



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 567-2012

DEACON RESERVOIR INTERCONNECTOR CULVERT REHABILITATION

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 DEACON RESERVOIR INTERCONNECTOR CULVERT REHABILITATION

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, August 10, 2012.

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

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

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site at 9:00 A.M. on July 26, 2012 to provide Bidders access to the Site. Bidders are requested to meet at reservoir gate, east side of Provincial Road 207, north of GWWD Railway.

B3.2 The Bidder is advised that site access is restricted and access to view the site can only be made under supervision of the City.

B3.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B3.4 Proponents will not be allowed to take pictures at any of the site investigations. The Proponent may request pictures of specific areas from the Project Manager identified in D4. The pictures will then be issued to all the Proponents registered for the site investigations.

B3.5 Although attendance at the Site Investigations is not mandatory, the City strongly suggests that Proponents attend.

B3.6 Proponents are required to register for the Site Investigations at least 48 hrs. prior by contacting the Contract Administrator identified in D4

B3.7 Bidders registered for the site visit must provide the Project Manager identified in D4 with a Public Safety Verification search obtained not earlier than one (1) year prior to the site visit.

(a) The Public Safety Verification Check may be obtained from BackCheck. Forms to be completed can be found on the website at: <http://www.backcheck.net/>. Note that the check will take between 12 and 48 hrs. to complete. See Appendix A for further Information

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 Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B5.2.2 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

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/her sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- 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/she 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 may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with 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.
- B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.6 deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B15.1(a).

B7. BID COMPONENTS

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices;
 - (c) Bid Security
 - (i) Form G1: Bid Bond and Agreement to Bond, or
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or
a certified cheque or draft;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B7.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.
- B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B15.1(a).
- B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B7.8 Bids shall be submitted to:

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

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/her own name, his/her name shall be inserted;
- (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
- (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
- (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

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 12 of Form A: Bid shall be signed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers 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/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

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 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.

B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

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; and
- (b) be financially capable of carrying out the terms of the Contract; and
- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

B10.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B10.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work; and
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
- (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);

B10.4 Further to B10.3, the Bidder shall be prepared to submit, within three (3) Business Days of a request by the Contract Administrator, a complete list of relevant project experience and key project personnel whom the Bidder proposes to engage (Form L: Contractor Experience):and shall list a minimum of:

- (a) A minimum of three (3) projects including contact references, demonstrating qualification in:
 - (i) installation of large diameter HDPE Pipe (>1200 mm)
 - (ii) installation and grouting of large diameter pipe liners (>1200 mm), and
 - (iii) Marine installations of large diameter pipe
- (b) Resumes of key project personnel and experience demonstrating qualification in:
 - (i) Installation of large diameter HDPE Pipe (>1200 mm)
 - (ii) installation and grouting of large diameter pipe liners (>1200 mm), and
 - (iii) Marine installations of large diameter pipe
- (c) Resumes of HDPE Fusing Technicians
- (d) Resumes of a minimum of one (1) supplier support personnel and experience in installing large diameter HDPE pipe, who will attend the site as specified herein.

B10.5 In addition to submitting its Subcontractor List (Form J), 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.

B10.6 Further to B10.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the

Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association or by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or
- (b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>)

B10.7 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B10.8 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.

B11.1.2 All signatures on bid securities shall be original.

B11.1.3 The Bidder shall sign the Bid Bond.

B11.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

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

B12.1.1 Bidders or their representatives may attend.

B12.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/default.stm>

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 Division website at <http://www.winnipeg.ca/matmgt/default.stm>

B12.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B13. IRREVOCABLE BID

B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 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 11 of Form A: Bid.

B14. WITHDRAWAL OF BIDS

B14.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B14.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

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 12 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 will:

- (a) retain the Bid until after the Submission Deadline has elapsed;
- (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B14.1.3(b), declare the Bid withdrawn.

B14.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her 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, or acceptable deviation there from (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 is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

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

B15.4.2 Further to B15.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B16. AWARD OF CONTRACT

B16.1 The City will give notice of the award of the Contract 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, in accordance with B15.

B16.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of relining of two existing 2500 millimetre wide by 1800 millimetre wide by 110 metre long precast concrete culvert with a 1600 millimetre (nominal) high density polyethylene liner, concrete bulkheads, annular grouting and associated work.

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

- (a) Installation of 1600 millimetre (nominal) liner.
- (b) Design, procurement and installation of temporary, diver installed pressure bulkhead.
- (c) Dewatering and cleaning of culvert.
- (d) Blocking of pipe liner.
- (e) Construction of permanent cast-in-place concrete bulkheads.
- (f) Annular grouting with low density cellular concrete grout.
- (g) Cleanup and restoration.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "AWWA" means American Water Works Association
- (b) "CSA" means Canadian standard Association;
- (c) "NSF" means National Sanitation Foundation;
- (d) "ASTM" means American Society for Testing and Materials;
- (e) "CSA" means Canadian Standards Association;
- (f) "ACI" means American Concrete Institute; and
- (g) "HDPE" means High Density Polyethylene

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is AECOM, represented by:

Marvin McDonald, C.E.T.
Project Manager

Telephone No. 204-477-5381

Facsimile No. 204-284-2040

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

D4.3 Bids Submissions must be submitted to the address in B7.8.

D5. CONTRACTOR'S SUPERVISOR

- D5.1 At the pre-construction meeting, the Contractor shall identify his/her 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 C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- 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 facsimile number identified in D4.1.
- D6.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following facsimile number:
The City of Winnipeg
Chief Financial Officer
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 facsimile number:
The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services
Facsimile No.: 204-947-9155

D7. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

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

D9. SAFE WORK PLAN

- D9.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

- D9.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Safety/default.stm>

D10. INSURANCE

- D10.1 The Contractor shall provide and maintain the following insurance coverage to remain in place at all times during the performance of the Work:

- (a) General liability in an amount of no less than five million (\$5,000,000) inclusive with The City of Winnipeg added as an additional insured; such liability policy to also contain a cross-liability clause, blanket contractual liability, non-owned automobile liability and products and completed operations cover with reference to diving operations including coverage for vessels under 26' **IF COVERAGE FOR VESSELS IS EXCLUDED UNDER GENERAL LIABILITY THEN (b) BELOW IS REQUIRED IN ADDITION TO (a).**
- (b) Marine Protection and Indemnity Liability to a limit of \$5,000,000 per occurrence, each vessel with The City of Winnipeg added as an additional insured.
- (c) Wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000) written in the name of the Contractor, The City of Winnipeg and all other contractors, -sub-contractors, engineering and architectural consultants, etc. ; and said policy to include twenty-four (24) months completed operations.
- (d) Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The limit for Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.
- (e) Project specific Contractors Pollution Liability (CPL) insurance in the amount of at least one million dollars (\$1,000,000) per occurrence and one million dollars (\$1,000,000) aggregate insuring against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder performed by the Contractor, its agents, representatives, employees or subcontractors. Coverage to include:
 - (i) bodily injury, sickness, disease, mental anguish or shock sustained by any person, including death;
 - (ii) property damage including physical injury to or destruction of tangible property and the resulting loss of use thereof; loss of use of tangible property that has not been physically injured or destroyed; diminution in value; and Natural Resource Damages;
 - (iii) clean-up costs (including restoration/replacement costs);
 - (iv) defense including costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages.
 - (v) transported cargo and Non-Owned Disposal Sites (blanket basis)

Coverage shall apply to both sudden and gradual pollution conditions, including the further disruption of pre-existing conditions, arising from the services rendered by the Contractor or others on their behalf. Further, coverage shall apply to conditions on, at, under and emanating from the job site including the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, structures thereupon, the atmosphere or any watercourse or body of water, which results in any loss or damages defined above. Coverage shall not contain any "Insured vs Insured" exclusions preventing the City from bringing a claim against the Contractor, nor any restrictions for property of others in the care, custody or control of the Contractor.

Contractor's Pollution Liability Policy to remain in place during the performance of the Work and for 24 months after completion.

- (f) Marine Hull Liability insurance for all owned and non-owned vessels to be used by the Contractor directly or indirectly in the performance of the Work. Such policy to contain a waiver of any subrogation right which the Contractor's Insurers may have against The City and against those for whom the City is, in law, responsible whether any such damage is caused by the act, omission or fault of the City or by those for whom the City, is in law, responsible.
- (g) For any design to facilitate Shop Drawing Submissions on this project, the Contractor or Sub-contractor shall provide and maintain the following insurance coverage:
 - (i) Project specific professional liability insurance in the amount of at least two million dollars (\$2,000,000) per occurrence and two million dollars (\$2,000,000) aggregate, per claimant basis. Professional Liability insurance to remain in place during the performance of the Work and for 24 months after substantial completion of the project. The party responsible for the design shall be responsible for deductibles up to \$50,000 maximum of any one loss.

D10.2 The Contractor shall be responsible for any and all deductibles under items D10.1(a) to D10.1(g).

D10.3 Workers compensation must be in place in accordance with provincial legislation.

D10.4 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

D10.5 The Contractor shall not cancel, or cause any such policy or policies to lapse without a minimum thirty (30) days prior written notice to the City.

D10.6 The Contractor shall provide the Contract Administrator with evidence of insurance at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than seven (7) Calendar Days from notification of the award of the Contract. The evidence shall be in a form of a certificate of insurance and must be satisfactory to the City Solicitor.

D10.7 All policies shall be in a form satisfactory to the City of Winnipeg and shall be kept in full force during the Work.

D11. PERFORMANCE SECURITY

D11.1 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.

D11.1.1 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.

D11.2 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 C4.1 for the return of the executed Contract.

D12. SUBCONTRACTOR LIST

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

D13. EQUIPMENT LIST

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

D14. DETAILED WORK SCHEDULE

D14.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least ten (10) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D14.2 The detailed work schedule shall consist of the following:

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

D14.3 Further to D14.1, the schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:

- (a) Temporary Bulkhead Templating and Fabrication
- (b) Mobilization
- (c) Pipeline Assembly and Testing
- (d) Pipeline installation - each Culvert
- (e) Pressure Bulkhead Installation - each Culvert
- (f) Pipeline dewatering, cleaning and blocking - each Culvert
- (g) Construction of Permanent Bulkheads - each Culvert
- (h) Annular Grouting - each Culvert
- (i) Refilling and return pipe to service - each culvert
- (j) Substantial Performance
- (k) Total Performance

D14.4 Further to D14.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D15. COMMENCEMENT

D15.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

D15.2 The Contractor shall not commence any Work on the Site until:

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D8;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the Safe Work Plan specified in D9;
 - (iv) evidence of the insurance specified in D10;
 - (v) the performance security specified in D11;
 - (vi) the Subcontractor list specified in D12;
 - (vii) the equipment list specified in D13; and
 - (viii) the detailed work schedule specified in D14.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- (c) The Contractor has provided Security Clearances as identified in E3 and Appendix A

D15.3 The Contractor shall not commence the Work on the Site before September 4, 2012.

D15.4 The City intends to award this Contract by August 31, 2012

D15.4.1 If the actual date of award is later than the intended date, the dates specified for Commencement, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D16. WORKING DAYS

D16.1 Further to C1.1(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.

D16.2 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.

D16.3 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.

D16.4 The Contract Administrator will furnish the Contractor with a daily record for each major type of work showing various information concerning the equipment, the time it worked, could have worked and Working Days charged. This report is to be signed each day by an authorized representative of the Contractor.

D17. SCHEDULE RESTRICTIONS

D17.1 Aqueduct, Yard Piping and Reservoir Operations

- (a) Aqueducts, existing yard piping and reservoir shutdown periods are scheduled based on a number of factors including routine maintenance and repair work along the Aqueduct, water demand, weather, reservoir operation and other factors. The City will endeavour to make the specified time periods available to the Contractor to schedule his work requiring removal of the Aqueduct and reservoir piping from service, without limiting the City's control over the operation of the regional water infrastructure to complete other work, maintain adequate water supply and storage of water and maintain the integrity of the infrastructure. The City will reserve the right to cancel and/or delay these schedule dates at any time, due to any circumstances that could adversely affect the Aqueducts or water supply, including but not limited to high water demand, abnormal weather, failures of related water system components and/or security concerns.
- (b) Operations involving shutdown or excessive risks to the Cell 1 supply chains shall be closely monitored. Only one of the two interconnection culverts shall be removed from service at any time. One culvert shall be available for return to service at all times.
- (c) At any time during construction, the Contractor shall be prepared to secure and evacuate both culverts, and the Cell 1 and 2 supply reservoirs, in the event Cell 1 must be returned to service, within 48 hours of a written request by the Contract Administrator.
- (d) The Contractor shall notify the Contract Administrator a minimum of ten (10) Business Days of intent to commence in reservoir works.
- (e) The Contractor shall notify the Contract Administrator of requiring operations to gates or other water control structures a minimum of 5 Business Days of requiring the operations.
- (f) The Cell 1 reservoir chain will not be taken out of commission prior to September 30, 2012.

D18. CRITICAL STAGES

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

- (a) Completion of pipe liner and return culverts to service – June 1, 2013.

D19. SUBSTANTIAL PERFORMANCE

D19.1 The Contractor shall achieve Substantial Performance within fifty (50) consecutive Working Days of the commencement of the Work as specified in D15.

D19.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D19.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D20. TOTAL PERFORMANCE

D20.1 The Contractor shall achieve Total Performance within sixty (60) consecutive Working Days of the commencement of the Work as specified in D15.

D20.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D20.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

D21. LIQUIDATED DAMAGES

D21.1 If the Contractor fails to achieve Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

- (a) Substantial Performance – two thousand dollars (\$2,000);
- (b) Total Performance – five hundred dollars (\$500);

D21.2 The amounts specified for liquidated damages in D21.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Substantial Performance or Total Performance by the days fixed herein for same.

D21.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

CONTROL OF WORK

D22. JOB MEETINGS

D22.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

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

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

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

MEASUREMENT AND PAYMENT

D24. PAYMENT

D24.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D25. WARRANTY

D25.1 Warranty is as stated in C13.

D25.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

BID OPPORTUNITY NO. 567-2012

DEACON RESERVOIR INTERCONNECTOR CULVERT REHABILITATION

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)**
(See D11)

(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 567-2012
DEACON RESERVOIR INTERCONNECTOR CULVERT REHABILITATION

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

(Name of Contractor)

(Address of Contractor)

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

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM K: EQUIPMENT
(See D13)

DEACON RESERVOIR INTERCONNECTOR CULVERT REHABILITATION

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

FORM K: EQUIPMENT
(See D13)

DEACON RESERVOIR INTERCONNECTOR CULVERT REHABILITATION

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

FORM L: CONTRACTOR EXPERIENCE
(See B10)

Attach additional resumes and documents as required. Indicate whether Projects/Project Personnel are for Contractor or Subcontractor, and if applicable include name of Subcontractor.

1. Project References:

Project Client/Contact: _____
(Name)

(Address)

(phone) (email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>

2. Project References:

Project Client/Contact: _____
(Name)

(Address)

(phone) (email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>

3. Project References:

Project Client/Contact: _____

(Name)

(Address)

(phone)

(email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>
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_____	_____	_____
_____	_____	_____
_____	_____	_____

4. Project References:

Project Client/Contact: _____

(Name)

(Address)

(phone)

(email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>
-------------	---	--------------

_____	_____	_____
_____	_____	_____
_____	_____	_____

5. Project Personnel:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

6. Project Personnel:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

7. Project Personnel:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

8. Project Personnel:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

9. Project Personnel-Suppliers:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

10. Project Personnel-Suppliers:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

11. Project Personnel-Suppliers:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm>
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
1-0620M-C0001-001	Cover Sheet
1-0620M-C0002-001	Site Location and Staging Plan
1-0620M-C0003-001	Cell 1&2 North Interconnector Culvert Existing Plan and Profile
1-0620M-C0004-001	Cell 1&2 South Interconnector Culvert Existing Plan and Profile
1-0620M-C0005-001	North Interconnector Culvert Proposed Profile and Details
1-0620M-C0006-001	South Interconnector Culvert Proposed Profile and Details
1-0620M-C0007-001	Miscellaneous Details

- E1.4 The following Historic Drawing Information is provided for information only, in Appendix B.

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
D-1222	Deacon Reservoir Stage 1 – Cell Interconnection Box Culvert Details
D-1339	Deacon Reservoir Cell II – Cell Interconnection Box Culvert Details
D-1341	Deacon Reservoir Cell II – Access Road
D-1345	Deacon Reservoir Cell II –Box Culvert Gate Chambers
F-706-3	Deacon Reservoir Precast Box Culvert - Manufacturer Shop Drawing (typical)

GENERAL REQUIREMENTS

E2. OFFICE FACILITIES

- E2.1 The Contractor shall supply office facilities meeting the following requirements:
- The minimum facility floor area shall be 12 square metres.
 - The facility shall have a door with lockable hardware.
 - The facility shall have lighting, heating and cooling provisions to maintain a temperature between 15°C and 25°C.
 - The facility shall have a desk, chair and plan table, and file cabinet.
 - Portable washroom facility with lockable door.
- E2.2 All temporary facilities shall be located outside of reservoir berms.
- E2.3 Location of temporary office facilities shall be approved by the Contract Administrator.

E3. SITE SECURITY AND PROTECTION

E3.1 Description

- (a) This specification covers on site security requirements during construction.

E3.2 Site Security

- (a) All personnel on site are required to obtain a Criminal Record Search Certificate and Public Safety Verification Check, as outlined in Appendix A. The Contractor shall submit copies of the Criminal Record Search Certificates to the Contract Administrator identified in D4. The City of Winnipeg Water Services Division will issue time-limited photo security passes to personnel identified as approved to work on the project. Personnel receiving passes are not permitted to provide or share security passes with other personnel to gain access to the Site. Violation of this policy will result in immediate dismissal of the personnel from the Site.
- (b) The City of Winnipeg will provide one (1) security key to the Contractor, upon receipt of a five hundred dollar (\$500) security deposit cheque. The cheque will be returned upon return of the security key. The Contractor shall provide the name and contact information for the person in charge and responsible for security on site.
- (c) On a daily basis during course of work, advise the City of Winnipeg Deacon Control Centre at 204-986-4781 as to the status of the site security, and in particular when Contractor staff leave the Site. The Contractor is not required to provide security services when not on site.
- (d) The Deacon site is monitored by CCTV and other security monitoring devices, and unauthorized attendance to the Site will result in dispatch of Police or security personnel to the Site.
- (e) Reservoir cell gates are alarmed. Contact Control Operator at 204-986-4781 prior to opening gates, and advise Operator when gates are closed and locked at the end of the workday, or when vacating site temporarily.
- (f) When security personnel and crews are not within visual range of Reservoir access gates, the gates shall be closed.
- (g) The Contractor shall notify the Contract Administrator a minimum of 2 Business Days in advance of works where gates to the reservoirs require opening.

E3.3 Emergency Response

- (a) The following lists appropriate Emergency Response Contacts for the Site;
 - (i) Fire, Rescue and Paramedics – City of Winnipeg, 911. If Provincial 911 is reached ask to be transferred to City of Winnipeg 911.
 - (ii) Police – RCMP, Provincial 911

E3.4 Photographs

- (a) All site photographs required for construction documentation shall be approved by City of Winnipeg Water Services Division representative, as identified by the Contract Administrator.

E4. CONDITION, PROTECTION OF AND ACCESS TO FACILITIES

E4.1 Condition of the Interconnection Culverts

E4.2 The Cell 1 and 2 Interconnection culverts consist of the following:

- (a) Cast-in place concrete culvert from the Cell 1 outlet to the approximate outside toe of the Cell 1 Reservoir Dike, constructed in 1972.
- (b) Precast Concrete Culvert from the approximate Cell 1 dike outside toe to the Cell 2 inlet, constructed in 1978.

E4.2.1 The condition of the culverts is generally good, based on visual diver inspection. Video inspection of the culverts can be viewed at the office of the Contract Administrator.

E4.3 Protection of Buried Pipelines and Conduits

- (a) Equipment shall only be permitted to cross the interconnector culverts at existing roadways and designated locations.
- (b) Granular material, construction material, soil or other material shall not be stockpiled on the pipelines or within 5 metres of the pipe centerline.
- (c) Construction practices shall not subject the pipelines to asymmetrical loading at any time.
- (d) Construction practices or procedures at or near the pipelines shall not impart excessive vibration loads on the pipelines and/or cause settlement of the subgrade below the pipe.
- (e) Asymmetrical water pressures shall not be permitted to build up on one side of the pipe.
- (f) Further to CW 2030-R6, only smooth edged excavation buckets, soft excavation or hand excavation shall be used for excavation adjacent to, and over the pipelines.

E4.3.1 It is the Contractors' responsibility to ensure that all work crew members understand and observe the requirements of E4.1. Prior to commencement of on-site work, the Contractor's superintendent, foreman and heavy equipment operators shall attend an orientation meeting that will outline restrictions for working on and around pipelines and reservoir facilities. Failure to comply with these restrictions will be grounds for removing the offending personnel from the Site.

E4.4 Reservoir Vegetation

E4.4.1 The City will remove excess vegetation from the top of the Cell 2 west dike to facilitate unrestricted access to the reservoir, prior to construction.

E5. ENVIRONMENTAL PROTECTION

E5.1 The Contractor shall be aware that the Deacon Reservoir, surrounding Aqueducts, pipelines and Water Treatment Plant are for potable water supply and no contamination by fuel, chemicals, etc. shall be permitted at any time. Fuels or chemicals shall not be stored within 30 metres of the reservoirs, Aqueducts or potable water piping

E5.2 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the environmental protection measures as herein specified.

E5.3 Submittals

- (a) Environmental protection plan including:
 - (i) Names of persons responsible for ensuring adherence to Environmental Protection Plan.
 - (ii) Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
 - (iii) Names and qualifications of persons responsible for training site personnel.
 - (iv) Descriptions of environmental protection personnel training program.
- (b) The Contractor is required to prepare and submit the following to the Contract Administrator prior to commencing construction, if applicable:
 - (i) Storm Water Pollution Prevention Plan describing water quality protection measures including erosion and sediment controls, inspections, monitoring and staff training. The Plan shall also provide a schematic drawing indicating location and type of erosion and sediment protection measures.
 - (ii) Drawings showing locations of proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

- (iii) Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plans include measures to minimize amount of mud transported onto paved public roads by vehicles or runoff.
- (iv) Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.
- (v) Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- (vi) Construction Waste Management Plan describing onsite waste management, disposal, reuse or materials, recycling and staff training.
- (vii) Hazardous Material Spill Management Plan describing management, reporting, emergency response and contact numbers, and staff training.

E5.4 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:

- (a) Workplace Hazardous Material Information System (Hazardous Product Act and Canada Labour Code);
- (b) Canadian Environmental Protection Act;
- (c) Canadian Environmental Assessment Act;
- (d) Transportation of Dangerous Goods Act;
- (e) Manitoba Environmental Act;
- (f) The Endangered Species Act E111;
- (g) The Manitoba Nuisance Act N120;
- (h) The Public Health Act c.P210;
- (i) Manitoba Dangerous Goods, Handling, and Transportation Act;
- (j) Fisheries Act;
- (k) The Workplace Safety and Health Act W210; and
- (l) Current applicable associated regulations.

E5.5 The Contractor is advised that the following environmental protection measures apply to the Work.

E5.5.1 Materials Handling and Storage

- (a) Construction materials shall not be stored within five (5) metres of existing pipe centerlines.

E5.5.2 Fuel Handling and Storage

- (a) The Contractor shall abide by the requirements of Manitoba Environment for handling and storage of fuel products.
- (b) All fuel handling and storage facilities shall comply with The Dangerous Goods and Transportation Act Storage and Handling of Petroleum Products Regulation and any local land use permits.
- (c) Fuels, lubricants, and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act shall be stored and handled within the approved storage areas.
- (d) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
- (e) Products transferred from the fuel storage area(s) to specific work sites shall not exceed the daily usage requirement.

- (f) When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, a groundsheets of suitable material (such as HDPE) and size shall be spread on the ground to catch the fluid in the event of a leak or spill.
- (g) Refueling of mobile equipment and vehicles shall take place at least 100 metres from a watercourse.
- (h) The area around storage sites and fuel lines shall be distinctly marked and kept clear of snow and debris to allow for routine inspection and leak detection.
- (i) A sufficient supply of materials, such as absorbent material and plastic oil booms, to clean up minor spills shall be stored nearby on-site. The Contractor shall ensure that additional material can be made available on short notice.
- (j) Where stationary equipment is required to be erected on or within the reservoir dikes, equipment shall be staged on impermeable containment membrane or containment pans of sufficient volume to contain all hazardous fuels and liquids plus a safety factor of 50 percent.
- (k) Fueling of stationary equipment shall be completed with portable tanks containing only enough fuel to fill equipment. Use of fuel trucks on or within the Reservoir dikes is prohibited.

E5.5.3 Waste Handling and Disposal

- (a) The construction area shall be kept clean and orderly at all times during and at completion of construction.
- (b) At no time during construction shall personal or construction waste be permitted to accumulate for more than one day at any location on the construction site, other than at a dedicated storage area as may be approved by the Contract Administrator.
- (c) Indiscriminate dumping, littering, or abandonment shall not take place.
- (d) Equipment shall not be cleaned near watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.

E5.5.4 Dangerous Goods/Hazardous Waste Handling and Disposal

- (a) Dangerous goods/hazardous waste are identified by, and shall be handled according to, The Dangerous Goods Handling and Transportation Act and Regulations.
- (b) The Contractor shall be familiar with The Dangerous Goods Handling and Transportation Act and Regulations.

E5.5.5 Fires

- (a) Fires and burning of rubbish on site shall not be permitted.

E5.5.6 Emergency Spill Response

- (a) The Contractor shall ensure that due care and caution is taken to prevent spills.
- (b) The Contractor shall report all major spills of petroleum products or other hazardous substances with the potential for impacting the environment and threat to human health and safety to the Contract Administrator and Manitoba Environment, immediately after occurrence of the environmental accident, by calling the 24-hour emergency telephone phone number 204-945-4888.
- (c) The Contractor shall designate a qualified supervisor as the on-site emergency response coordinator for the project. The emergency response coordinator shall have the authority to redirect manpower in order to respond in the event of a spill.
- (d) The following actions shall be taken by the person in charge of the spilled material or the first person(s) arriving at the scene of a hazardous material accident or the on-site emergency response coordinator:
 - (i) Notify emergency-response coordinator of the accident:
 - identify exact location and time of accident
 - indicate injuries, if any

- request assistance as required by magnitude of accident (Manitoba Environment 24-hour Spill Response Line (204) 945-4888, Police (RCMP), Fire Department (City of Winnipeg), Ambulance, company backup)
- (ii) Assess situation and gather information on the status of the situation, noting:
 - personnel on site
 - cause and effect of spill
 - estimated extent of damage
 - amount and type of material involved
 - proximity to waterways and the Aqueduct
- (iii) If safe to do so, try to stop the dispersion or flow of spill material:
 - approach from upwind
 - stop or reduce leak if safe to do so
 - dike spill material with dry, inert sorbent material or dry clay soil or sand
 - prevent spill material from entering waterways and utilities by diking
 - prevent spill material from entering Aqueduct manholes and other openings by covering with rubber spill mats or diking
- (iv) Resume any effective action to contain, clean up, or stop the flow of the spilled product.
- (e) The emergency response coordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to the Manitoba Environment according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.

E5.5.7 Controlled Products

- (a) Materials classified as “Controlled Products” under Regulation 52/88, “Workplace Hazardous Materials Information System”, including amendments, are prohibited inside the Reservoir Dikes, unless the material will be directly employed in the Work.

E6. SUPPLY AND INSTALLATION OF TEMPORARY PRESSURE BULKHEAD

E6.1 Description

- (a) This specification covers supply, installation and removal of a temporary pressure bulkhead in the existing box culvert.

E6.2 Materials

E6.2.1 Temporary Pressure Bulkhead

- (a) Fabricated Aluminium 6061-T6
- (b) EDPM Seals
- (c) Provide set of replacement seals

E6.2.2 Approved Manufacturers

- (a) Mechanical Research and Design, Manitowoc, Wisconsin
Steven Backhaus
Mechanical Research & Design
7511 Center Road
Manitowoc, WI 54220
P. (920) 684-5608
Toll Free. 800-645-0808
F. (920) 726-5000
www.mechanicalresearch.com
- (b) Or Approved Equal in accordance to B6

E6.2.3 Design

- (a) Existing conduits shall be templated at the proposed installation location prior to fabrication. Templating shall confirm fabricated bulkhead can be transported to installation location, and successfully erected in place.
- (b) Bulkhead shall be designed for a differential static water head of 8.62 metres (12 psi)
- (c) Bulkhead shall be designed with independent and redundant sealing mechanisms, including one inflatable style seal, and one mechanical seal. Bulkhead shall be designed to allow methods for pressure testing between seals to verify seal.
- (d) The bulkhead must be constructed as to allow easy manual replacement of the mechanical seal and the inflatable seal, using standard hand tools
- (e) Bulkhead shall be designed with independent and redundant lateral restraint mechanisms
- (f) Bulkhead shall be designed for redeployment in second culvert.
- (g) Bulkhead to be designed for diver installation and removal. The bulkhead must include an integral, adjustable wheel carriage that allows easy deployment of the bulkhead.
- (h) The bulkhead design shall meet the requirements of the Workplace Safety and Health Act of Manitoba and Regulation and Workplace Safety and Health Regulation 217/2006.
- (i) Bulkhead design shall be stamped by a Professional Engineer registered in the Province of Manitoba.

E6.3 Submittals

- (a) Submit design and shop Drawings of bulkhead, including templating data, installation and removal procedures to the Contract Administrator a minimum of 14 business days prior to manufacture.

E6.4 Construction Methods

E6.4.1 Cleaning and Sanitation

- (a) Reservoirs contain potable raw water (pre-treatment). All materials, equipment and personnel (dive suits) entering the water supply shall be thoroughly cleaned, and free of debris and laitance. Equipment and materials entering reservoirs shall be sanitized with a 1 percent hypochlorite solution.

E6.4.2 Bulkhead Template

- (a) Prior to fabrication of bulkhead, a template shall be made and test fitted at the proposed bulkhead locations to ensure proper fit and transportability into the existing conduit.
- (b) Contractor shall note that reservoirs will be full during templating operations, but off-line (no flow conditions).
- (c) Provide a minimum of 14 business days notice prior to fitting template, to allow for taking reservoir cells out of service.

E6.4.3 Bulkhead Installation

- (a) Contractor shall note that reservoirs will be full during installation operations, and liner construction, but off-line (no flow conditions).
- (b) Install bulkhead by methods approved by manufacturer. Install independent and redundant restraint mechanisms. Pressure test gasket system to insure low leakage seal.
- (c) Dewater culvert between sluice gate and bulkhead ONLY to top of box culvert at sluice gate chamber. This will expose installation to approximately 75 percent of

design head, while minimizing water displacement should major leakage or failure occur. Monitor sluice chamber for leakage for a time period of 12 hours.

- (d) Dewater entire culvert between sluice gate and bulkhead. Monitor culvert for leakage for a minimum time period of 12 hours
- (e) Monitor bulkhead for movement, leakage and seal pressure daily. Evacuate personnel immediately upon any sign of movement.

E6.5 Method Of Measurement and Basis of Payment

- (a) Fabrication and supply of the temporary bulkhead will be measured on a lump sum basis, including provision of second set of seals. The City of Winnipeg shall retain ownership of the bulkhead upon completion of the work.
- (b) Installation and removal of the bulkhead will be measured on a unit basis, including installation and removal of the bulkhead, installation of secondary seals (if required), all fasteners and restraints, including patching or removal of anchors. Payment will be made at the following schedule;
 - (i) 50% upon successful installation of each bulkhead location
 - (ii) 50% upon successful removal and patching of the bulkhead at each location.

E7. SUPPLY AND INSTALLATION OF CULVERT LINER

E7.1 Description

- (a) This specification covers the supply, fabrication, testing and installation of liner

E7.2 Materials

E7.2.1 HDPE Pipe

- (a) 1600 mm IPS, DR 26
- (b) PE 3608 with minimum cell classification 345464C in accordance with ASTM D3350
- (c) Certified under NSF61 System Components-Health Effects
- (d) Meeting AWWA C906
- (e) Acceptable Products
 - (i) Sclairpipe by KWH Canada
 - (ii) JM Eagle HDPE Water Pipe
 - (iii) or Approved Equal in accordance to B6

E7.2.2 Backup Rings

- (a) Backup Rings for liner testing shall be ductile iron two piece spit rings suitable for restraint of specified test pressure.
- (b) Backup rings to be removed prior to pipe liner insertion
- (c) Acceptable Products
 - (i) Improved Piping Products (IPP)
 - (ii) Or Approved Equal in accordance to B6

E7.2.3 Stub Ends

- (a) HDPE stub ends shall be provided at each and of each pipe segment for testing and permanent bulkhead anchor rings.
- (b) HDPE shall be compatible with main pipe
- (c) Acceptable Products
 - (i) Improved Piping Products (IPP)
 - (ii) Or Approved Equal in accordance to B6

E7.3 Equipment

E7.3.1 Boats, barges and other floatation devices

- (a) Boats, barges and floatation devices shall not contain harmful or deleterious substances. Equipment shall be cleaned by pressure washing prior to use on site.
- (b) Equipment shall be thoroughly inspected for foreign species and biota prior to use on site.
- (c) Equipment and materials entering reservoirs shall be sanitized with a 1 percent hypochlorite solution prior to use on site.
- (d) Only electric propulsion devices shall be permitted. Batteries shall be completely contained in leak proof containers

E7.3.2 Cell 1 and 2 Sluice Gate Chamber Gates

- (a) The Cell 1 and 2 sluice gates are cast iron sluice gates as manufactured by Rodney Hunt Co in approximately 1977. The gates have been used as recently as year 2000 for dewatering purposes. The gates are known to have a moderate amount of leakage. The Contractor shall assume that the rate of leakage is manageable with reasonable pumping at the lift required, as indicated on drawings.

E7.4 Submittals

E7.4.1 Pipe Manufacture Quality Control Reports

- (a) Submit quality control reports, for testing required in accordance to AWWA C906-07 Section 5.4, no later than 5 Business Days upon manufacture of pipe.

E7.4.2 Affidavit of Compliance

- (a) An affidavit of compliance signed by an officer of the pipe manufacturing company shall be provided stating that the pipe and fittings comply with this Specification, in accordance with Section 6.3 of AWWA C906-07.

E7.5 Quality Control

E7.5.1 Inspection

- (a) The Contractor shall afford the Contract Administrator every facility to access and inspect all plant to be provided, work to be performed, materials to be supplied and equipment or machinery to be installed in accordance with Specifications.

E7.5.2 Testing of Pipe and Materials

- (a) The Contractor shall provide access to the Contract Administrator or his appointed representative to conduct plant inspections, in accordance to Section 5.8 of AWWA C906-07. The Contractor shall provide a minimum of 7 calendar days notice of commencement of pipe manufacture, for the purposes of scheduling plant inspections.
- (b) The Contract Administrator reserves the right to conduct third party quality control testing.

E7.5.3 Dimensional Checks

- (a) Notwithstanding AWWA C906-07, Section 5.4.2, dimensional checks shall be carried out for each and every pipe in the production run.

E7.6 Construction Methods

E7.6.1 HDPE Jointing and Fusing

- (a) Thermal butt fusing to be in accordance with ASTM F-2620.
- (b) Use qualified personnel for all welding operations (butt-fusion jointing of polyethylene pipe). Submit qualifications of personnel to Contract Administrator for review. Welding personnel to be trained specifically for the fusing machine being utilized by

qualified technician from the pipe Manufacturer. Jointing machine to be approved by pipe Manufacturer. Provide a written verification from Manufacturer certifying that the Contractor's personnel who will perform the jointing, is qualified and that the jointing equipment has been inspected and is suitable for the pipe supplied.

- (c) Check the temperature and uniformity of temperature over the heating surface of the heating tool with a pyrometer on the first joint of the day and periodically during the day in accordance with Section 6.3 of ASTM Standard Practice F 2620 for "Heat Fusion Joining of Polyethylene Pipe and Fittings". Select multiple checkpoints to ensure uniform surface temperature.
- (d) Use a data logging device with the hydraulic joining equipment to record fusion parameters of pressure, temperature, and time for each joint.
- (e) Prior to commencement of the works provide Manufacturer's written bulletins on required heat and pressures. Use procedures to allow pressure readings during fusion to be accurately measured.
- (f) Ensure pipe ends are clean and dry prior to commencing fusing and do not allow ends of pipe to become wet during fusion operation.
- (g) Do not weld pipe in long sections which become unmanageable for maneuvering and placement.
- (h) During cold or inclement weather, provide adequate shelter over the pipe joining equipment while fusing for protection from the elements (i.e. cold, rain, or wind, etc.).
- (i) Provide PE stub end ring at limits of each pipe liner section.
- (j) Temperature correct fused length of pipe line segment to ensure installed length conforms to design.
- (k) Handle pipe by approved methods. Do not use chains or cables passed through pipe bore so that weight of pipe bears on pipe ends. Do not drag pipe in a manner which may scratch or otherwise damage the pipe.

E7.7 Testing

E7.7.1 Pre-Installation Testing

- (a) Prior to installing pipe in existing culvert, each completed segment of HDPE slipliner shall be pressure tested. Pipeline shall be visually assessed for leaks during test phase.
- (b) Water for tests may be drawn from the reservoir. Pumps and piping used to supply water shall be cleaned and disinfected prior to use.
- (c) Pressure test shall be recorded as per CW 2125. The Contract Administrator will provide Test Record form
- (d) Expansion phase pressure shall be 275 KPa (40 psi)
- (e) Test phase pressure shall be 205KPa (30 psi)
- (f) The test section should be completely filled with the test liquid, taking care to bleed off any trapped air. Venting at high points may be required to purge air pockets while the test section is filling. Venting may be provided by bleed valves or equipment vents.
- (g) The test procedure consists of initial expansion, and test phases. For the initial expansion phase, the test section is pressurized to test pressure and make-up test liquid is added as required to maintain maximum test pressure for four (4) hours. For the test phase, the test pressure is reduced by 70 KPa (10 psi). This is the target test pressure. If the pressure remains steady (within 5% of the target test pressure) for one hour, leakage is not indicated.
- (h) If leaks are discovered, depressurize the test section before repairing leaks. Leakage at a butt fusion joint may indicate imminent catastrophic rupture. Depressurize the test section immediately if butt fusion leakage is discovered. Leaks at fusion joints require the fusion joint to be cut out and redone.

- (i) If the pressure leak test is not completed due to leakage, equipment failure, etc., the test section should be de-pressurized and repairs made. Allow the test section to remain depressurized for at least eight (8) hours before retesting.

E7.7.2 Installation of Liner

- (a) Provide blocking or skids to protect pipe from damage on riprap or other damaging surfaces.
- (b) Float liner into place over box culvert entrance. Anchor in place. It is recommended pipe be inserted from Cell 2 side, as Cell 1 outlet is depressed below reservoir floor.
- (c) Remove riprap and riprap bedding from culvert entrance a sufficient amount to allow liner pipe into the entrance. Replace riprap on completion of culvert insertion.
- (d) Install temporary ballasting weights along pipeline to obtain neutral buoyancy. Ballast weights shall be attached to pipe in a manner that will prevent movement of weights during installation. Sink pipeline into place at entrance. For 1600 mm DR26, PE3608 pipe, estimated mass required to obtain neutral buoyancy is 15 to 20 kg/m³ buoyant mass, and will vary based on density of polyethylene. Consult manufacturer.
- (e) Carefully pull liner into place by winch, flow drone or other approved methods.
- (f) Arrange to close sluice gates, install temporary bulkhead, and dewater culvert.

E7.7.3 Bracing and Blocking

- (a) Place blocking to vertical centre liner in host culvert, and provide uniform longitudinal grade.
- (b) Block between top of liner and host culvert to prevent floatation during grouting.
- (c) Internally provide bracing to support culvert during grouting to prevent excessive deflection. Alternately, liner may be water filled during grouting process to prevent floatation and support pipe.

E7.7.4 Culvert Cleaning

- (a) Remove excess debris, organic materials from culvert. Dispose of debris off site.
- (b) Center and block liner into place in accordance with E9 and Drawings.

E7.8 Method of Measurement and Basis of Payment

E7.8.1 Supply and Assembly of Liner

- (a) Supply, assembly and testing of liner will be measured on a unit basis. The units measured and paid will be the number of lineal metres of pipe supplied and assembled by fusion, based on measurements made by the Contract Administrator, as indicated in Form B: Prices, including end rings, test backup rings, and all equipment and labour required to complete assembly in accordance with the specifications.

E7.8.2 Pressure Testing of Liner

- (a) Pressure testing of liner will be measured on a unit basis. The number of units measured and paid will be the number of pressure tests successfully completed on each liner segment, including supply of test records, as listed in Form B: Prices.

E7.8.3 Installation of Liner

- (a) Installation of liner will be measured and paid on a per installation unit basis. The number of units measured and paid will be the number of liner installations completed in accordance with this specification, including installation, blocking and bracing, as listed in Form B: Prices

E8. CAST-IN-PLACE CONCRETE

E8.1 Description

- (a) This Specification covers construction of cast-in-place concrete and bulkheads

E8.2 Materials

E8.2.1 Concrete

- (a) As per CW 2160

E8.2.2 Extrudable Waterstop

- (a) Gun Grade extrudable polyurethane based waterstop, SikaSwell S by Sika, or Approved Equal in accordance to B6

E8.3 Mix Design

- (a) As per CW 2160 Table 2160.1 Type A

E8.4 Construction Methods

- (a) As per CW 2160.
- (b) Further to CW 2160, inner formwork will be permitted to remain in place.

E8.5 Method of Measurement and Basis of Payment

E8.5.1 Construction of Bulkheads

- (a) Construction of Bulkheads will be measured and paid on a unit basis. The units measured and paid will be the number of concrete bulkheads constructed, as listed in Form B: Prices in accordance to these specifications, including all materials, formwork, reinforcing and miscellaneous materials required to complete the works.

E9. ANNULAR GROUTING

E9.1 Description

- (a) This Specification covers materials, design and installation of annular grouting of pipe slip liners using low density Cellular Concrete Grout

E9.2 References

- (a) WRC Sewerage Rehabilitation Manual Fourth Edition.
- (b) ASTM C796-04 Standard Test Method for Foaming Agents for Use in Producing Cellular Concrete Using Preformed Foam.
- (c) ASTM C869-11 Standard Specification for Foaming Agents Used in Making Preformed Foam for Cellular Concrete.
- (d) ACI 523.3R Guide for Cellular Concretes Above 50 pcf, and for Aggregate Concretes Above 50 pcf with Compressive Strengths Less Than 2500 psi.

E9.3 Materials

E9.3.1 Foaming Agents

- (a) Foaming Agents shall conform to ASTM C869-11 and be tested in accordance to ASTM C796-04.
- (b) Foaming agents shall be closed cell non pervious foams

- (c) Products
 - (i) Mearl Geofoam Non-Pervious by Cellular Concrete Solutions
 - ◆ AddCell by Multiurethanes
 - ◆ Cematrix CF-1
 - ◆ Or Approved Equal in accordance to B6
- E9.3.2 Portland Cement
 - (a) CSA A3001 Type GU
- E9.3.3 Flyash
 - (a) CSA A3001 Class CI Fly Ash
- E9.3.4 Grout Headers and Injection Ports
 - (a) Solvent weld Schedule 40 PVC
 - (b) HPDE DR 17
 - (c) Product to be certified for use in potable water
- E9.4 Grout Design
 - E9.4.1 Design Intent
 - (a) Grout is intended to fill annular void between pipe carrier liner and host pipe with a low permeability, light weight fill. Density of grout is to be 15% to 25 % denser than the unit weight of water, to prevent excessive subgrade settlement of the completed installation, reduce grouting floatation forces during installation, and dense enough to prevent floatation of the completed installation under saturated groundwater conditions.
 - E9.4.2 Grout Properties
 - (a) Density $1200 \text{ kg/m}^3 \pm 50 \text{ kg/m}^3$
 - (b) 28 Day compressive strength 4-5 MPa
 - (c) Permeability 1×10^{-9} metres per second
 - E9.4.3 Personnel
 - (a) Grout design, mixing and installation shall be supervised by personnel experienced in design and installation of cellular concrete grout, and pipeline annular grouting.
 - E9.4.4 Mix Design
 - (a) Design mix proportions to meet specified performance requirements, in accordance to ACI 523.3R
 - (b) Provide Foam test data
 - E9.4.5 Trial Mix
 - (a) Prepare trial mix using equipment and materials proposed for construction.
 - (b) Prepare trial mix in presence of the Contract Administrator. Provide 14 Business Days notice to Contract Administrator prior to commencing test.
 - (c) Trial mix shall simulate actual field grouting batching.
 - (d) Prepare test specimens for determination of conformance to design Criteria.
 - (i) Density as per ASTM C495.
 - (ii) Compressive Strength as per ASTM C330.
 - (iii) Permeability in accordance with ASTM D 2434.
 - (e) Amend Mix design proportions based on test data to meet design criteria.

- E9.4.6 Submittals
- (a) Submit Mix Design to the Contract Administrator a minimum of 14 Business Days prior to preparing Trial Mix.
 - (b) Submit Equipment proposed and foam generator test data.
 - (c) Submit credentials of design, mixing and installation supervisors to the Contract Administrator.
 - (d) Submit Trial Mix Test results within 5 Business Days of completion of testing.
 - (e) Submit grouting plan and Quality Control Plan to Contract Administrator for review. Plan shall describe grouting system layout, grouting verification procedures, grouting tube close off procedures.

E9.5 Construction Methods

E9.5.1 Blocking

- (a) Inspect and insure blocking is sufficient for grout installation procedures and pressures.

E9.5.2 Annulus Grouting

- (a) Carry out annulus grouting in accordance with approved grouting protocol submission. Monitor liner during grouting operations to ensure short-term deflections do not exceed maximum allowable and that liner is not displaced during grouting operations. Confirm that annulus is fully grouted.
- (b) Grouting procedures shall be designed without the use of through liner grout ports. A sufficient number and size of grouting tubes and air vents shall be installed in the annular space to transport grout and monitor annular space for complete filling of voids.
- (c) General rules that apply to grouting include:
 - (i) Estimate the volume of grout required (include overfill allowance based on grout properties, carrier and host geometry and condition, and previous experience with grout mixture);
 - (ii) Minimize infiltration (or its effects);
 - (iii) Inject from the downstream end of the renovated section;
 - (iv) Inject from the invert towards the crown;
 - (v) Provide air vents at the high points and as required;
 - (vi) Monitor and record the injection pressures;
 - (vii) Inspect the lining for signs of distortion or flotation;
 - (viii) Monitor and record the volume of grout injected and compare with the estimate (with due consideration of overfill allowance); and
 - (ix) Regularly monitor for grout leaks in sections of pipe upstream and downstream, drain connections (via inspection chambers), particularly if the volume of grout injected exceeds the estimated grout take.
- (d) The volume to be grouted at any one time can be varied to suit the various constraints such as the workability of the grout, design of the lining (including flotation), capacity of the mixing and pumping equipment, rate of installation of the lining, and the necessity for overpumping.
- (e) Monitor grout process through adjacent grout and air relief ports to ensure complete filling of void.

E9.6 Quality Control

- (a) Prepare Quality Control samples for compressive strength. One sample should be taken for each placement, or every 100 m³, whichever is more frequent. Prepare in accordance with ASTM C330

- (b) Prepare Quality Control samples for density. Cellular concrete density shall be measured and recorded once per production run, or once for every 50 cubic metres, or once per 30 minutes, whichever is more frequent. The density shall be maintained within +/- 10 % of the design density. Test samples in accordance to ASTM C495.
- (c) Prepare Quality Control samples for permeability. One sample shall be prepared for each day's production. A minimum of 2 samples shall be prepared for each culvert liner. Test samples in accordance to ASTM D2434.

E9.7 Method of Measurement and Basis of Payment

E9.7.1 Cellular Concrete Grout

- (a) Trial Test Program
 - (i) Trial test program will be measured on a lump sum basis.
- (b) Field Grouting
 - (i) Field grouting will be measured and paid on a volume basis. The volume measured and paid will be based on in situ volume measurements of the annular space as determined by the Contract Administrator.

E10. PERFORMANCE MONITORING

E10.1 Description

- (a) This specification covers performance monitoring of the culvert repairs.

E10.2 Construction Methods

- (a) Performance Monitoring of the culvert repairs will be conducted for a period on one (1) Calendar Year from the completion of Substantial Performance.
- (b) The Contractor shall assist the Contract Administrator in installation of a pressure monitoring device in the annular space of each culvert, for the purpose of monitoring effectiveness of the slipliner repairs and closure bulkheads. Pressure monitoring devices shall be provided by the Contract Administrator.
- (c) The Contract Administrator will also be installing and monitoring piezometric devices and other monitoring equipment, installed by others, adjacent to the repaired culvert sections, for the purpose on monitoring effectiveness of repairs in curtailing leakage from the culverts and/or reservoir dikes.
- (d) The Contract Administrator will be visually monitoring surface water accumulation adjacent to the repaired culverts to assess effectiveness of repairs.
- (e) The Contractor will be permitted to attend site monitoring, and will be provided with monitoring reports.
- (f) If it is determined from monitoring data, that any continued leakage is the result of performance of the slipliner, permanent bulkheads or other construction completed under this Contract, the Contractor shall endeavor to effect repairs to the liner, bulkheads or other construction, to the satisfaction of the Contract Administrator.

E10.3 Monitoring Frequency

E10.3.1 Monitoring Frequency will be as follows:

- (a) Monthly for a period of 3 months following completion of construction;
- (b) Quarter Annually (3 months) to completion of monitoring period

E10.4 Method of Measurement and Basis of Payment

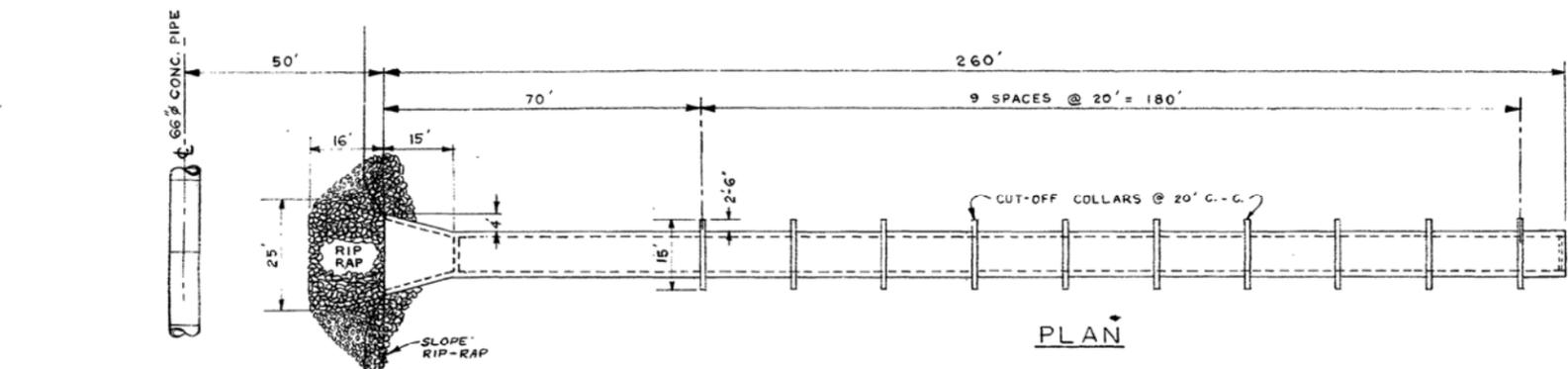
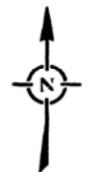
- (a) Monitoring will not be measured or paid.

APPENDIX A – SECURITY CLEARANCE

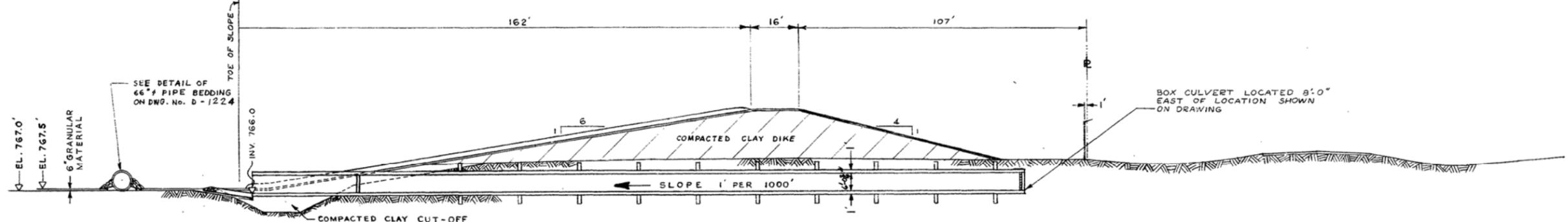
1. SECURITY CLEARANCE

- 1.1 Each individual proposed to perform Work under the Contract shall be required to obtain a Criminal Record Search Certificate from the police service having jurisdiction at his/her place of residence. This can be obtained from one of the following;
 - (a) police service having jurisdiction at his/her place of residence; or
 - (b) BackCheck, forms to be completed can be found on the website at: <http://www.backcheck.net/> ; or
 - (c) Core of Commissionaires, forms to be completed can be found on the website at: <http://www.commissionaires.mb.ca/> .
- 1.2 Each individual proposed to perform Work under the Contract shall be required to obtain a Public Safety Verification Check. This can be obtained from one of the following;
 - (a) BackCheck, forms to be completed can be found on the website at: <http://www.backcheck.net/> ; or
- 1.2.1 Contact Ron Risley at 204-986-3758 if you have any questions regarding the Public Safety Verification.
- 1.3 Prior to the commencement of any Work, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Criminal Record Search Certificate obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform the Work.
- 1.4 Any individual for whom a Criminal Record Search Certificate is not provided, or for whom a Criminal Record Search Certificate indicates any convictions or pending charges related to property offences or crimes against another person, will not be permitted to perform any Work.
- 1.5 Any Criminal Record Search Certificate obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.
- 1.6 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated criminal records search. Any individual who fails to provide a satisfactory Criminal Record Search Certificate as a result of a repeated criminal records search will not be permitted to continue to perform any Work.

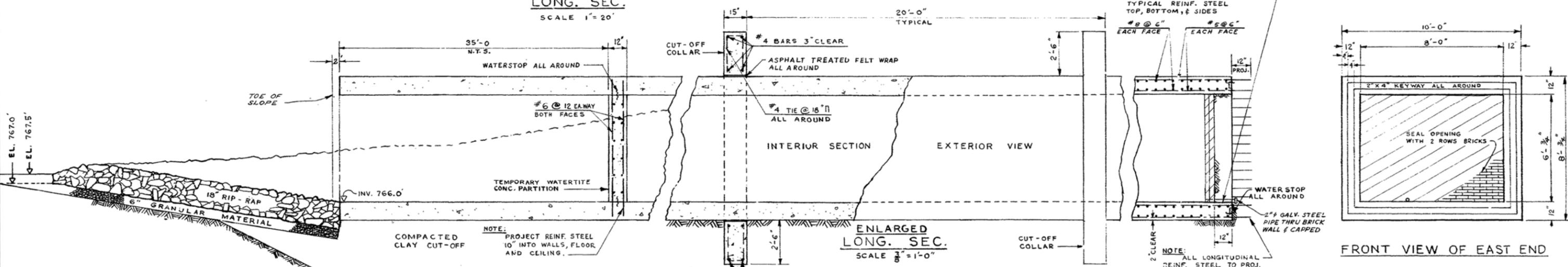
APPENDIX B
HISTORIC DRAWING INFORMATION



PLAN

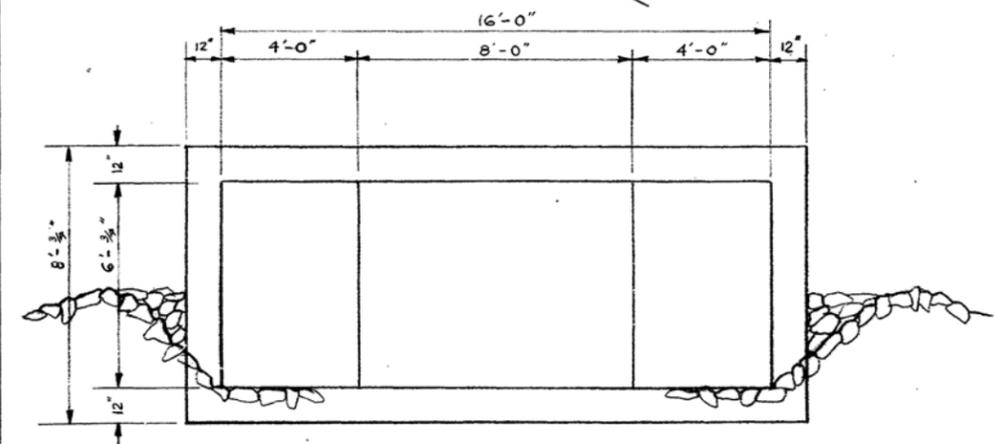


LONG. SEC.
SCALE 1" = 20'

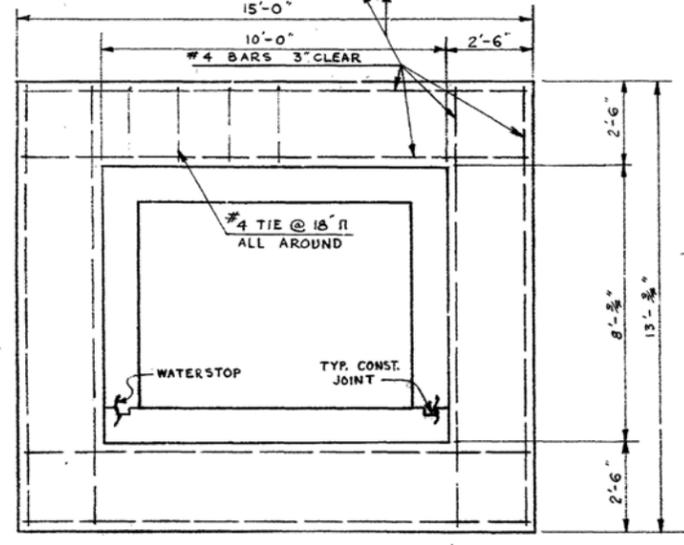


ENLARGED LONG. SEC.
SCALE 3/8" = 1'-0"

FRONT VIEW OF EAST END



FRONT VIEW OF WEST END
3/8" = 1'-0"



CUT-OFF COLLAR DETAIL
3/8" = 1'-0"

SURVEYED & PLAN CHECKED
BY: _____
APPROVED FOR CUILT
BY: _____
V.O. Am/75

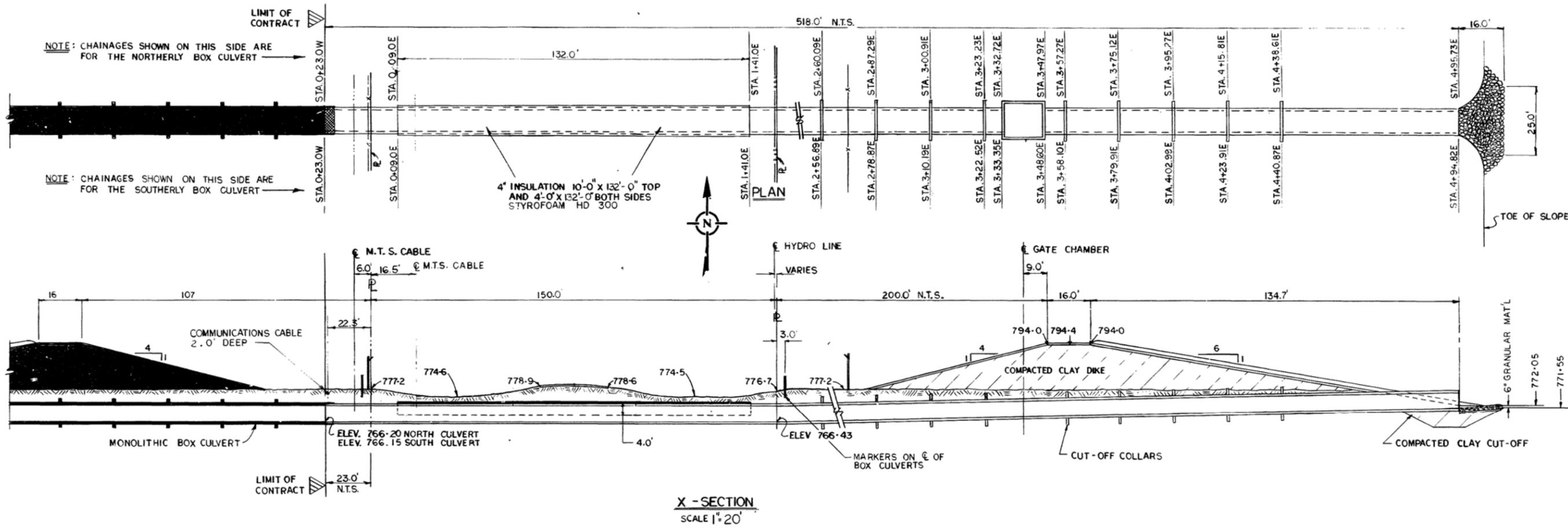


THE METROPOLITAN CORPORATION
OF GREATER WINNIPEG
WATERWORKS & WASTE
DISPOSAL DIVISION
A. PENMAN - DIRECTOR

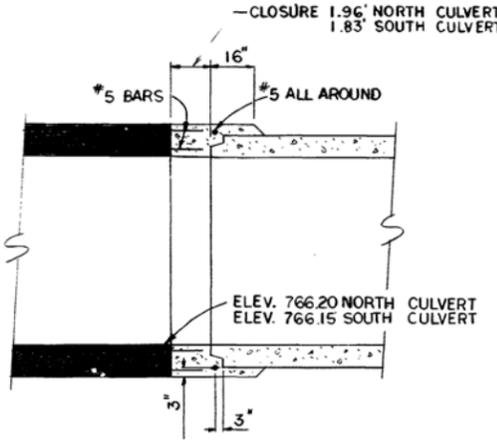
WATERWORKS DEPT.
DEACON RESERVOIR
STAGE I
CELL INTERCONNECTION
BOX CULVERT DETAILS

MICROFILMED mar77

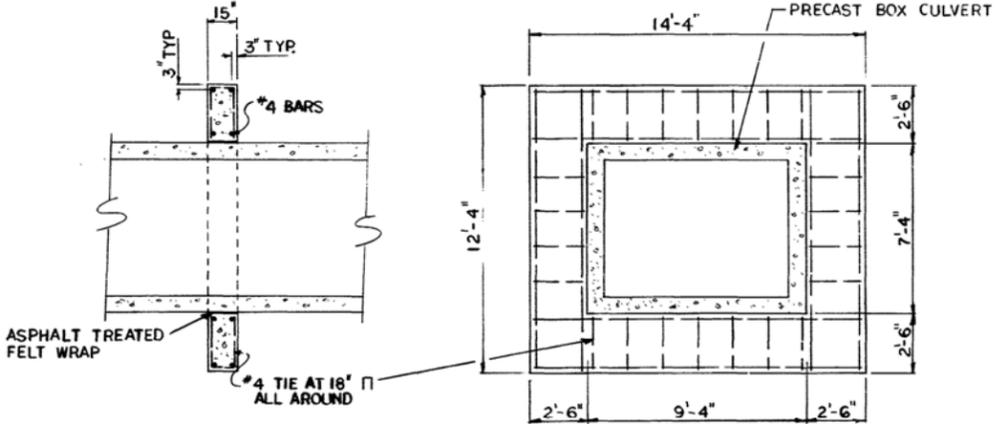
DES. _____
CHKD. _____
DRN. _____
DATE 24 MAR 70
ENL. _____
APPROV. _____
SCALES AS NOTED
DRAWING NO. D-1222



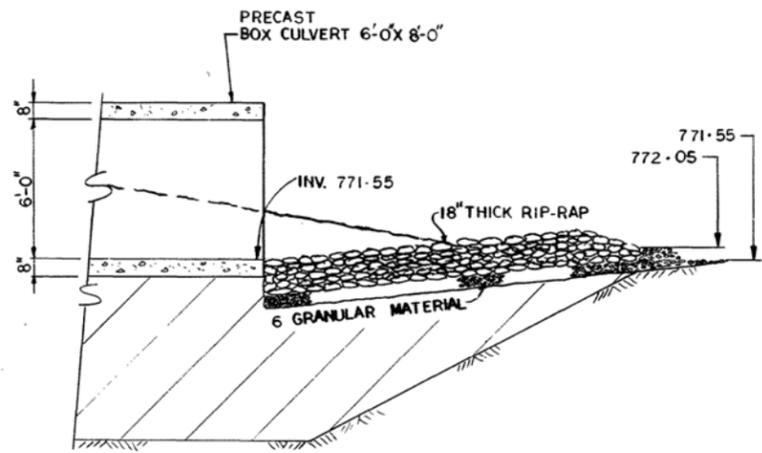
X - SECTION
SCALE 1" = 20'



CONNECTION DETAIL
SCALE 1" = 3'-0"



DETAIL OF CUT-OFF COLLAR
SCALE 1" = 4'-0"



INLET DETAIL
SCALE 1" = 4'-0"

NO.	DESCRIPTION	DATE	BY
3	REVISED TO AS-BUILT	790201	R.F.
2	DIKE MOVED 100' EAST	24/5/77	R.H.
1	ADDED NOTE (SUPPLIED BY BOX CULVERT MANUF.)	9/5/77	R.F.

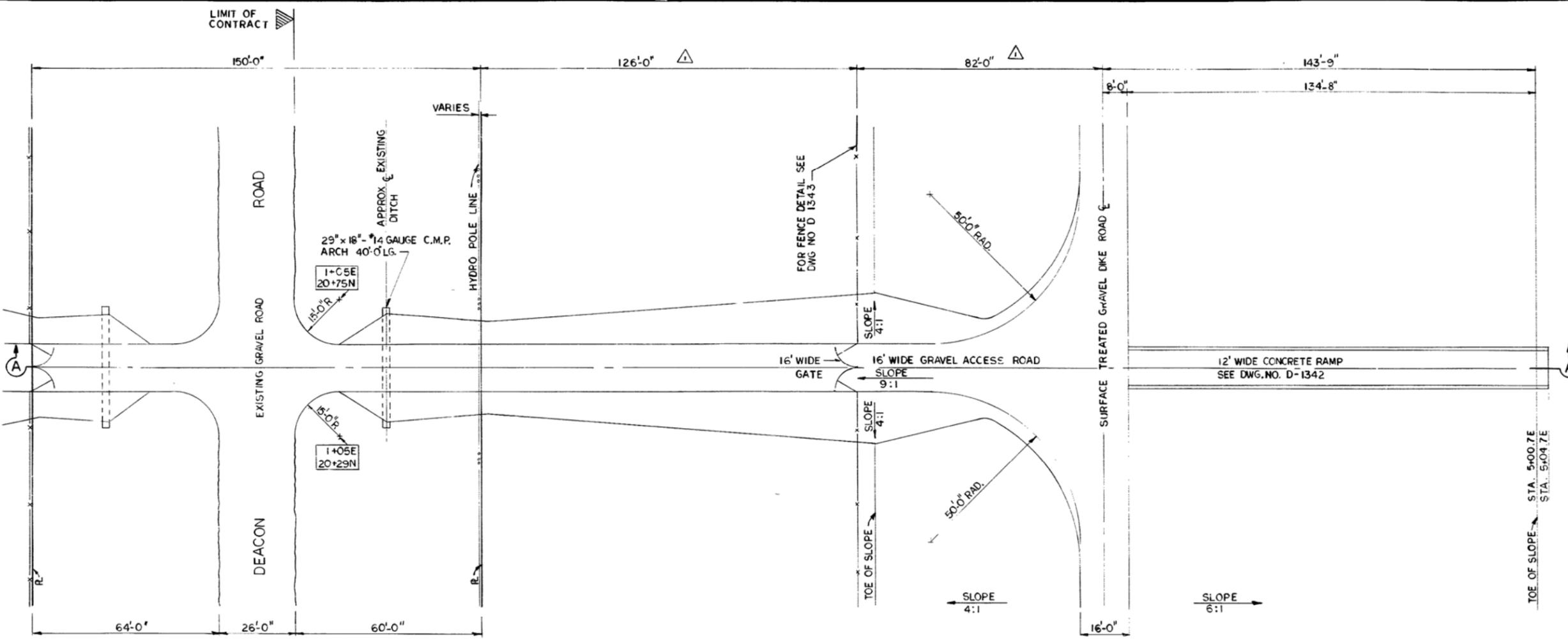
The City of Winnipeg
Waterworks, Waste and Disposal Division

ENGINEERING BRANCH
WATERWORKS
DEACON RESERVOIR CELL II
CELL INTERCONNECTION
BOX CULVERT DETAILS

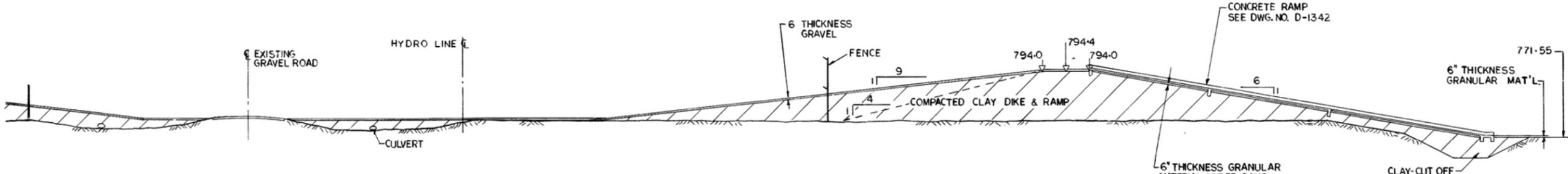
DESIGNED BY PDW	DRAWN BY RH
CHECKED BY P. D. WIWCHAR 18/4/77	DATE 18-APR-77
APPROVED <i>[Signature]</i> REGISTERED ENGINEER	SCALE AS NOTED
	DRAWING NO. D-1339

D. S. Walby 190209

MICROFILMED APR 80



PLAN



FOR DIKE X-SECTION DETAILS SEE DWG. NO. D-1338

SECTION A-A

D. Scott W. Alphonse 790307

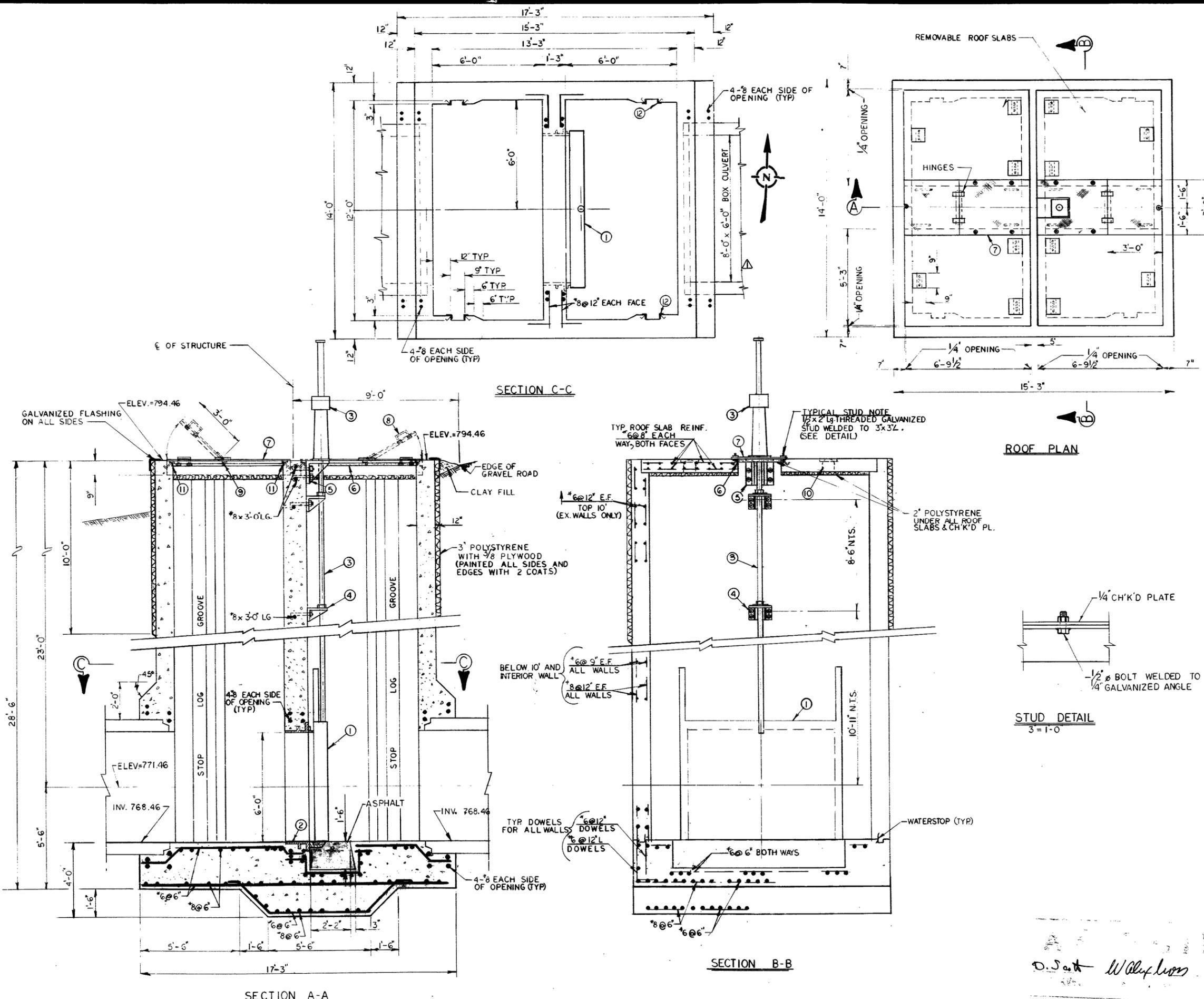
NO.	DESCRIPTION	DATE	BY
2	REVISED TO AS BUILT	790201	R.F.
△	DIKE MOVED 100' EAST	24/5/77	R.H.

The City of Winnipeg
Waterworks, Waste and Disposal Division

ENGINEERING BRANCH
WATERWORKS
DEACON RESERVOIR CELL II
ACCESS ROAD

MICROFILMED

DESIGNED BY PDW	DRAWN BY RH
CHECKED BY B. D. WILCHART	DATE 18-MAR-77
APPROVED BY <i>[Signature]</i>	SCALE 1" = 20'-0"
PROVINCE OF MANITOBA REGISTERED ENGINEER	DRAWING NO. D-1341



LIST OF MATERIALS				
NO.	DESCRIPTION	SIZE	QTY	DWG. NO.
1	HEAVY DUTY SLUICE GATE*	96" x 72"	1	
2	TYPE "F" WALL THIMBLE	15"	1	
3	LIFTING DEVICE 1/4" STEM COVER AND COUNTER INDICATOR		1	
4	ADJUSTABLE STEM GUIDE		2	
5	WALL BRACKET FOR LIFT SUPPORT		1	
6	3x3x1/4 GALV. L (SEE NOTE RE. STUDS)	6'-9 1/2" Lg	4	
7	1/4" GALV. CH'K'D PLATE	SEE DWG.		
8	LIFTING LUG		8	A-910
9	3x3x1/4 GALV. L (WELD TO 1/4" PLATE ON THE UNDERSIDE OF HINGED AREA)	2'-4" Lg	2	
10	3/4" GALV. RECESSED LIFTING LUG		8	D-1337
11	3x3x1/4 GALV. L	3'-0" LG.	4	
12	3x3x1/16 GALV. L 3.7"/FT.	25'-0" LG.	8	

NOTE: QUANTITIES SHOWN ARE FOR ONE CHAMBER (TWO REQUIRED)

▲ SUPPLIED BY GATE MANUF.
 * SLUICE GATE SUPPLIED BY RODNEY HUNT SEE MANUFACTURER'S FILE NO. F-710

NO.	DESCRIPTION	DATE	BY
3	REVISED TO AS-BUILT	790201	R.F.
▲	CHANGED NOTE TO (SUPPLIED BY GATE MANUF.)	770511	R.F.
▲	CHANGED NOTE TO (SUPPLIED BY BOX CULVERT MANUF.)	770509	R.F.

The City of Winnipeg
 Waterworks, Waste and Disposal Division

ENGINEERING BRANCH
 WATERWORKS

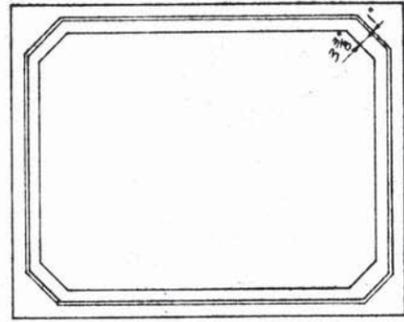
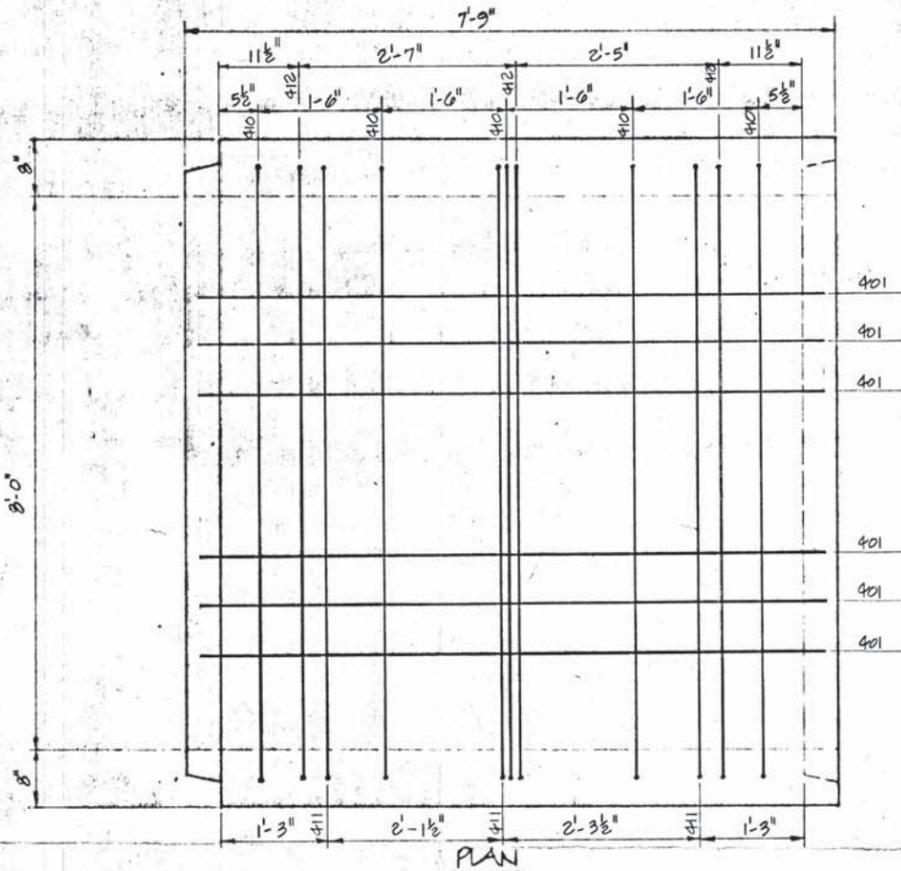
DEACON RESERVOIR CELL II
 BOX CULVERT GATE CHAMBERS

MICROFILMED APR 6 1979

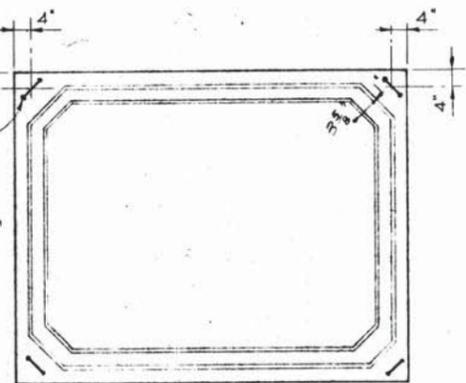
DESIGNED BY P.D.W. DRAWN BY R.F.
 CHECKED BY DATE APRIL 21-77
 APPROVED BY
 SCALE 3/8" = 1'-0" DRAWINGS NO. D-1345

PROVINCE OF MANITOBA
 P. D. WIWCHAR
 28/1/77
 REGISTERED ENGINEER

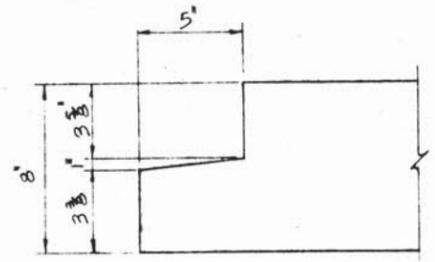
D. Scott Walby 790403



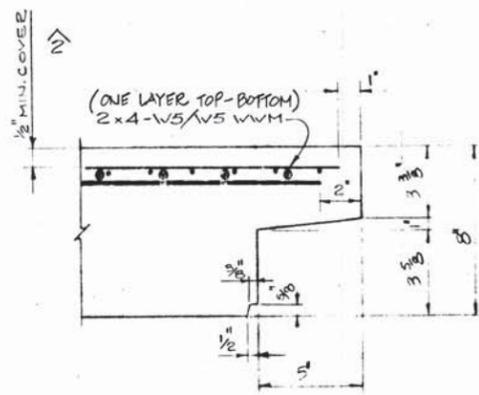
END ELEVATION-SPIGOT



END ELEVATION-BELL



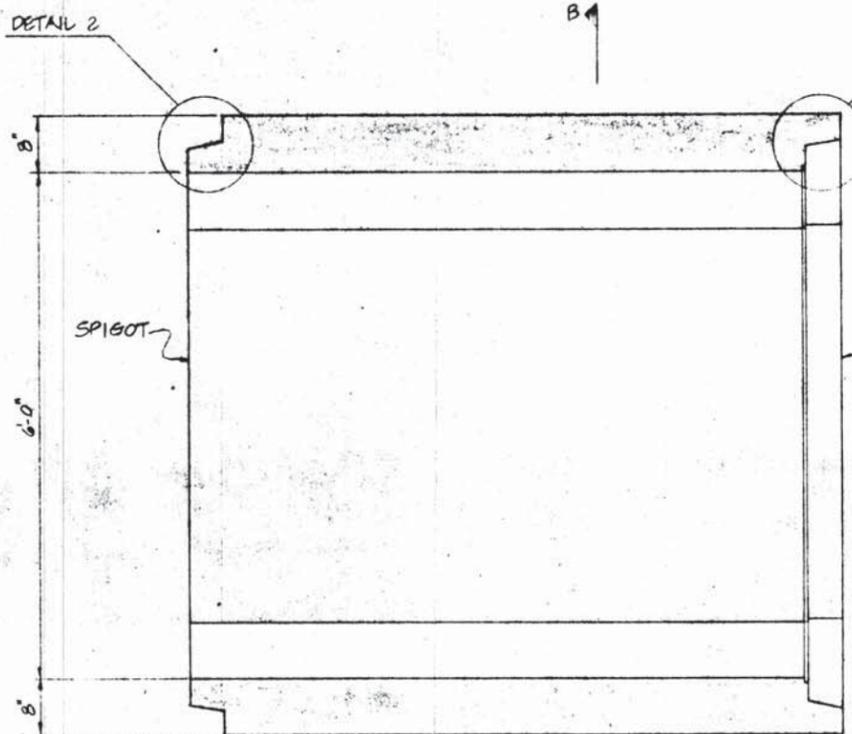
DETAIL 2



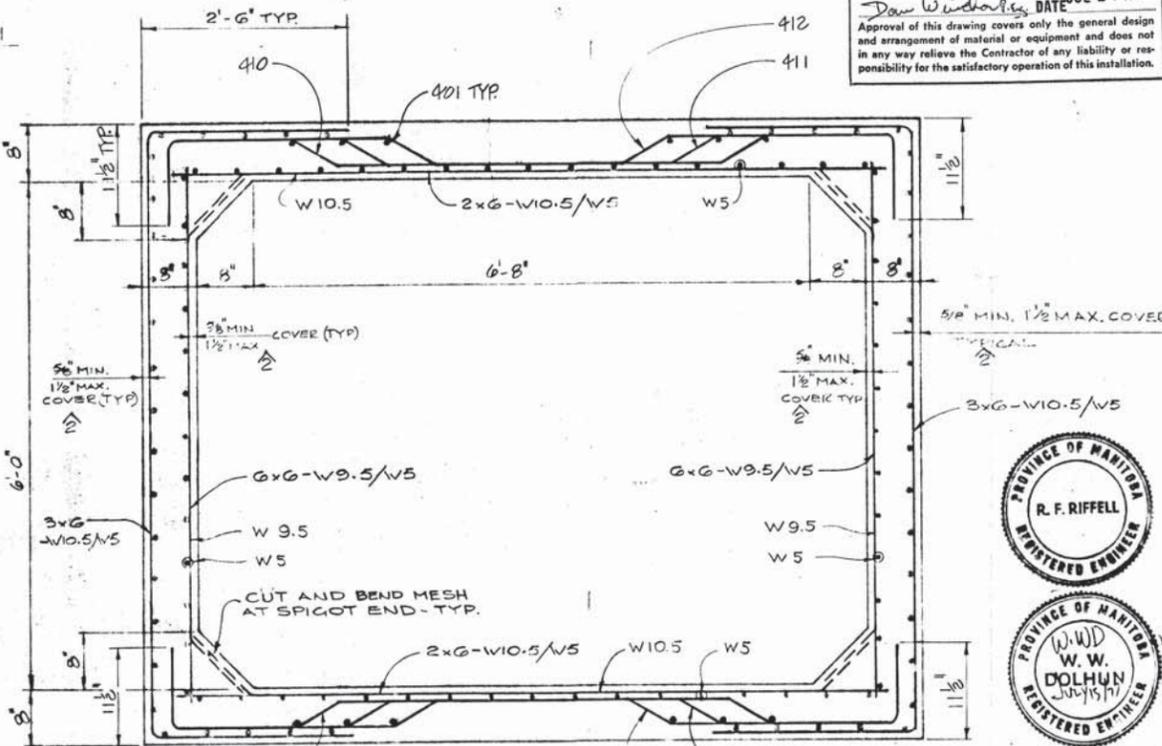
DETAIL 1

1/2" ϕ LIFT LOOP
GRIND FLUSH AND PAINT WITH GALVACON BEFORE SHIPPING TYP.

THE CITY OF WINNIPEG
WATERWORKS, WASTE & DISPOSAL DIVISION
APPROVED FOR CONSTRUCTION
DATE JUL 27 1977
Approval of this drawing covers only the general design and arrangement of material or equipment and does not in any way relieve the Contractor of any liability or responsibility for the satisfactory operation of this installation.



SECTION A



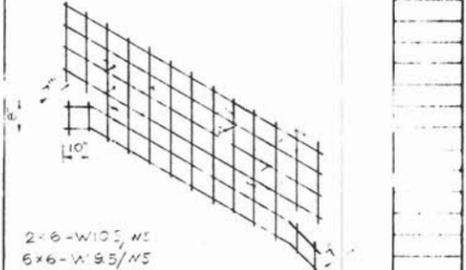
SECTION B

PROVINCE OF MANITOBA
REGISTERED ENGINEER
R. F. RIFFELL

PROVINCE OF MANITOBA
REGISTERED ENGINEER
W. W. DOLHUN
July 15, 1977

RELEASED FOR PRODUCTION
JUL 14 1977

REINFORCING SCHEDULE						
MARK	SIZE	NO	REQ	SKETCH	CUT L	WEIGHT
C1	4	10	10		10'-10"	72.4
	4	11	6		10'-10"	43.4
	4	12	6		10'-10"	43.4
	4	01	12	STRAIGHT	6'-4"	50.8
ALL REINF. PER GO						



TOTAL REINF. WEIGHT = 210.0
REINF. PER CU YD = 36.3

QUANTITIES										
MARK	NO	LEN	AREA	VOLUME	WEIGHT	NO	LEN	AREA	VOLUME	WEIGHT
C1	18,500	7'-9"	72.3	5.19	91.6	11	6	10'-10"	12.0	23.470

MISCELLANEOUS MATERIALS
C1 4-1/2" ϕ LIFT LOOPS x 6'-0" L

MISCELLANEOUS IRON

RELEASED FOR APPROVAL

JUL 26 1977

NO.	REVISION	BY	CHKD	DATE
1	MIN. MAX. CLEAR COVER REVISED	W.W.D.	W.W.D.	JUL 18 1977
2	REVISION	W.W.D.	W.W.D.	JUL 14 1977

DEACON RESERVE

MICROFILMED MAR 23 1979
CON-FORCE
CALGARY
EDMONTON
REGINA
VANCOUVER
WINNIPEG

SCALE	DATE	EST	NO
BY 100	CHKD 15 JUL 14 1977	EST	NO 775

F 706-3