



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 332-2005

SUPPLY AND DELIVERY OF BUTTERFLY VALVES AND MANUAL ACTUATORS

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PART B - BIDDING PROCEDURES

B1. PROJECT TITLE

B1.1 SUPPLY AND DELIVERY OF BUTTERFLY VALVES AND MANUAL ACTUATORS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, June 9, 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. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

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

B4.2.2 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.

B4.3 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.

B5. SUBSTITUTES

- B5.1 The Work is based on the materials, equipment, methods and products 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 seven (7) 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 material, equipment, method or product 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 Contract;
 - (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 Contract.
- 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 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 B13.
- B5.9 No later claim by the Contractor for an addition to the price(s) because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B6. BID SUBMISSION

- B6.1 The Bid Submission consists of the following components:

- (a) Form A: Bid;
- (b) Form B: Prices.

- B6.2 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.
- B6.3 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.
- B6.3.1 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.
- B6.4 Bid Submissions submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B6.5 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

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 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.

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

B7.4.2 All signatures shall be original and shall be witnessed except where a corporate seal has been affixed.

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 Submission 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 Prices on Form B: Prices shall include:

- (a) duty;
- (b) freight and cartage;
- (c) Provincial and Federal taxes [except the Goods and Services Tax (GST) and Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable] and all charges governmental or otherwise paid;
- (d) profit and all compensation which shall be due to the Contractor for the Work and all risks and contingencies connected therewith.

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.

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, or if the Bidder does not carry on business in Manitoba, in the jurisdiction where the Bidder does carry on business;
- (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;

B9.2 The Bidder shall be prepared to submit, within three (3) Business Days of a request by the Contract Administrator, the following technical data for determination that all equipment offered complies with the Specifications outlined in Part E. The Bidder shall also provide the following specific information:

- (a) The model name and model number for all butterfly valves and actuators and combinations thereof listed in Form B: Prices and listed in further detail in the Specifications in Part E.
- (b) Evidence of compliance with the latest revision of AWWA Standard C504 for Rubber Seated Butterfly Valves, for all valve sizes and classes outlined in the Specifications in Part E.
- (c) A list of references demonstrating that the equipment to be supplied under this Contract shall be designed and manufactured by a company having at least five (5) years prior experience in manufacturing these types of products in the sizes and to the pressure ratings as those specified in the Specifications in Part E.

B9.3 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.

B9.4 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.

B10. OPENING OF BIDS AND RELEASE OF INFORMATION

B10.1 Bid Submissions will not be opened publicly.

B10.2 Within two (2) Business Days 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 Branch internet site at <http://www.winnipeg.ca/matmgt>.

B10.3 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>.

B10.4 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.

B11. IRREVOCABLE BID

B11.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 10 of Form A: Bid.

B11.2 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 for the time period specified in Paragraph 10 of Form A: Bid.

B12. WITHDRAWAL OF BIDS

B12.1 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.

B12.1.1 Notwithstanding GC.7.05(2), 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.

B12.1.2 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.

B12.1.3 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 B12.1.3(b), declare the Bid withdrawn.

B12.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B11.2 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.

B13. EVALUATION OF BIDS

B13.1 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 B9 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B5.

B13.2 Further to B13.1(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.

B13.3 Further to B13.1(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.

B13.4 Further to B13.1(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.

B13.4.1 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. AWARD OF CONTRACT

- B14.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B14.2 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.
- B14.2.1 Without limiting the generality of B14.2, 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.
- B14.3 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 the Supply and Delivery of Goods* (Form 21: 88 03) are applicable to the Work of the Contract.

C1.1.1 The *General Conditions for the Supply and Delivery of Goods* 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 the Supply and Delivery of Goods*, 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 "Board of Commissioners" or "Commissioner" wherever it appears in the General Conditions and substituting the "Chief Administrative Officer".
- D1.4 The General Conditions are amended by striking out "Tender Package" wherever it appears in the General Conditions and substituting "Bid Opportunity".
- D1.5 The General Conditions are amended by striking out "Tender Submission" wherever it appears in the General Conditions and substituting "Bid Submission".
- D1.6 The General Conditions are amended by striking out "Bidding Instructions" wherever it appears in the General Conditions and substituting "Bidding Procedures".

D2. SCOPE OF WORK

- D2.1 The Work to be done under the Contract shall consist of supply, delivery, field testing and commissioning of AWWA C504 Rubber Seated Butterfly Valves.
- D2.2 The major components of the Work are as follows:
- (a) Supply and Delivery of four (4) 600 millimetre AWWA C504 Butterfly Valves complete with manual actuators.
 - (b) Shop testing of valves.
 - (c) Inspection of installation and commissioning.
 - (d) Supply of operation and Maintenance Manuals.

D3. DEFINITIONS

- D3.1 When used in this Bid Opportunity:
- (a) "**Business Day**" means any Calendar Day, other than a Saturday, Sunday, or a Statutory or Civic Holiday.
 - (b) "**Submission Deadline**" and "**Time and Date Set for the Final Receipt of Bids**" mean the time and date set out in the Bidding Procedures for final receipt of Bids.
- D3.2 Notwithstanding GC.1.01, when used in this Bid Opportunity:
- (a) **ANSI** means American National Standards Institute.
 - (b) **ASME** means American Society of Mechanical Engineers.
 - (c) **ASTM** means American Society for Testing and Materials.
 - (d) **AWWA** means American Water Works Association.
 - (e) **CSA** means Canadian Standards Association.

- (f) **IEC** means International Electrotechnical Commission.
- (g) **ISO** means International Organization for Standardization.
- (h) **NACE** means National Association of Corrosion Engineers.
- (i) **NEMA** means National Electrical Manufacturers Association.
- (j) **NSF** means National Sanitation Foundation.
- (k) **SAE** means Society of Automotive Engineers.

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is UMA Engineering Ltd., represented by:

Marv McDonald, C.E.T.
Senior Project Coordinator
1479 Buffalo Place, Winnipeg, Manitoba

Telephone No. (204) 284-0580
Facsimile No. (204) 475-3646

D5. NOTICES

D5.1 GC.7.05 is hereby amended to delete reference to "registered mail" and to replace same with "ordinary mail".

D5.2 GC.7.05 is further amended hereby to include delivery by facsimile transmission (fax) as an acceptable means of delivering notices, consents, approvals, statements, authorizations, documents or other communications required or permitted to be given under this Contract. Deliveries by fax will be deemed to have been received on the day of delivery, if a business day, or if not a business day, on the business day next following the day of delivery.

D5.3 Further to GC.7.05, all notices, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.4, D5.5 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.

D5.4 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

D5.5 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

SUBMISSIONS

D6. AUTHORITY TO CARRY ON BUSINESS

D6.1 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.

D7. INSURANCE

D7.1 The Contractor shall provide and maintain 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, to remain in place at all times during the performance of the Work.

D7.2 Deductibles shall be borne by the Contractor.

D7.3 The Contractor shall provide the Contract Administrator with a certificate of insurance of the policy 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.3.01 for the return of the executed Contract.

D7.4 The Contractor shall not cancel, materially alter, or cause the policy to lapse without providing at least fifteen (15) Calendar Days prior written notice to the Contract Administrator.

D8. MATERIAL SAFETY DATA SHEETS

D8.1 The Contractor shall provide the Contract Administrator with one (1) copy of Material Safety Data Sheets (MSDS's) for each product to be supplied under the Contract at least two (2) Business Days prior to the commencement of Work but in no event later than the date specified in GC.3.01 for the return of the executed Contract.

D8.2 Throughout the term of the Contract, the Contractor shall provide the Contract Administrator with revisions or updates of the MSDS's as soon as may be reasonably possible.

D9. PERFORMANCE SECURITY

D9.1 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.

D9.1.1 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. SHOP DRAWINGS

- D10.1 Submit Shop Drawings promptly to the Contract Administrator in an orderly sequence to prevent delay in the Work or in the work of other contractors. Notify the Contract Administrator at the time of submission of any deviations in the Shop Drawings from the requirements of the Specifications.
- D10.2 The Contract Administrator will review Shop Drawings promptly or in accordance with a schedule agreed upon in writing. Upon completion of review the Contract Administrator will communicate either acceptance or rejection of Shop Drawings. The Contract Administrator's review and acceptance will be for conformity to design concept of the Work and for compliance with the Specifications.
- D10.3 Acceptance of Shop Drawings for a component or a subassembly does not constitute acceptance of the complete assembly of which it is a part.
- D10.4 The Contract Administrator's review will not relieve responsibility for errors and omissions in Shop Drawings or of the responsibility for meeting requirements of the Specifications unless identified deviations on Shop Drawings have been approved by the Contract Administrator.
- D10.5 Make changes to Shop Drawings as required by the Contract Administrator that are consistent with the Specifications and promptly resubmit Shop Drawings to the Contract Administrator for review and acceptance unless otherwise indicated by the Contract Administrator. Notify the Contract Administrator of any revisions other than those requested by the Contract Administrator when resubmitting Shop Drawings.
- D10.6 Do not undertake work associated with Shop Drawings until the Contract Administrator's review is completed and Shop Drawings are accepted.
- D10.7 Shop Drawings are to be in accordance with the following requirements.
- (a) Sheet size: appropriate for item and information being depicted.
 - (b) Submit 5 prints or an electronic file in a format acceptable to the Contract Administrator.
 - (c) Show the following information in lower right hand corner.
 - (i) Project Title.
 - (ii) Bid Opportunity or other project number assigned by the Contract Administrator.
 - (iii) Name of the depicted item in accordance with the Specifications and Drawings.
 - (iv) Project series number and location where the item is used if applicable.
 - (v) Specification section number if applicable.
 - (vi) Proposed option if applicable.
 - (vii) Name of Contractor.
 - (viii) Revise the drawing date for each resubmission.

SCHEDULE OF WORK

D11. COMMENCEMENT

- D11.1 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.
- D11.2 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 insurance specified in D7;
 - (iii) the Material Safety Data Sheets specified in D8;
 - (iv) the performance security specified in D9;
- (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

D11.3 The Contractor shall commence work on Site within seven (7) Calendar Days of receipt of the letter of intent.

D11.4 The City intends to award this Contract by June 23, 2005.

D12. CRITICAL STAGES

D12.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

- (a) Delivery and shop testing of two (2) 600 millimetre Butterfly Valves for Lagimodiere Feedermain Extension by September 30, 2005.
- (b) Delivery and shop testing of two (2) 600 millimetre Butterfly Valves for Kenaston Underpass Feedermain Relocations by October 15, 2005.

D13. SUBSTANTIAL PERFORMANCE

D13.1 The Contractor shall achieve Substantial Performance by October 30, 2005.

D13.2 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.

D13.3 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.

D14. TOTAL PERFORMANCE

D14.1 The Contractor shall achieve Total Performance by November 30, 2005.

D14.2 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.

D14.3 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.

D15. LIQUIDATED DAMAGES

- D15.1 If the Contractor fails to achieve critical stages or Substantial 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) Delivery and shop testing of two (2) 600 millimetre Butterfly Valves for Lagimodiere Feedermain Extension– fifteen hundred dollars (\$1,500.00).
 - (b) Delivery and shop testing of two (2) 600 millimetre Butterfly Valves for Kenaston Underpass Feedermain Relocations - fifteen hundred dollars (\$1,500.00).
 - (c) Substantial Performance – five hundred dollars (\$500.00).
- D15.2 The amounts specified for liquidated damages in D15.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages or Substantial Performance by the days fixed herein for same.
- D15.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

FORM H1: PERFORMANCE BOND
(See D9)

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. 332-2005

SUPPLY AND DELIVERY OF BUTTERFLY VALVES AND MANUAL ACTUATORS

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 D9)

(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. 332-2005

SUPPLY AND DELIVERY OF BUTTERFLY VALVES AND MANUAL ACTUATORS

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. GENERAL

E1.1 These Specifications shall apply to the Work.

E2. GOODS

E2.1 The Contractor shall supply the following goods and support services:

- (a) Four (4) 600 millimetre Rubber seated butterfly valves conforming to the latest version of AWWA Standard C504, and as specified herein.
- (b) Manual actuators conforming to the latest version of AWWA Standard C504, and as specified herein.
- (c) Shop testing of butterfly valves.
- (d) Inspection of installation in accordance with the requirements hereinafter specified.
- (e) Manuals for operation and maintenance of valves and actuators.

E3. DELIVERY

E3.1 All goods shall be delivered to City of Winnipeg warehouse at 552 Plinguet street, Winnipeg, Manitoba, or at an alternate location within the City of Winnipeg, if directed by the Contract Administrator. Delivery shall be made between 8:00 a.m. and 2:00 p.m., Monday to Friday. Contact the Contract Administrator a minimum of 48 hours prior to delivery.

E3.2 All goods must be delivered to the above location and tested by the Critical Stage set out in D12.1. The Contractor shall be responsible for off-loading of goods. The Contractor is advised that this location contains suitable lifting facilities for this purpose. The Contractor shall arrange and pay for all required labour to off-load goods to floor of warehouse, in a position suitable for testing. The Contractor is responsible for providing stands, blocking and skids to secure valves in a vertical position for testing.

E3.3 Butterfly valves shall be delivered and off-loaded in accordance with AWWA Standard C504 Section 6 and Appendix A.

E4. BUTTERFLY VALVES

E4.1 Description

- (a) This Specification shall cover the design and manufacture of butterfly valves to be supplied under this Contract. This Specification is supplementary to and shall be read together with the latest revision of AWWA Standard C504, "Rubber Seated Butterfly Valves".
- (b) All butterfly valves to be supplied under this Contract shall be designed and manufactured by a company having at least five (5) years prior experience in manufacturing these types of products in the sizes and to the pressure ratings as those specified herein.

E4.2 Design Requirements

- (a) General
 - (i) Design, materials and construction of all valves shall conform to the latest version of AWWA Standard C504.

- (ii) Further to AWWA C504, products and coatings in contact with potable water shall be certified as suitable for contact with drinking water by an accredited certification organization in accordance with ANSI/NSF 61 "Drinking Water System Components – Health Effects"
 - (iii) Design torques shall be calculated using procedures outlined in AWWA Manual of Water Supply Practices – Butterfly Valves: Torque, Headloss and Cavitation Analysis – M49.
- (b) Design Parameters
- (i) Service Potable Drinking Water
 - (ii) Chemical Resistance 1 % Hypochlorite
 - (iii) Installation Submerged Service
 - (iv) Operating service -40°C to +70°C
 - (v) Water Temperature Service 0°C to 20°C
 - (vi) Normal System Operating Pressure 500 Kilopascals (75 psi)
 - (vii) Valve Test Pressure (2 times Operating) 1000 kPa (150 psi)
 - (viii) Type of Body (All) Flanged Short Body
 - (ix) Maximum Non-Shock Shut-Off Pressure (All) 1000 Kilopascals (150 psi)
 - (x) Body (All) Cast Iron
 - (xi) Headloss Maximum K value 0.5
 - (xii) Valve torques and safety factors shall be based upon the design pressure of 700 Kilopascals (100 psi).

NOMINAL PIPE SIZE (MM)	QUANTITY	ACTUATOR TYPE	VALVE CLASS	PRIMARY SERVICE FUNCTION
600	4	Manual	150B	Isolation (Open/Close)

E4.3 Materials

(a) General

- (i) Materials for butterfly valves shall meet or exceed the latest revision requirements of AWWA Standard C504 and shall meet or exceed the requirements of this Specification.
- (ii) Materials throughout shall be the best of their respective kinds. The equipment shall be designed for the very highest class of service, shall include the highest degree of strength, durability and reliability for continuous operation and for most convenient maintenance.
- (iii) Liberal factors of safety [minimum of fifty percent (50%)] shall be used throughout especially for all parts subject to alternating stresses or shock.
- (iv) All joints shall be machined and all castings shall be spot-faced for nuts. All rods shall be finished. All mating faces shall be drilled and tapped, peened, or finished as subsequently specified.
- (v) The mechanical features of the equipment covered by these Specifications shall conform to the appropriate standards of the ASME.
- (vi) Threads on all screws, bolts, studs, and nuts shall be American Standard. Tapped holes in flanges shall be standard unified national threads of the coarse-thread series.

- (b) Stainless Steel Components
 - (i) All components specified in the latest revision of AWWA Standard C504 as stainless steel and the valve shaft, pins, clamps and retaining rings for the rubber seats shall be Type 304 stainless steel. No alternative materials will be accepted in this regard.
- (c) Workmanship
 - (i) All foundry and machine work shall be in accordance with the best modern practice for the class of work involved.
 - (ii) All parts shall conform accurately to the required dimensions and shall be free from injurious defects. All machine parts shall be made to template or gauge.
 - (iii) No repairs to metal such as welding, plugging, peening or stitching will be permitted. Any valve or actuator exhibiting such repairs will be rejected.
 - (iv) All joints shall be faced true and shall be watertight where subject to water pressure.
 - (v) The bolt holes of all cast iron flanges and flanged fittings shall be spot faced to the specified thickness of flange with a plus tolerance of 3 millimetres (1/8 inch).
 - (vi) All iron parts receiving bronze mounting shall be finished to fit. Such hand work shall be done in finishing as is required to produce a neat, workmanlike, well fitting, and smooth operating job throughout.
 - (vii) All parts of the same size and same make shall be interchangeable.
- (d) Ferrous Castings
 - (i) All castings shall be true to pattern, of workmanlike finish and of uniform fine grain quality and condition, free from blowholes, porosity, hard spots, shrinkage defects, cracks, or other injurious defects and shall be smooth and well cleaned before inspection. Castings shall be readily machinable. Castings shall not be repaired, plugged, or welded.
- (e) Valve Bodies
 - (i) Valve bodies shall be short body and constructed of either cast iron conforming to ASTM Standard A126, Class B or ASTM A48, Class 40; of ductile iron conforming to ASTM A536, Grade 65-45-12; or of alloy cast iron conforming to ASTM A436, Type 1 and 2, or ASTM A439, Type D-2 with a maximum lead content of 0.003 percent.
- (f) Valve Ends
 - (i) The ends of the valves shall be flanged and drilled to ANSI B16.1 standard for cast iron flanges, Class 125.
- (g) Valve Discs
 - (i) The design and materials of valve discs shall conform to the requirements of Section 4.5 of the latest revision of AWWA Standard C504.
 - (ii) Discs shall be offset to provide an uninterrupted 360 degree seating edge and shall be cast iron per ASTM A48, Class 40 or ductile iron per ASTM A536 (65-45-12).
 - (iii) The disc seating edge, if applicable, shall be solid type 316 stainless steel.
 - (iv) The disc shall be securely attached to the valve shaft using type 304 stainless steel taper fasteners.
 - (v) Disc structures containing hollow cavities are not acceptable.
- (h) Valve Shaft
 - (i) Valve shaft shall be constructed of type 304 stainless steel.
- (i) Valve Seats
 - (i) Valve seats shall be reinforced natural or synthetic rubber reinforced with high resiliency fabric inserts. The mating seat shall be of type 304 stainless steel. Seats shall be of a design that permits adjustment, removal or replacement of the seat at

- the site of the installation without removal of the valve from the line. Seats that are clamped or mechanically secured are preferred over epoxy retained seats.
- (ii) Valve seats shall be manufactured from a solid mass rather than layers of rubber bonded together.
 - (iii) Valves with a rubber seat mounted on the valve disc shall meet the following conditions:
 - a) The disc seats shall be offset from the centre line of the shafts so that the rubber seat forms a continuous uninterrupted ring.
 - b) An insert of stainless steel shall be provided in the body to provide a smooth seating surface for the rubber disc seat.
 - (iv) Mechanically retained rubber seats shall be held in position on the disc or body by a segmented retaining ring secured by type 316 stainless steel nuts and bolts which by tightening will slightly deform the rubber seat to maintain proper contact with the seat face throughout the entire circumference.
- (j) Bearings
- (i) Bearings in the valve body for shaft ends shall be of the sleeve type made of self-lubricating material such as Teflon filled acetal or approved equal.
 - (ii) Each valve shall be equipped with one or two thrust bearings of corrosion resistant material on the shaft, outboard of the shaft seal or in the actuator housing.
- (k) Shaft Seals
- (i) Shaft seals shall be designed for the use of standard split-V type packing, standard O-ring seals or pull down packing as described in Section 4.5.7 of the latest revision of AWWA Standard C504.
- (l) Painting and Coating
- (i) Interior surfaces shall be coated with a protective system in accordance to AWWA Standard C550 – Protective Interior Coatings of Valves and Hydrants, which can be used in a potable water system.
 - (ii) Interior coatings shall comply with ANSI/NSF 61 “Drinking Water System Components – Health Effects”.
 - (iii) 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. Application as per manufacturer’s recommendations.
 - (iv) Coatings shall be holiday free as defined in Section 5.2.3 of AWWA Standard C550.
 - (v) Exterior surfaces shall be painted consistent with interior surfaces.
 - (vi) Surfaces shall be prepared to NACE SSPC-SP10- Near-White Metal Blast Cleaning.
 - (vii) All machined surfaces shall be protected with an approved coating, prior to assembly to prevent rusting. Machined surfaces for valve seats shall have particular attention paid to, as this area if untreated, has proven to support "barnacle growth" which can prevent watertight closure of the valve.
- (m) Acceptable Products
- (i) DeZurik
 - (ii) K-Flo 47 Series
 - (iii) Mueller
 - (iv) Pratt
 - (v) Rodney Hunt
 - (vi) Val-Matic
 - (vii) Or Approved Equal

E4.4 Submittals

(a) Shop Drawings

- (i) Submit Shop Drawings in accordance to D10.
- (ii) Shop Drawings shall state all performance and design criteria.
- (iii) Allow three (3) calendar weeks in delivery schedule for review of Shop Drawings, commencing at the date of receipt by the Contract Administrator.
- (iv) At the time of submission, the Contractor shall inform the Contract Administrator in writing of any deviation in the Shop Drawings from the requirements of the Contract documents. The Shop Drawings shall include a copy of the Specifications attached in Part E and marked by the Contractor as either in "compliance" or "deviation" with comment.
- (v) Provide valve torque calculations for operating conditions listed.

(b) Affidavit of Compliance

- (i) Provide Affidavit of Compliance stating that valves meet requirements of the latest revision of ANSI/AWWA Standard C504 and terms of this Specification.

(c) Testing

- (i) Provide all factory pressure test reports.
- (ii) Provide protective coating thickness measurements as specified in ANSI/AWWA Standard C550.
- (iii) Provide recent coating qualification testing results as specified in ANSI/AWWA Standard C550 Section 5.2.1.

E4.5 Valve Testing and Acceptance

E4.5.1 Factory Tests

(a) General

- (i) All acceptance testing shall be completed in the presence of the Contract Administrator or his appointed representative, unless the Contract Administrator waives this requirement. Provide a minimum of two (2) weeks notice of testing schedule to the Contract Administrator.
- (ii) Testing of valves and actuators, including pressure tests, paint and coatings and electrical tests shall be coordinated to minimize number of plant visits.
- (iii) If the Contract Administrator waives witnessing of testing as indicated in E4.5.1(a)(i), provide all testing results to the Contract Administrator for review prior to shipping valves.

(b) Butterfly Valves

- (i) All valves shall be tested with mated actuators mounted and adjusted.
- (ii) All valves shall be tested with valves mounted in the vertical operating orientation.
- (iii) Each valve shall be subjected to hydrostatic tests under a pressure (1000 kPa for class 150B valves) by the manufacturer at their facilities prior to shipping. The tests shall be conducted in the following manner, in accordance with the latest revision of AWWA Standard C504.
 - ◆ A hydrostatic pressure of (1000 kPa for class 150B valves) shall be applied through bulkheads, alternately to the two sides of the closed disc with the opposite side open to inspection. Under this pressure, the valve seat shall be perfectly watertight.
 - ◆ A hydrostatic pressure of (2000 kPa for class 150B valves) shall be applied to the body of the valve with bulkheads closing both flanges and the disc open. Under this pressure there shall be no leakage through the

metal or joints, no permanent deformation of the castings, and no other defects.

- (iv) The following information shall be supplied by the Contractor prior to delivery of the valves:
- ◆ A certified copy of the chemical and physical analysis on all materials used in the manufacturer of the valve(s) or certification that the materials used are in strict accordance with this Specification.
 - ◆ Copies of the test reports for Performance, Leakage and Hydrostatic Tests performed in accordance with AWWA Standard C504. Included in the report shall be the signature of the official who is responsible for the valve assembly and testing.

(c) Protective Coatings

- (i) Conduct non-destructive film thickness testing, in accordance to NACE SSPC PA 2, on both interior and exterior surfaces and provide comparison to qualification standard, as per AWWA Standard C550.
- (ii) Conduct low voltage holiday testing as specified in AWWA Standard C550 section 5.2.3. Completed coating shall be holiday-free.
- (iii) The Contract Administrator will conduct holiday testing to NACE RP01188-88.
- (iv) The Contract Administrator will conduct disbondment testing in accordance to ASTM D 4541. Tensile adhesion shall be acceptable if a minimum tensile adhesion rating of 3447 kPa (500 psi) is achieved.

E4.5.2 Field Tests

(a) Butterfly Valves

- (i) The Contractor shall perform a hydrostatic leak test, in the presence of the Contract Administrator, on all valves once they arrive at the City warehouse.
- (ii) The City will provide a suitable blind flange for testing.
- (iii) The Contractor shall provide 3 millimetre SBR gasket, bolts, and testing equipment, suitable to conduct tests.
- (iv) The test shall be performed as follows:
 - ◆ The valve shall be orientated in the vertical position.
 - ◆ A gasketed, steel blind flange with a tapped fitting suitable for introduction of compressed water, shall be bolted in place.
 - ◆ The space between the blind flange and valve disc shall be filled through the center port, and air bled off through the top port. Once all air has been expelled, the top test port shall be closed.
 - ◆ A pressure of 1000 kPa for class 150B valves shall be applied through the fitting and maintained for 10 minutes. Under this pressure the valve seat shall be perfectly watertight.
 - ◆ The test shall be repeated for the opposite side.

E4.5.3 The Contractor shall ensure a qualified representative of the valve manufacturer is present for the testing of the valves to correct any deficiencies found.

E4.5.4 Acceptance

- (a) Upon completion of delivery and testing specified, the Contractor shall give notice to the Contract Administrator so that arrangements for receipt and inspection can be made. The shipping lists of materials will be carefully checked by the Contractor in the presence of the Contract Administrator and the City.
- (b) Written acceptance of receipt, at delivery, by the installation contractor shall constitute "Delivery to Site" under this Contract. A representative from each of the following

groups will be in attendance at the time of delivery: The Contractor, installation contractor, and the Contract Administrator. A duly executed "Certificate of Equipment Delivery" (Form 200) shall be completed. A sample of this certificate is included in Part F. Any damage identified during the inspection shall be repaired as per the manufacturer's recommendations by the Contractor at no cost to the City.

E4.6 Measurement and Payment

- (a) Measurement and payment for "Supply and Delivery of 600 millimetre AWWA C504 Butterfly Valves and Manual Actuators" will be made at the Contract Unit Price for each valve installation location listed in Form B: Prices, and shall include valve, actuators, delivery and in-warehouse testing and operation and Maintenance manuals. Payment will be made on the following payment schedule:
 - (i) Seventy-five (75) percent upon delivery and completion of Form 200.
 - (ii) Twenty-two (22) percent upon satisfactory installation and commissioning, and completion of Form 202 and Form 203.
 - (iii) Three (3) percent upon delivery and acceptance of Operation and Maintenance Manuals.

E5. MANUAL VALVE ACTUATORS

E5.1 Description

- (a) This Specification shall cover the design and manufacture of manual actuators for butterfly valves to be supplied under this Contract. This Specification is supplementary to and shall be read together with the latest revision of AWWA Standard C504, "Rubber-Seated Butterfly Valves".
- (b) All manual actuators to be supplied under this Contract shall be designed and manufactured by a company having at least five (5) years prior experience in manufacturing these types of products in the size and to the pressure ratings as those specified herein.

E5.2 General Design Requirements

- (a) Quarter turn, manual geared actuators shall be of worm gear drive type designed for one person operation and for a maximum pull on the handwheel rim, at maximum torque conditions of not more than 356 Newtons (80 ft pounds).

E5.3 Gearing and Enclosure

- (a) Actuators shall be manual geared with a ball bearing mounted worm gear drive, machine cut gear teeth, and be totally enclosed in a sealed housing sufficient to permit normal operation even when totally submerged in water. Travelling nut type of mechanisms will not be accepted. Gear lubricant shall be of the bulk grease type; synthetic lubricants will not be accepted.
- (b) Number of actuator turns to open or close the valve shall be kept to as few as possible to avoid overtorquing and damage to the actuator.
- (c) Submersible rating shall be adequate for 7.5 metres water submergence for forty-eight hours.
- (d) Accessible parts of the actuator requiring lubrication shall be provided with button-head alemite grease fittings.

E5.4 Input Limit Stops

- (a) Adjustable, external stop-limiting devices shall be provided on the actuators to prevent over-travel of the valve disc in the open and closed position.

- (b) Under circumstances where spur gear attachments are installed on the input side of the actuator to facilitate the maximum input operating torque of 356 Newtons (80 ft. pounds), input limit stops shall be installed on the input side of the spur gear attachment.
- (c) A shear pin or other torque regulating device shall be provided on the actuator or handwheel/operating nut as an extra precaution against actuators being over-torqued.

E5.5 Handwheel

- (a) Each actuator shall be equipped with a 450 millimetre (min.) to 600 millimetre (max.) diameter handwheel fitted with an operating nut secured in position by a lock nut, pin or key. The operating nut shall be 49 millimetres square at the top, 51 millimetres square at the base and 45 millimetres high. The handwheel shall be made of cast iron or aluminum of the rimmed type with finger grips, an arrow, the word "OPEN" cast in relief on the rim and have an easy slide fit onto the mating shaft. Direction of opening shall be counter clockwise. Spinners shall be provided on all handwheels.
- (b) The handwheel shall be located sufficiently away from the valve flanges, housings, etc. such that personnel will not hit their knuckles on any of these obstructions when using the handwheel.

E5.6 Valve Position Indicator

- (a) A mechanical, valve position indicator shall be provided and mounted on the outside of each valve actuator. The dial or scale plate shall be 316 stainless steel and shall be clearly graduated and marked. A 316 stainless steel pointer shall be aligned to show the exact position of the valve disc in the valve body. The fastener for the indicator dial shall be made of 316SS stainless steel.
- (b) There shall also be a visible indication on the valve shaft end showing the position of the valve disc in relation to the shaft to ensure proper relation of the disc and indicating mechanism in the event an actuator has to be removed and replaced on a valve.

E5.7 Protective Coatings

- (a) All external ferrous components including adaptor and mounting plates, shall be painted and tested in accordance to Clause E4.3(l) Painting and Coating and Clause E4.5.1(c) of this Specification.
- (b) Any touch-up paintwork required during installation shall be undertaken by the installation contractor. The touch-up paint shall be of the same colour and specifications used in the above clauses and shall be supplied by the Contractor. The Contractor shall provide a minimum of one (1) litre of paint product for this purpose.

E5.8 Acceptable Manufacturers

- (a) Rotork
- (b) Limitorque

E5.9 Measurement and Payment

- (a) Measurement and payment for manual actuators will not be made. The cost of the actuators shall be included in the price for the butterfly valves as listed in Form B: Prices.

E6. INSPECTION OF INSTALLATION OF BUTTERFLY VALVES AND ACTUATORS

E6.1 General

- (a) The butterfly valves and actuators will be installed by the installation contractor forces at a later date (Fall 2005) and the Contractor will be required to provide a qualified technical representative to:

- (i) Be present at the field testing of valves and actuators.
- (ii) Inspect each valve and actuator installation, provide any assistance necessary in setting up the actuators, instruct City personnel in the operation and maintenance of the actuators and provide a letter or certificate of satisfactory installation for each valve and actuator.

E6.2 Unless otherwise specifically stated in the Specifications, the Contractor shall provide, and shall allow for in his Bid, a factory-trained representative who, in conjunction with the Contract Administrator, shall give instructions regarding the installation of the equipment. The Contractor's representative shall complete Form 201, attached in Part F, when he is satisfied that the installation contractor has received adequate instruction in the installation of the Contractor's equipment. The completed Form 201 shall be submitted to the Contract Administrator prior to the commencement of equipment installation.

E6.3 The Contractor's factory-trained representative shall visit the site as required to ensure that the installation work is being performed in a proper and workmanlike manner. The Contractor's representative shall complete Form 202, attached in Part F, following installation of the equipment. The completed Form 202 shall be submitted to the Contract Administrator prior to the commencement of functional testing. The Contractor shall allow for a minimum of one (1) visit to each of the following sites:

- (a) Charleswood Feedermain relocation - Kenaston Boulevard at Wilkes Avenue.
- (b) Lagimodiere Feedermain extension - Lagimodiere Boulevard and Warde Avenue.

E6.4 The Contractor's representative shall be present to supervise the commissioning, initial operation and functional testing of the equipment. The Contractor shall be required to complete Form 203, stating that his qualified representative has checked the installed equipment and found the equipment to be satisfactorily installed and in specified working operation. The completed Form 203 shall be received by the Contract Administrator prior to commencement of the Warranty period. The scheduling of the Contractor's factory-trained representative's visits to the site shall be to the mutual satisfaction of the Contractor and the installation contractor, and shall be agreed upon before the work of installing the equipment begins. The Contractor shall allow for a minimum of one (1) site visit to each of the following sites, for the initial operation, functional testing and commissioning:

- (a) Charleswood Feedermain relocation - Kenaston at Wilkes.
- (b) Lagimodiere Feedermain extension - Lagimodiere Boulevard and Warde Avenue.
- (c) If the Contractor is requested by the installation contractor or the Contract Administrator to send a representative to the jobsite to investigate or rectify a suspected fault in the equipment furnished by the Contractor but it is found that the said equipment or Contractor is not at fault, the Contractor shall be entitled to be reimbursed for all reasonable costs and expenses incurred by him in sending his representative to the jobsite, at the per diem rate listed in Form B: Prices. Additional time required for testing, installation inspection and commissioning required as a result of deficient work or materials attributed to supply and delivery of the valves shall be borne by the Contractor.

E6.5 Operating equipment and systems shall be performance tested by the Contractor in the presence of the Contract Administrator to demonstrate compliance with the specified operating requirements. Functional testing shall be conducted under the specified design operating conditions or under such simulated operating conditions as recommended or approved by the Contract Administrator.

E6.6 Measurement and Payment

- (a) Measurement and payment for inspection, installation, commissioning and testing shall be at the Contract Unit Price, per day for "Supply of Site Inspection and Commissioning

Services". Payment shall be compensation in full for site time and expenses, including all travel and related expenses.

E7. OPERATION AND MAINTENANCE MANUALS INCLUDING SPARE PARTS LISTS

- E7.1 For each type of equipment, five (5) sets of Operation and Maintenance Manuals shall be submitted to the Contract Administrator for review. The Contractor shall provide these manuals thirty (30) Calendar Days in advance before commencement of equipment startup and commissioning.
- E7.2 All instructions in these manuals shall be in the English language to guide the City in the proper operation and maintenance of the equipment.
- E7.3 Bind contents in a three-"D-Ring", hard-covered, plastic-jacketed binder with full cover and spine insert. Organize contents into applicable sections of Work, parallel to Specifications breakdown.
- E7.4 Provide all required data in electronic format. Text documents shall be Microsoft Word or Adobe format. Drawings, scanned documents, parts lists, test forms shall be in Adobe format. If possible, documents shall be an original electronic format. Documents that require scanning shall be high quality scans and fully legible. Documents shall be submitted on a high quality compact disk. Compact disk and case shall be labeled in type, with the following:
- (a) Bid opportunity number.
 - (b) Job Title.
 - (c) Description of Equipment.
- E7.5 In addition to information called for in the Specifications, the following shall be included:
- (a) Title sheet, labelled "Operation and Maintenance Instructions," containing project name and date.
 - (b) List of contents.
 - (c) Reviewed shop drawings of all equipment.
 - (d) Certified factory test results.
 - (e) Full description of entire mechanical system, operation, and control.
 - (f) Names, addresses, and telephone numbers of all major sub-contractors and suppliers.
 - (g) Detailed specification and operating and maintenance instructions for all items of equipment provided including a preventative maintenance program.
 - (h) An itemized list of spare parts recommended for five years of service, particularly those components failure of which will render the equipment supplied inoperative. Any special tools or other ancillary items necessary for commissioning and/or proper operation and maintenance shall also be listed.
 - (i) Part books that illustrate and list all assemblies, sub-assemblies, and components.
 - (j) Routine test procedures for all electronic and electrical circuits.
 - (k) Troubleshooting chart covering the complete valve and controls/electrical power systems, showing description of trouble, probable cause, and suggested remedy.
- E7.6 The Contractor shall modify and supplement the manual as required by the Contract Administrator. When accepted, five (5) additional copies, including electronic versions, shall be provided by the Contractor for distribution purposes. The City's staff shall be in receipt of these manuals prior to the date set out for Substantial Performance. The Contract shall not be considered complete, for the purpose of issuing a Certificate of Substantial Performance, until

the above manuals have been completed and submitted to the satisfaction of the Contract Administrator.

E7.7 Measurement and Payment

- (a) Measurement and payment for operation and maintenance manuals will not be made. The cost of the Operation and Maintenance Manuals shall be included in the price for the butterfly valves as listed in Form B: Prices

PART F - 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)