plug and dewater the 900 mm and 1050 mm LDS as necessary to complete the required work. Plugging and dewatering the 900 mm and 1050 mm LDS shall be considered incidental to the work.

E21.3 The Contractor shall be responsible for maintaining adequate drainage for the duration and upon completion of this project to the satisfaction of the Contract Administrator. This includes ensuring temporary connections between the LDS and ditch meet the City's guidelines for drainage inlet and outlet safety and erosion control.

E22. TRENCHLESS EXCAVATION

E22.1 Further to Clause 3.4.1 of CW 2130, all sewers shall be installed by trenchless methods.

E22.2 Selection of excavation equipment for installation of sewers by trenchless methods shall be the responsibility of the Contractor and shall be made based on the basis of expected soil conditions outlined in the geotechnical report and as detailed on the soil logs. The Contractor shall make allowances in the choice of equipment to account for reasonable and minor deviations in ground conditions and shall have contingency plans for the removal of boulders and other minor changes in ground conditions.

E22.3 In the event that there is a substantial change in the character or nature of the subsurface conditions or that obstructions are encountered, which adversely impact the Contractor's production or construction procedure, the Contractor shall immediately notify the Contract Administrator.

The notice shall provide details of the change in subsurface soil conditions or obstructions encountered, any proposed construction procedure revision that the Contractor intends to undertake, as well as any other relevant supporting information.

The Contract Administrator shall review the notice as expeditiously as possible to assess whether the change in conditions and revised construction procedures amount to a Change in Work. In the case of obstructions due to boulders in the silt/till or hardpan strata where that stratum is evident in the soils logs, no consideration will be made for a Change in Work as boulder obstructions can be reasonably anticipated when working in this stratum. Obstructions such as "random boulders" in the clay strata well above the till interface may be considered as a Change in Work dependent on the level of effort required to facilitate their removal.

Where the Contract Administration deems that a Change in Work is necessary, it shall be valued in accordance with the provisions of GC: 7 and the supplementary requirements of E23.

E23. TRENCHLESS EXCAVATION OBSTRUCTIONS

E23.1 Contingency plans for removal of the obstructions encountered in trenchless excavations must be approved by the Contract Administrator and may consist of but not limited to one of the following.

(a) Drill or excavate a shaft at the location of the obstruction and remove the obstruction.

(b) Remove the obstruction through the jacking head or core hole following drilling, splitting or breaking the obstruction into smaller components as required.

(c) Other removal methods.

E23.2 Where the Contract Administrator deems that the obstruction encountered represents a Change in Work, it shall be valued in accordance with GC: 7.4 (c) and the following supplemental requirements:

(a) The first four (4) hours of handling obstructions for each occurrence shall be the responsibility of the Contractor.

(b) Equipment rates for equipment required in support of the obstruction removal shall be compensated at the MHCA rental rates. Equipment not listed in the MHCA rate schedule shall have their rates established by the Contractor prior to the commencement of Work in accordance with the procedure documented in the MHCA rental guide for establishing equipment rental rates and shall be subject to the approval of the Contract Administrator.

(c) Standby equipment that cannot reasonably be deployed elsewhere during the duration of the obstruction removal shall be compensated at 50% of its established rate as noted in E23.2(b) above.

(d) Labour rates and material costs associated with obstruction removal shall be compensated as per GC: 7.4 (c) and 7.4.1 with the provision that any removal and replacement of pavements shall be compensated at the Contract Unit Price for such Work.

E24. EXCAVATION, BEDDING AND BACKFILL

E24.1 On-Site Disposal Excavated Material from Land Drainage Sewer Installation

(a) If the Contractor wishes to dispose of suitable excess material from the Land Drainage Sewer installation on-site in areas where clean fill is required for the roadworks, the contractor shall strip all organics to the satisfaction of the Contract Administrator prior to placement of the material.

E24.2 Modified Class 3 Backfill

(a) In areas where the land drainage sewer is installed in the south boulevard of the right-of-way, a modified Class 3 backfill shall be used in the excavation as per the detail shown on the drawings.

E25. PROVISIONAL ITEMS

DESCRIPTION

E25.1 The Provisional Items listed on Form B: Prices and described by the City of Winnipeg Standard Construction Specifications is a part of the Contract.

E25.2 The Contractor will not order any material or perform any work listed under their provisions without prior notification from the Contract Administrator. All work carried out will be within the construction areas listed in the Specifications.

E25.3 The City reserves the right to diminish all or any portion of the work listed as Provisional Items and no claim shall be made for damages on ground of loss of anticipated profit or any other ground.

MATERIALS

E25.4 Standard SD-010 Manhole on Existing Sewer

(a) 1200 mm diameter

CONSTRUCTION METHODS

E25.5 The installation of the 1200 mm diameter standard manhole is dependent on the information gathered by the pre-construction inspection of the 450 mm LDS MA00005054. No previous inspection of the sewer main has been completed. It is therefore unknown if it has any service connections. If upon the completion of the pre-construction sewer inspection no service pipes are found to connect to MA00005054 then abandonment of the main can proceed after the 750 mm LDS between MH.15 and MH.19 has been installed. Should a sewer service(s) be found, then the 1200 mm diameter SD-010 shall be installed at or just upstream (west) of the most upstream (westerly) service as per the instructions of the Contract Administrator. The 450 mm LDS between the current upstream manhole (MH00004467) and the new 1200 mm SD-010 manhole shall be abandoned according to CW 2130. The main will continue to operate between the new 1200 mm SD-010 manhole and the existing downstream combined sewer manhole (MH00004466).

MEASUREMENT AND PAYMENT

E25.5.1 Measurement and payment will be in accordance with CW 2130.