



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 354-2005

**LAGIMODIERE BOULEVARD FEEDERMAIN EXTENSION – 515 METRES SOUTH
OF BISHOP GRANDIN TO JOHN BRUCE ROAD**

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APPENDIX A – FORMS

PART B - BIDDING PROCEDURES

B1. PROJECT TITLE

B1.1 LAGIMODIERE BOULEVARD FEEDERMAIN EXTENSION – 515 METRES SOUTH OF BISHOP GRANDIN TO JOHN BRUCE ROAD

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, August 30, 2005.

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

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

B3. SITE INVESTIGATION

B3.1 Further to GC:3.1, the Bidder may view the Site without making an appointment.

B4. ENQUIRIES

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

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

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

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

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

B5. ADDENDA

B5.1 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.

B5.2 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.

B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

B5.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Branch internet site for addenda shortly before submitting his Bid.

B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 9 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6. SUBSTITUTES

B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.

B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B6.3 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.

B6.4 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.

B6.5 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.

B6.6 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.

B6.6.1 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.

B6.7 If the Contract Administrator approves a substitute as an "approved equal", any Bidder may use the approved equal in place of the specified item.

B6.8 If the Contract Administrator approves a substitute as an "approved alternative", any Bidder bidding that approved alternative shall 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 B15.

B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B7. BID SUBMISSION

B7.1 The Bid Submission consists of the following components:

- (a) Form A: Bid;
- (b) Form B: Prices;
- (c) Form G1: Bid Bond and Agreement to Bond, or
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or
a certified cheque or draft;

B7.2 All components of the Bid Submission 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 in ink, to constitute a responsive Bid.

B7.3 The Bid Submission shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B7.3.1 Samples or other components of the Bid Submission 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 Submission.

B7.4 Bid Submissions submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B7.5 Bid Submissions shall be submitted to:

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

B8. BID

B8.1 The Bidder shall complete Form A: Bid, making all required entries.

B8.2 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.

B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.

B8.3 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.

- B8.4 Paragraph 11 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, should 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.
- B8.4.1 The name and official capacity of all individuals signing Form A: Bid shall be printed below such signatures.
- B8.4.2 All signatures shall be original and shall be witnessed except where a corporate seal has been affixed.
- B8.5 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 Submission and the Contract, when awarded, shall be both joint and several.

B9. PRICES

- B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B9.2 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.
- B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B10. QUALIFICATION

- B10.1 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;
 - (b) be responsible and not be suspended, debarred or in default of any obligation to the City;
 - (c) be financially capable of carrying out the terms of the Contract;
 - (d) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract;
 - (e) have successfully carried out work, similar in nature, scope and value to the Work;
 - (f) employ only Subcontractors who:
 - (i) are responsible and not suspended, debarred or in default of any obligation 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 Branch internet site at <http://www.winnipeg.ca/matmgt>); and
 - (ii) have successfully carried out work similar in nature, scope and value to the portion of the Work proposed to be subcontracted to them, and are fully capable of

performing the Work required to be done in accordance with the terms of the Contract;

- (g) have a written workplace safety and health program in accordance with The Workplace Safety and Health Act (Manitoba).

B10.2 Further to B10.1(g), the Bidder shall, within three (3) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder 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 - Option 1 administered by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or
- (b) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association; or
- (c) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.)

B10.3 The Bidder shall be prepared to 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.

B10.4 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.

B11. BID SECURITY

B11.1 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.

B11.1.1 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.

B11.2 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.

B11.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B11.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B11.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B11.3 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.

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

B12.1 Bid Submissions will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Branch, or in such other office as may be designated by the Manager of Materials.

B12.1.1 Bidders or their representatives may attend.

B12.1.2 Bid Submissions determined by the Manager of Materials, or his designate, to not include the bid security specified in B11 will not be read out.

B12.2 After the public opening, the names of the Bidders and their Total Bid Prices as read out (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 Branch internet site at <http://www.winnipeg.ca/matmgt>.

B12.3 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 Branch internet site at <http://www.winnipeg.ca/matmgt>.

B12.4 The Bidder is advised that any information contained in any Bid Submission 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.

B13. IRREVOCABLE BID

B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 10 of Form A: Bid.

B13.2 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 10 of Form A: Bid.

B14. WITHDRAWAL OF BIDS

B14.1 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.

B14.1.1 Notwithstanding GC:23.3, 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.

B14.1.2 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 11 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B14.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials shall:

- (a) retain the Bid Submission until after the Submission Deadline has elapsed;
- (b) open the Bid Submission to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 11 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B14.1.3(b), declare the Bid withdrawn.

B14.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B13.2 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.

B15. EVALUATION OF BIDS

B15.1 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 (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B10 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B6.

B15.2 Further to B15.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission 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 if the interests of the City so require.

B15.3 Further to B15.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid Submission or in other information required to be submitted, that he is responsible and qualified.

B15.4 Further to B15.1(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.

B15.4.1 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.

B16. AWARD OF CONTRACT

B16.1 The City will give notice of the award of the Contract by way of a letter of intent, or will give notice that no award will be made.

B16.2 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.

B16.2.1 Without limiting the generality of B16.2, 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.

B16.3 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.

PART C - GENERAL CONDITIONS

C1. GENERAL CONDITIONS

C1.1 The *General Conditions for Construction Contracts* (Revision 2000 11 09) are applicable to the Work of the Contract.

C1.1.1 The *General Conditions for Construction Contracts* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

- D1.1 In addition to the *General Conditions for Construction Contracts*, these Supplemental Conditions are applicable to the Work of the Contract.
- D1.2 The General Conditions are amended by striking out "The City of Winnipeg Act" wherever it appears in the General Conditions and substituting "The City of Winnipeg Charter".
- D1.3 The General Conditions are amended by striking out "Tender Package" wherever it appears in the General Conditions and substituting "Bid Opportunity".
- D1.4 The General Conditions are amended by striking out "Tender Submission" wherever it appears in the General Conditions and substituting "Bid Submission".
- D1.5 The General Conditions are amended by deleting GC:6.16 and GC:6.17. The City of Winnipeg is now within the jurisdiction of the Manitoba Ombudsman pursuant to The Ombudsman Act.

D2. SCOPE OF WORK

- D2.1 The Work to be done under the Contract shall consist of the construction of approximately 800 metres of PVC Feedermain pipe and the construction of an offtake/valve chamber.
- D2.2 The major components of the Work are as follows:
- (a) Installation of 600mm diameter PVC feedermain by trench methods;
 - (b) Connection of Feedermain to existing offtake/valve chamber;
 - (c) Testing and disinfection of 600mm diameter feedermain;
 - (d) Construction of offtake/valve chamber;
 - (e) Restoration of pavement and boulevard areas.

D3. DEFINITIONS

- D3.1 When used in this Bid Opportunity:
- (a) "AWWA" means American Waterworks Association;
 - (b) "CSA" means Canadian Standard Association;
 - (c) "NSF" means National Sanitation Foundation; and
 - (d) "ASTM" means American Society for Testing and Materials

D4. CONTRACT ADMINISTRATOR

- D4.1 The Contract Administrator is:
- Mr. Stacy Cournoyer, E.I.T.
Project Coordinator
849 Ravelston Avenue West
Winnipeg, MB
R3W 1S8
- Telephone No. (204) 986-2142
Facsimile No. (204) 222-2168

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

D5. CONTRACTOR'S SUPERVISOR

D5.1 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.

D6. NOTICES

D6.1 Except as provided for in GC:23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D4.1.

D6.3 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 Administrative Officer Secretariat
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9
Facsimile No.: (204) 949-1174

D6.4 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
Corporate Services Department
Legal Services Division
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1
Facsimile No.: (204) 947-9155

D7. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

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 GC:4.1 for the return of the executed Contract.

D8.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

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) all inclusive, with The City of Winnipeg being added as an additional insured, with a cross-liability clause, such liability policy to also contain a contractual liability, an unlicensed motor vehicle liability and a products and completed operations endorsement to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) automobile liability insurance for owned and non-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;

D9.2 Deductibles shall be borne by the Contractor.

D9.3 The Contractor shall provide the City Solicitor with a certificate of insurance of each policy, in a form satisfactory to the City Solicitor, 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 GC:4.1 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 fifteen (15) 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 Submission was not a certified cheque or draft pursuant to B11.1(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 but in no event later than the date specified in GC:4.1 for the return of the executed Contract.

D11. DETAILED WORK SCHEDULE

D11.1 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 GC:4.1 for the return of the executed Contract.

D11.2 The detailed work schedule shall consist of the following:

(a) a Gantt chart for the Work based on the C.P.M. schedule; acceptable to the Contract Administrator.

D11.3 Further to D11.2(a), the Gantt chart shall clearly identify the start and completion dates of all major activities/tasks making up the Work. The Gantt chart shall show the time on a weekly basis, required to carry out the Work at each location. The time shall be on the horizontal axis, and the Work at each location on the vertical axis.

D12. COMMENCEMENT

D12.1 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.

D12.2 The Contractor shall not commence any Work on the Site until:

(a) the Contract Administrator has confirmed receipt and approval of:

- (i) evidence that the Contractor is 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;
- (ii) evidence of the workers compensation coverage specified in GC:6.14;
- (iii) the Safe Work Plan specified in D8;
- (iv) evidence of the insurance specified in D9;
- (v) the performance security specified in D10;
- (vi) the detailed work schedule specified in D11; 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.

D12.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D13. WORKING DAYS

D13.1 Further to GC:1.1(gg), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.

D13.2 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.

D13.3 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.

D13.4 The Contract Administrator will furnish the Contractor with a daily record for each major type of work showing various information concerning the equipment, the time it worked, could have worked and Working Days charged. This report is to be signed each day by an authorized representative of the Contractor.

D14. CRITICAL STAGES

D14.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

- (a) Delivery of the two (2) 600mm butterfly valves is scheduled for October 31, 2005. Installation cannot take place until the delivery of the valves.

D15. SUBSTANTIAL PERFORMANCE

D15.1 The Contractor shall achieve Substantial Performance within forty (40) consecutive Working Days of the commencement of the Work as specified in D12.

D15.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D15.3 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.

D16. TOTAL PERFORMANCE

D16.1 The Contractor shall achieve Total Performance within fifty (50) consecutive Working Days of the commencement of the Work as specified in D12.

D16.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D16.3 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.

D17. LIQUIDATED DAMAGES

D17.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City one thousand (\$1000.00) per Working Day for each and every Working Day following the day fixed herein for Substantial Performance during which such failure continues.

D17.2 If the Contractor fails to achieve Total Performance in accordance with the Contract by the day fixed herein for Total Performance, the Contractor shall pay the City five-hundred (\$500.00) per Working Day for each and every Working Day following the day fixed herein for Substantial Performance during which such failure continues.

D17.3 The amounts specified for liquidated damages in D17.1 and D17.2 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.

D17.4 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D18. SCHEDULED MAINTENANCE

D18.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) Landscape maintenance as specified in CW 3520.

D18.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D19. JOB MEETINGS

D19.1 Regular job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D19.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

D20. SEQUENCE OF WORK

D20.1 Further to GC6.1, the sequence of work shall comply with the following:

D20.1.1 Construction of the 600mm diameter feedermain and the construction of the concrete offtake valve chamber shall be done concurrently.

D21. TRAFFIC CONTROL AND MAINTENANCE OF ACCESS

D21.1 Traffic control shall be carried out in accordance with Section 3.7 of CW 1130 of the General Requirements.

D21.2 Access to the construction site shall be from the John Bruce Road or Melnick Road.

D21.3 Further to Section 3.6 of CW 1130 of the General Requirements, the Contractor shall maintain safe pedestrian crossing at intersections at all times. If possible, only one pedestrian crossing at an intersection is to be blocked by construction at any one time. If more than one pedestrian crossing is blocked by construction at an intersection at the same time the Contractor shall provide flag persons to safely escort pedestrians across the intersection. The Contractor shall leave pedestrian crossing locations safe and free of equipment that may hamper pedestrians when no construction activities are being performed at a particular crossing location.

D21.4 The Contractor shall not park company or private vehicles inside the barricaded work zone in a manner that will block sightlines for vehicles and pedestrians approaching and crossing intersections.

D22. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D22.1 Further to GC:6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

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 dated the

_____ day of _____, 20____, for:

BID OPPORTUNITY NO. 354-2005

LAGIMODIERE BOULEVARD FEEDERMAIN EXTENSION – 515 METRES SOUTH OF BISHOP
GRANDIN TO JOHN BRUCE ROAD

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)

(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
Corporate Services Department
Legal Services Division
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 354-2005

LAGIMODIERE BOULEVARD FEEDERMAIN EXTENSION – 515 METRES SOUTH OF BISHOP
GRANDIN TO JOHN BRUCE ROAD

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)

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS

- E1.1 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.1.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- E1.1.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.1.3 Further to GC:2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.2 The following Drawings are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
D-8821	Cover Sheet
D-8822	Lagimodiere Boulevard – 515 South of Bishop Grandin Boulevard to 677.5 South of Bishop Grandin Boulevard
D-8823	Lagimodiere Boulevard – 677.5 South of Bishop Grandin Boulevard to 840 South of Bishop Grandin Boulevard
D-8824	Lagimodiere Boulevard – 840 South of Bishop Grandin Boulevard to 1002.5 South of Bishop Grandin Boulevard
D-8825	Lagimodiere Boulevard – 1002.5 South of Bishop Grandin Boulevard to 1127.5 South of Bishop Grandin Boulevard
D-8826	Lagimodiere Boulevard – 1127.5 South of Bishop Grandin Boulevard to 1252.5 South of Bishop Grandin Boulevard
D-8827	Lagimodiere Boulevard – 1252.5 South of Bishop Grandin Boulevard to John Bruce Road
D-8828	Offtake Valve Chamber – Pipe and Fitting Details
D-8835	Offtake Valve Chamber - Miscellaneous Details
D-8836	Offtake Valve Chamber – Concrete Details
D-8837	Offtake Valve Chamber – Concrete Details & General Notes
	Offtake Valve Chamber – Reinforcing Details

E2. OFFICE FACILITIES

- E2.1 The Contractor shall supply office facilities meeting the following requirements:
- The field office shall be for exclusive use of the Contract Administrator.
 - The building shall be conveniently located near the Site of Work.
 - The building shall have a minimum floor area of 15 square metres, with two windows for cross-ventilation, and a door entrance with a suitable lock.
 - 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 16 degrees Celsius and 24 degrees Celsius.
 - The building shall be adequately lighted with florescent light fixtures and have a minimum of three electrical wall outlets.
 - The building shall be furnished with one desk, one drafting table 3.0 x 1.2 metre in surface area, one stool, one four drawer legal size filing cabinet, and six chairs.

- (g) A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for exclusive use by the Contract Administrator. The field office building and the portable toilet shall be cleaned on a weekly basis. The Contract Administrator may request additional cleaning when he deems it necessary.
- (h) All of the temporary structures provided by the Contractor for this project shall be stabilized in a sufficient manner to prevent the temporary structure from being overturned by wind forces as defined in the National Building Code (NBC). The stabilization provided shall be designed by a Professional Engineer registered in the Province of Manitoba. Detailed drawings and design notes for the stabilization works bearing the Engineer's seal shall be provided to the Contract Administrator for review.

E2.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E2.3 The office facilities will be provided from the date of commencement of the Work to the date of Substantial Performance.

E3. SHOP DRAWINGS

E3.1 Description

- (a) This Specification shall revise, amend and supplement the requirements of CW 1100.
 - (i) The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, which are to be provided by the Contractor to illustrate details of a portion of the work.
 - (ii) The Contractor shall submit specified shop drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be shown on all submissions for Engineering review.
- (b) Shop Drawings
 - (i) Original drawings are to be prepared by the Contractor, Subcontractor, Supplier, Distributor, or Manufacturer, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate sections.
 - (ii) Shop drawings for the following structural components shall bear the seal of a registered Engineer of Manitoba experienced in the type of work the drawings are prepared for.
 - (a) Reinforcing steel placement.
- (c) Contractor's Responsibilities
 - (i) Review shop drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.
 - (ii) Verify:
 - (a) Field measurements
 - (b) Field construction criteria
 - (c) Catalogue numbers and similar data
 - (iii) Coordinate each submission with requirements of work and Contract Documents. Individual shop drawings will not be reviewed until all related drawings are available.
 - (iv) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.
 - (v) Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission, unless Contract Administrator gives written acceptance of specified deviations.
 - (vi) Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.

- (vii) The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on previous submission.
 - (viii) After Contract Administrator's review and return of copies, distribute copies to sub-trades as appropriate.
 - (ix) Maintain one (1) complete set of reviewed shop drawings, filed by Specification Section Number, at the site of the work for use and reference of the Contract Administrator and Subcontractors.
- (d) Submission Requirements
- (i) Schedule submissions at least 7 Calendar days before dates reviewed submissions will be needed, and allow for a 7 Calendar day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
 - (ii) Submit five (5) paper prints of shop drawings. The Contractor is advised that the Contract Administrator will retain three (3) copies of all submittals and return two (2) copies to the Contractor.
 - (iii) Accompany submissions with transmittal letter, containing:
 - (a) Date
 - (b) Project title and Bid Opportunity number
 - (c) Contractor's name and address
 - (d) Number of each shop drawing, product data and sample submitted
 - (e) Specification Section, Title, Number and Clause
 - (f) Drawing Number and Detail/Section Number
 - (g) Other pertinent data
 - (iv) Submissions shall include:
 - (a) Date and revision dates.
 - (b) Project title and Bid Opportunity number.
 - (c) Name of:
 - (i) Contractor
 - (ii) Subcontractor
 - (iii) Supplier
 - (iv) Manufacturer
 - (v) Separate detailer when pertinent
 - (d) Identification of product of material.
 - (e) Relation to adjacent structure or materials.
 - (f) Field dimensions, clearly identified as such.
 - (g) Specification section name, number and clause number or drawing number and detail/section number.
 - (h) Applicable standards, such as CSA or CGSB numbers.
 - (i) Contractor's stamp, initialled or signed, certifying review of submission, verification of field measurements and compliance with Contract Documents.
- (e) Other Considerations
- (i) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent shop drawings and resubmit.
 - (ii) Material and equipment delivered to the site of the works will not be paid for at least until pertinent shop drawings have been submitted and reviewed.
 - (iii) Incomplete shop drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.

- (iv) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions and review of shop drawings.

E3.2 Measurement and Payment

- (a) Preparation and submittal of Shop Drawings will be included in the cost of the work they are required for.

E4. FEEDERMAINS

E4.1 Description

- E4.1.1 This Specification shall cover the supply and installation of the feedermain and related work as shown on the Drawings.

E4.2 Materials

E4.2.1 Backfill

- (a) Class 4 backfill with Class B sand bedding in accordance with CW 2030.

E4.2.2 Feedermain Pipe

- (a) Poly Vinyl Chloride (PVC) conforming to AWWA C905 DR18 and CSA B137.3-M86
- (b) Affidavit of Compliance
 - (i) Provide an affidavit of compliance signed by an officer of the pipe manufacturing company stating that the pipe and fittings comply with this Specification, in accordance with Section 6.3 of AWWA C905.
 - (ii) The Contract Administrator reserves the right to conduct third party quality control testing.
- (c) Dimensional Checks
 - (i) Notwithstanding AWWA C905, Section 5.1.1, dimensional checks shall be carried out for each and every pipe in the production run.

E4.2.3 Pipe Couplings

- (a) Pipe couplings for pipe connections to existing C301 (L) pipe shall be to the latest revision of AWWA C219 for bolted, Sleeve Type Couplings for Plain End Pipe. Minimum requirements are:
 - ◆ Minimum sleeve length 250 mm
 - ◆ Minimum centre sleeve thickness 12.7 mm
 - ◆ Couplings capable of accommodating up to 2 degrees deflection
 - ◆ Bolts and nuts to be 316 Stainless Steel.
 - ◆ Design pressure 150 psi
- (b) Buried pipe couplings shall be protected against corrosion by wrapping with Denso Tape system, consisting of Denso Profiling Mastic, Denso Paste and Densyl Tape, or approved equal.
- (c) Couplings to be supplied with two di-electric insulating boots
- (d) Couplings to be fusion bonded epoxy coated to AWWA C213, and meeting the requirements of ANSI/NSF 61 "Standard for Drinking Water System Components – Health Effects"

E4.2.4 Paint

- (a) Paint for exposed metal surfaces shall be in accordance to AWWA C213.

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

E4.3 Construction Methods

E4.3.1 Excavation

- (a) In accordance with Specification CW 2030, CW 2110 and as specified on the Drawings.
- (b) Over-excavated material shall be replaced with compacted, well-graded crushed limestone having a maximum aggregate size of 20mm, conforming to CW 2030 Type 2 granular material.

E4.3.2 Pipe Installation - AWWA C905 PVC

- (a) Install pipe utilizing trench methods in accordance with CW 2110.
- (b) Protect the exposed end of the pipe with an approved stopper to prevent foreign matter from entering the pipe. Keep the interior of the pipe free of all dirt, concrete or superfluous material as the Work proceeds.

E4.3.3 Connection to Offtake Valve Chamber

- (a) Connect to offtake valve chamber at locations shown on Drawings with adapter coupling.
- (b) Leave joint exposed after commissioning to inspect for leakage.
- (c) Correct any leakage at the connections.
- (d) Wrap connection with Denso tape or an approved equal once connection is accepted by the Contract Administrator.

E4.3.4 Frost Conditions

- (a) Do not install pipe on a foundation into which frost has penetrated, nor at any time when the Contract Administrator deems that there is a chance for the formation of ice or the penetration of frost at the bottom of the excavation. Take every precaution to prevent frost from penetrating the ground to depths below the foundation during construction.
- (b) Remove pipe installed on a frozen foundation and reinstall after thawing the foundation.
- (c) Commence heating of the pipe, sand, mortar and gaskets when the ambient temperature falls below -5 C. Heat pipe throughout with a low heat immediately prior to installation.
- (d) All mortar for joints shall be heated, and heated sand shall be placed around the pipe for the full height of the specified bedding and initial backfill and to at least 600 millimetres on either side of the joint, all to the satisfaction of the Contract Administrator.

E4.3.5 Connections to Existing Feedermain Pipe

- (a) Connect to existing AWWA C301 feedermain pipes at the locations shown on the Drawings.
- (b) Make connections between existing feedermain pipe and AWWA C905 PVC pipe by means of a bell by plain end adaptor and bolted sleeve coupling as indicated on the drawings.
- (c) Leave joints exposed until after commissioning to inspect for leakage.

- (d) Correct any leakage at connection.
- (e) Grout connection once connection is accepted by the Contract Administrator.

E4.3.6 Hydrostatic Leakage Testing

- (a) Perform hydrostatic leakage testing in accordance with CW 2125.
- (b) Fill feedermain from existing offtake valve chamber.

E4.3.7 Disinfection of Watermains

- (a) Disinfect feedermain in accordance with CW 2125. Initial flushing will not be required if feedermain has been kept free of debris during construction.
- (b) Fill feedermain from existing offtake valve chamber.
- (c) If, in the opinion of the Contract Administrator, debris has entered the feedermain, the Contractor shall flush the pipeline with sanitized pipeline cleaning equipment at their expense before disinfecting.
- (d) Further to CW 2125, disinfection of segments of feedermain not disinfected as noted above, shall be completed by swabbing as outlined in Section 3.3.16 of CW 2125.
- (e) Upon completion of disinfection, remove chlorinated water from the feedermain at locations approved by the Contract Administrator. Do not discharge chlorinated water directly to the environment. Treat the chlorinated water by one of the following methods, as recommended in AWWARF - GUIDANCE MANUAL FOR THE DISPOSAL OF CHLORINATED WATER:
 - (i) discharge into a waste water sewer;
 - (ii) de-chlorinate using Sodium Ascorbate, Vita-D-Chlor™ by Integra Chemical, or approved equal;
 - (iii) contain on Site until chlorine has dissipated to acceptable limits.
- (f) Refill the pipeline with potable water and take water samples for bacteriological tests taken in accordance to CW 2125, except test samples shall be taken each day at least 24 hours apart for three (3) successive days.

E4.4 Restoration

- (a) Restore existing areas disturbed by construction activities to match existing grade and slope as follows:
 - (i) Boulevard and field areas: seeding using imported topsoil in accordance with CW 3520
 - (ii) Gravel surfaces: in accordance with CW 3150.
 - (iii) Asphalt surfaces: in accordance with CW 3410.

E4.5 Method of Measurement and Basis of Payment

E4.5.1 Feedermain Installation

- (a) Feedermain installation will be measured on a length basis for each size, method of installation, type of backfill and type of bedding and paid for at the Contract Unit Price for "Feedermain Installation". The length measured and paid will be from the first pipe joint outside of the valve chambers, to the connection points on the existing feedermain. Measurement will be from face of bell to face of bell.

E4.5.2 Connection to Offtake Valve Chamber

- (a) Connection to offtake valve chamber will be included with the installation of the feedermain.

E4.5.3 Connection to Existing Feedermain

- (a) Connecting to the existing feedermain will be measured on a unit basis for each size and type and paid for at the Contract Unit Price for "Connect to Existing Feedermain".
- (b) All excavations, backfill, removal of existing pipes and bulkheads, patching of concrete where required and provision of new pipe gaskets will be included in the price for the connection to the existing feedermain.

E4.5.4 Testing and Disinfection

- (a) Testing and Disinfection of feedermain will be measured on a unit basis and paid for at the Contract Unit Price for "Pressure Test and Disinfection".
- (b) All main cleaning testing, disinfecting, and disposal of chlorinated water, successfully completed in accordance with this specification, will be included in the price for pressure testing and disinfection.

E4.5.5 Restoration

- (a) Restoration costs will be included with the "Feedermain Installation" and "Construction of Underground Concrete Structure – Offtake Valve Chamber".

E5. CONSTRUCTION OF OFFTAKE VALVE CHAMBER

E5.1 Description

- E5.1.1 This specification shall cover the construction of the cast-in-place offtake valve chamber and shall supplement, revise and amend CW 2160.

E5.2 Materials

- (a) Formwork, Reinforcing Steel and Concrete
 - (i) Formwork, reinforcing steel and concrete shall be as indicated on the Drawings.
- (b) Concrete Mix Design
 - (i) Concrete mix design shall be as indicated in the Construction Notes on the Drawings.
- (c) Lean-Mix Concrete design
 - (i) Proportioning of fine aggregate, coarse aggregate, cement, and water for lean mix concrete shall be as follows:
 - a) Cement: Type 50
 - b) Minimum Compressive Strength @ 28 days: 15 MPa
 - c) Slump: 80mm
 - d) Air Content: nil
 - e) Minimum Cement Content: 240 kg/m³
 - f) Maximum Water/Cement Ratio: 0.49
- (d) Grout
 - (i) Grout shall be Sika Grout 212 or approved equal.
- (e) Bonding Agent
 - (i) Bonding agent shall be ACRYL-STIX or approved equal.
- (f) Foundation Waterproofing
 - (i) Foundation waterproofing shall be in accordance with E6 of this specification.
- (g) Water Stops

- (i) Water stops shall be as indicated on the Drawings.
- (h) Rigid Insulation
 - (i) Rigid insulation for below grade applications shall be rigid polystyrene insulation conforming to CAN/ULC S701 Type 4, Styrofoam SM by Dow Chemical, or approved equal.
- (i) Pipe
 - (i) Steel Pipe Conforming to AWWA C200
 - ◆ Minimum steel yield strength of 307 MPa (30,000 psi)
 - ◆ Minimum wall thickness 6.3 millimetres (600 and 300 millimetre size)
 - ◆ Paint for exposed steel surfaces shall be in accordance with AWWA C213.
 - ◆ 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 140F Pota-Pox Plus or approved equal.
 - (ii) Ductile Iron Pipe conforming to AWWA C151
 - ◆ Class 54
 - ◆ Cement Lined as per AWWA C104
- (j) Fittings
 - (i) Fabricated steel fittings: conforming to AWWA C208.
 - (ii) Ductile iron fittings: conforming to AWWA C110.
- (k) Nuts and Bolts
 - (i) Nuts and bolts shall be ASTM A276 Type 316 Stainless steel. Bolt size, type and diameter shall be in accordance to AWWA C207. Bolt length shall be sufficient to accommodate flanges, gaskets and insulators with a maximum 10 millimetre extending beyond the nut.
 - (ii) Flange insulator kits shall be Advance Products and Systems or approved equal, including full faced gasket, hole sleeves and washers.
- (l) Flange Gaskets
 - (i) 3mm, full faced, cloth inserted SBR rubber gaskets or Nylon inserted neoprene in accordance with AWWA C207. Gaskets shall be one piece construction where possible. Segmented gaskets shall be constructed of a minimum number of segments and joints shall be of dovetailed construction, or other jointing methods approved by the Contract Administrator.
- (m) Blind Flanges
 - (i) Steel Flanges shall be AWWA C207-01 Class D.
 - (ii) Cast and Ductile flanges shall be ASME/ANSI B16.1 Class 125
- (n) Valve Stem Extensions
 - (i) Schedule 40 Stainless Steel ASTM A-276 Type 304. Size and length as shown on the drawings, fitted with 50mm square operating nut.
- (o) Threaded Valves
 - (i) Small diameter threaded gate valves (75mm diameter and less) shall be all cast bronze, solid wedge disk, rising stem c/w hand wheel rated for minimum 1.0 MPa non-shock cold water service. Direction of opening shall be counter clockwise and shall be indicated on the hand wheel. Bronze material shall conform to ASTM B62. Acceptable product; Crane, Jenkins, Kennedy, Mueller, or approved equal.

- (p) Threaded Piping, Fittings and Flanges
 - (i) Small diameter threaded piping, fittings and flanges (75mm diameter and 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 ANSI B16.24 - 150#.
 - (ii) Small diameter steel pipe nipples shall be ASTM A276 Type 304, Schedule 80 stainless steel.
- (q) Backfill
 - (i) Backfill shall be in accordance with CW 2030. Class of backfill to be as shown on the Drawings.

E5.3 Supply and Field Testing of 600 Butterfly Valves

- (a) 600 Butterfly valves are being supplied under a separate bid opportunity, City of Winnipeg Bid Opportunity 332-2005. Valves are to be supplied, delivered and tested at the City of Winnipeg, 598 Plinquet Avenue Road, by October 31, 2005.
- (b) Should the 600 Butterfly valves be delivered later than October 31, the Contract will be extended by an amount equal to the extra days it took to deliver the valves. No additional payment will be made to the Contractor for costs incurred as a result of the late delivery of the valves.
- (c) The Contractor shall attend a delivery inspection, with the Valve Supply Contractor, and Contract Administrator. The Supply Contractor, prior to turning valves over to the Installation Contractor, shall rectify any damage noted during the delivery inspection. Written acceptance of the valves and actuators by a duly completed "Certificate of Equipment Delivery (Form 200)" (Appendix A) shall constitute acceptance for installation from the Installation Contractor.
- (d) The Valve Supply Contractor shall perform hydrostatic leakage testing of the valves, after delivery. Any leakage or defects noted during field-testing shall be repaired by the Supply Contractor, prior to the Installation Contractor taking possession.
- (e) The Installation Contractor may leave the valves in storage at the City facility at 598 Plinquet Avenue, until required on-site for preassembly and installation.
- (f) Pickup valves from storage at the City facility and transport the valves directly to the jobsite for installation. Store the valves in a secure, on-site storage compound protected from the weather.
- (g) Take the following precautions while transporting the valves from the storage facility to the site:
 - (i) Protect valve flange faces from damage by installation of a minimum of 20 mm plywood cover on both faces of each valve.
 - (ii) Handle valves only by methods approved by the manufacturer, and properly secured to preclude any damage during transport.

E5.4 Design

- (a) All pipe and fittings shall be designed for an operating pressure of 700 kilopascals (100 p.s.i.) and a test pressure of 1000 kilopascals (150 p.s.i.)

E5.5 Submittals

- (a) Submit reinforcing steel shop drawings and concrete mix design in accordance to CW 2160 and E3. Submit a minimum two (2) weeks prior to the fabrication of any reinforcing steel.
- (b) Submit shop drawings and data sheets for all pipe, fittings and valves in accordance with E3.

E5.6 Construction Methods

(a) Excavation

- (i) Excavate in accordance with CW 2030 and as shown on the Drawings.
- (ii) Place a minimum 75 millimetre thick lean mix concrete slab in the bottom of the excavation to provide a clean working base upon completion of the excavation to the required limits.
- (iii) Lean mix concrete shall be well-tamped and screed to give a level working platform for setting up forms and placing reinforcing steel. Allow the concrete to set for twenty-four (24) hours before setting up forms or placing reinforcing steel.
- (iv) Setting and placing lean mix concrete, as directed by the Contract Administrator, as backfill for any portions of the excavation, carried beyond the limits of excavation. The limits of excavation shall be considered to be the inside-face of the shoring system and the underside of the working base slab.
- (v) All working areas below grade shall be kept adequately and securely supported during and after excavation until the shoring and bracing is in place to prevent loss of ground or injury to any person from falling material.

(b) Cast-In-Place Concrete

- (i) Cast-in-place concrete as per CW 2160 and as shown on the Drawings.
- (ii) Adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.
- (iii) Do not use welded splices for reinforcing steel.
- (iv) Order all wall reinforcing steel in lengths to best suit the spacing of walers so that reinforcing bars will not be bent or misformed in order to remove the walers.
- (v) Install foundation waterproofing in accordance with E6 of this Specification.

(c) Floor Drains

- (i) Construct Floor drain as detailed on the drawings.

(d) Installation of Butterfly Valves

- (i) Prior to installation of butterfly valves, the Contractor shall receive installation instructions from the Valve Supply Contractor. Upon completion of installation, Form 201: Certificate of Instruction (Appendix A) shall be completed and submitted to the Contract Administrator.
- (ii) Install butterfly valve as shown on the drawings. Install the valves with the valve shaft in the horizontal position. The Supply Contractor is obligated to provide installation supervision, and will complete Form 202: Certificate of Satisfactory Installation (Appendix A) upon successful installation.
- (iii) Core 125 mm opening in roof slabs directly above actuator operation nut. Valve box and valve stem extensions shall be installed plumb and aligned directly above the valve actuator operation nut.

(e) Commissioning of Butterfly Valves

- (i) The Contractor shall assist in operation of the butterfly valves for the purpose of commissioning. The Supply Contractor is required to complete Form 203 (Appendix A), indicating a qualified representative has checked the installed equipment, and has found the equipment to be installed and operating in accordance to the specifications.

(f) Threaded Valves and Fittings

- (i) 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.

E5.7 Method of Measurement and Basis of Payment

- (a) Construction of Valve Chambers shall be measured on a unit basis and paid for at the Contract Unit Price for "Construction of Underground Concrete Structure – Offtake Valve Chamber". The unit price shall include excavation, backfill, cast-in-place concrete works, installation of butterfly valves, installation of chamber piping, supply and installation of miscellaneous valves, appurtenances, miscellaneous metals, couplings, interior plumbing, and other miscellaneous materials. Piping shall be considered all piping within the chamber, to the first joint outside the chamber wall.

E6. FOUNDATION WATERPROOFING

E6.1 Description

- (a) This Specification shall cover the supply and placement of foundation waterproofing for the new offtake valve chamber.

E6.2 Materials

E6.2.1 Waterproofing Membrane

- (a) Styrene-Butadiene-Styrene (SBS) elastomeric polymer, prefabricated sheet, reinforced with non-woven polyester weighing 180 g/m². Top surface polyethylene film. Bottom surface: thermofusible plastic film. Acceptable material: Soprema Sopralene Flam 180, IKO Aquabarrier TG.

E6.2.2 Primers

- (a) Mastic sealant and accessories: as recommended by membrane manufacturer, applicable for substrate.

E6.2.3 Protection Board

- (a) Insulating fibreboard to CAN/CSA-A247, Type II, 12 millimetres thick.

E6.3 Construction Methods

E6.3.1 Quality Assurance

- (a) Installation of waterproofing membrane shall be performed by workers approved and trained by manufacturer for application of its products. Applicators must have minimum 5 years proven experience. If requested, submit proof of experience, in writing, from manufacturer.

E6.3.2 Environmental Requirements

- (a) Maintain air temperature and structural base temperature at installation area above membrane manufacturer's recommendations before, during and 72 hours after installation.
- (b) For applications in freezing weather do not commence application until authorized by membrane manufacturer.
- (c) For enclosed applications ensure adequate forced air circulation during curing period.
- (d) Install membrane on dry substrates, free of snow and ice. Use only dry materials and apply only during weather that will not introduce moisture beneath waterproofing membrane.

E6.3.3 Preparation

- (a) Examine substrates and site conditions to ensure acceptability for application of waterproofing membranes. Notify Contract Administrator, in writing, of unsuitable surfaces or working conditions.

- (b) Do not commence application until all other work that will penetrate membrane is complete.
- (c) Clean substrates of all snow, ice, loose particles, oil, grease, dirt, curing compounds, or other foreign matter detrimental to application of primers and waterproofing membranes.
- (d) Ensure concrete surfaces are fully cured and dry using test methods recommended by membrane manufacture.
- (e) Repair defects in concrete surfaces such as spalled or poorly consolidated concrete. Remove sharp protrusions, sharp edges and form lines.
- (f) Patch rough areas with a weld-adhered parge coat to provide smooth surface. Allow to fully cure and dry.

E6.3.4 Priming

- (a) Apply primer in accordance with manufacturer's instructions at recommended rate of application.
- (b) Do not apply primer to frozen or damp surfaces.
- (c) Apply primer only when air and surface temperatures are within manufacturer's recommended limits.
- (d) Avoid pooling of primer and allow to cure until tack-free.
- (e) Prime only the area to be covered with membrane in a working day. Re-prime areas not covered with waterproofing within 24 hours of application of primer.

E6.3.5 Membrane Application

- (a) Apply membrane in accordance with manufacturer's instructions and with good construction practice to maintain continuity of waterproofing over building elements below finished grade elevation.
- (b) Place membrane in position without stretching, taking care to avoid trapped air, creases or fish mouths.
- (c) Ensure membrane is totally bonded to substrate.
- (d) Apply membrane vertically in longest possible lengths to reduce number of end joints.
- (e) Overlap side laps minimum 75 millimetres and end laps minimum 150 millimetres. Stagger end laps minimum 300 millimetres in adjacent rows.
- (f) Seal horizontal and vertical terminations by applying heavy pressure to edges with a roller to ensure positive bond. Apply a continuous bead of mastic sealant to all terminations. Make watertight. Seal daily terminations with mastic sealant.
- (g) Terminate membrane 300 millimetres below finished grade.

E6.3.6 Membrane Application at Corners

- (a) Remove sharp or protruding edges from external corners prior to application of membrane.
- (b) Reinforce external corners with cushion strip of membrane minimum 300 mm wide at each corner. Install cushion strip below main membrane.

E6.3.7 Membrane Application Over Protrusions and Penetrations

- (a) Apply two layers of membrane flashing around protrusions, and extend at least 150 millimetres in all directions. Cut and fit membrane neatly and snug fitting, leave no gaps. Seal all terminations with mastic sealant. Flash protrusions with liquid mastic extending 150 millimetres along pipe or conduit.

- (b) Seal with liquid mastic all protrusions or difficult detail areas which do not allow easy installation of membrane. Make watertight.

E6.3.8 Inspection and Repair

- (a) Inspect membrane thoroughly before covering and make corrections immediately.
- (b) Patch and repair misaligned or inadequately lapped seams, tears, punctures or fishmouths.
- (c) Patch with piece of waterproofing membrane and extend minimum 150 millimetres in all directions from fault and seal edges with mastic sealant.

E6.3.9 Protection Board

- (a) Install protection board against all waterproofing membranes to protect against backfilling operations.
- (b) Install boards vertically without fasteners or adhesives.
- (c) Install protection board during backfilling operations to allow backfill materials to hold protection board tight to waterproofing membrane.
- (d) Terminate protection board 600 millimetres below grade.

E6.4 Measurement and Payment

- E6.4.1 Supply and installation of waterproofing membrane and protection board will be included in the price for "Construction of Underground Concrete Structures – Offtake Valve Chamber".

E7. CONSTRUCTION OF ACCESS ROAD TO OFFTAKE VALVE CHAMBER

E7.1 Description

- (a) This Specification shall cover the construction of the crushed limestone access road for the offtake valve chamber.

E7.2 Materials

- (a) Limestone Base Material
 - (i) Crushed limestone material used for the access road shall be in accordance with Section 2.2 of CW 3110.

E7.3 Construction Methods

- (a) Access road shall be constructed in accordance with CW 3110 to the dimensions and depths shown on the Drawings.
- (b) Place crushed limestone for access road directly on existing ground. No excavation will be required for the construction of the access road.

E7.4 Measurement and Payment

- (a) Construction of Access Road will be included in the price for "Construction of Underground Concrete Structures – Offtake Chamber".

APPENDIX A

FORMS

INDEX TO FORMS

Form 200	Certificate of Equipment Delivery
Form 201	Certificate of Instruction
Form 202	Certificate of Satisfactory Installation
Form 203	Certificate of Equipment Satisfactory Performance

**FORM 200:
CERTIFICATE OF EQUIPMENT DELIVERY**

We certify that the equipment listed below has been delivered into the care of the installation contractor. The equipment was delivered in satisfactory condition and meets its Basic Design Criteria. No defects in the equipment were found.

Project: _____

Item of Equipment: _____

Tag No./ Location: _____

Reference Specification: _____

(Authorized Signing Representative of the Installation Contractor) (Date)

(Authorized Signing Representative of the Contractor) (Date)

(Authorized Signing Representative of the Contract Administrator) (Date)

**FORM 201:
CERTIFICATE OF INSTRUCTION**

I have completed instruction of the installation of the equipment listed below:

Project: _____

Item of Equipment: _____

Tag No./Location: _____

Reference Specification: _____

(Authorized Signing Representative of the Contractor) (Date)

I have received satisfactory instructions from the Contractor.

(Authorized Signing Representative of the Installation Contractor) (Date)

**FORM 202:
CERTIFICATE OF SATISFACTORY INSTALLATION**

I have completed inspection of the installation listed below and confirm that it is satisfactory and that deficiencies have been remedied to my satisfaction except any as noted below:

Project: _____

Item of Equipment: _____

Tag No./Location: _____

Reference Specification: _____

Outstanding Deficiencies: _____

(Authorized Signing Representative of the Contractor)

(Date)

**FORM 203:
CERTIFICATE OF EQUIPMENT SATISFACTORY PERFORMANCE**

We certify that the equipment listed below has been validated and has been operated for at least seven (7) consecutive days and that the equipment operates satisfactory and meets its Basic Design Criteria. No deficiencies in the equipment were found.

Project: _____

Item of Equipment: _____

Tag No./Location: _____

Reference Specification: _____

(Authorized Signing Representative of the Contractor)

(Date)

(Authorized Signing Representative of the Installation Contractor)

(Date)

(Authorized Signing Representative of the Contract Administrator)

(Date)