



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 500-2005**

**ENTRANCE CONCRETE DECK UPGRADE (FRONT & BACK)  
227 PROVENCHER BLVD.**

## TABLE OF CONTENTS

### PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	3

### PART B - BIDDING PROCEDURES

B1. Project Title	1
B2. Submission Deadline	1
B3. Enquiries	1
B4. Addenda	1
B5. Substitutes	2
B6. Bid Submission	3
B7. Bid	3
B8. Prices	4
B9. Qualification	4
B10. Opening of Bids and Release of Information	4
B11. Irrevocable Bid	5
B12. Withdrawal of Bids	5
B13. Evaluation of Bids	5
B14. Award of Contract	6

### PART C - GENERAL CONDITIONS

C1. General Conditions	1
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### PART D - SUPPLEMENTAL CONDITIONS

#### General

D1. General Conditions	1
D2. Scope of Work	1
D3. Contract Administrator	1
D4. Contractor's Supervisor	1
D5. Notices	1

#### Submissions

D6. Insurance	2
D7. Performance Security	3

#### Schedule of Work

D8. Commencement	3
D9. Total Performance	3
D10. Liquidated Damages	4
D11. Scheduled Maintenance	4

#### Control of Work

D12. Job Meetings	4
D13. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	4

#### Warranty

D14. Warranty	5
Form H1: Performance Bond	6
Form H2: Irrevocable Standby Letter of Credit	8

### PART E - SPECIFICATIONS

#### General

E1. Applicable Specifications, Standard Details and Drawings	1
E2. General Provisions Section 01000	1

Template Version: C320050301

E3. Cutting and Patching Section 01045	4
E4. Field Measurement Section 01055	5
E5. Demolition Section 02050	6
E6. Concrete Piles Section 02465	7
E7. Topsoil and Finish Grading Section 02921	8
E8. Landscape Rock Section 02931	10
E9. Sodding Section 02932	11
E10. Shrubs and Planting Beds Section 02950	15
E11. Concrete Reinforcement Section 03200	17
E12. Cast-In-Place Concrete Section 03300	18

## **PART B - BIDDING PROCEDURES**

### **B1. PROJECT TITLE**

- B1.1 ENTRANCE CONCRETE DECK UPGRADE (FRONT & BACK)  
227 PROVENCHER BLVD.

### **B2. SUBMISSION DEADLINE**

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, September 8, 2005.
- B2.2 Bid Submissions determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.
- B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

### **B3. ENQUIRIES**

- B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.
- B3.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.
- B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.
- B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.
- B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

### **B4. ADDENDA**

- B4.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.
- B4.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B4.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- B4.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Branch internet site for addenda shortly before submitting his Bid.
- B4.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

## **B5. SUBSTITUTES**

- B5.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B5.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B5.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B5.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
  - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
  - (c) identify any anticipated cost or time savings that may be associated with the substitute;
  - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
  - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B5.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B5.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B5.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.
- B5.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B5.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative shall base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B13.
- B5.9 No later claim by the Contractor for an addition to the 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. BID SUBMISSION**

- B6.1 The Bid Submission consists of the following components:
- (a) Form A: Bid;
  - (b) Form B: Prices.
- B6.2 The Bid Submission shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B6.2.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B6.3 Bid Submissions submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B6.4 Bid Submissions shall be submitted to:
- The City of Winnipeg  
Corporate Finance Department  
Materials Management Branch  
185 King Street, Main Floor  
Winnipeg MB R3B 1J1

**B7. BID**

- B7.1 The Bidder shall complete Form A: Bid, making all required entries.
- B7.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;
  - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
  - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
  - (d) if the Bidder is carrying on business under a name other than his own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B7.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B7.2.
- B7.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B7.4 Paragraph 10 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
  - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
  - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers;
  - (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

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

B7.4.2 All signatures shall be original.

B7.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid Submission and the Contract, when awarded, shall be both joint and several.

## **B8. PRICES**

B8.1 The Bidder shall state the lump sum price in Canadian funds for the Work on Form B: Prices.

## **B9. QUALIFICATION**

B9.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
- (b) be responsible and not be suspended, debarred or in default of any obligation to the City;
- (c) be financially capable of carrying out the terms of the Contract;
- (d) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract;
- (e) have successfully carried out work, similar in nature, scope and value to the Work;
- (f) employ only Subcontractors who:
  - (i) are responsible and not suspended, debarred or in default of any obligation to the City (a list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>); and
  - (ii) have successfully carried out work similar in nature, scope and value to the portion of the Work proposed to be subcontracted to them, and are fully capable of performing the Work required to be done in accordance with the terms of the Contract;
- (g) have a written workplace safety and health program in accordance with The Workplace Safety and Health Act (Manitoba);

B9.2 The Bidder shall be prepared to submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B9.3 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

## **B10. OPENING OF BIDS AND RELEASE OF INFORMATION**

B10.1 Bid Submissions will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Branch, or in such other office as may be designated by the Manager of Materials.

B10.1.1 Bidders or their representatives may attend.

- B10.2 After the public opening, the names of the Bidders and their Total Bid Prices as read out (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- B10.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- B10.4 The Bidder is advised that any information contained in any Bid Submission may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

### **B11. IRREVOCABLE BID**

- B11.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.
- B11.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work for the time period specified in Paragraph 9 of Form A: Bid.

### **B12. WITHDRAWAL OF BIDS**

- B12.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B12.1.1 Notwithstanding GC:23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
- B12.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B12.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials shall:
- (a) retain the Bid Submission until after the Submission Deadline has elapsed;
  - (b) open the Bid Submission to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid; and
  - (c) if the notice has been given by any one of the persons specified in B12.1.3(b), declare the Bid withdrawn.
- B12.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B11.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law.

### **B13. EVALUATION OF BIDS**

- B13.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity (pass/fail);

- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B9 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B5.

B13.2 Further to B13.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements if the interests of the City so require.

B13.3 Further to B13.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid Submission or in other information required to be submitted, that he is responsible and qualified.

B13.4 Further to B13.1(c), the Total Bid Price shall be the lump sum price shown on Form B: Prices.

B13.4.1 If there is any discrepancy between the lump sum price written in figures and the lump sum price written in words, the price written in words shall take precedence.

#### **B14. AWARD OF CONTRACT**

B14.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B14.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

B14.2.1 Without limiting the generality of B14.2, the City will have no obligation to award a Contract where:

- (a) the prices exceed the available City funds for the Work;
- (b) the prices are materially in excess of the prices received for similar work in the past;
- (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
- (d) only one Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

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

B14.4 Notwithstanding GC:4, the City will issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.

B14.5 The Contract, as defined in GC:1.1, in its entirety shall be deemed to be incorporated in and to form a part of the Purchase Order notwithstanding that it is not necessarily attached to or accompany said Purchase Order.

## **PART C - GENERAL CONDITIONS**

### **C1. GENERAL CONDITIONS**

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

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

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

#### **D1. GENERAL CONDITIONS**

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

#### **D2. SCOPE OF WORK**

- D2.1 The Work to be done under the Contract shall consist of Entrance Concrete Deck Upgrade (Front & Back).

#### **D3. CONTRACT ADMINISTRATOR**

- D3.1 The Contract Administrator is:  
Ruby Li  
Architect/Interior Designer  
Planning, Property and Development Department  
3<sup>rd</sup> Floor – 65 Garry Street  
Telephone No. (204) 986-3984  
Facsimile No. (204) 947-2284
- D3.2 At the pre-construction meeting, the Contract Administrator will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

#### **D4. CONTRACTOR'S SUPERVISOR**

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

#### **D5. NOTICES**

- D5.1 Except as provided for in GC:23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

- D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3, D5.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1.
- D5.3 All notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:  
The City of Winnipeg  
Chief Administrative Officer Secretariat  
Administration Building, 3rd Floor  
510 Main Street  
Winnipeg MB R3B 1B9  
Facsimile No.: (204) 949-1174
- D5.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:  
The City of Winnipeg  
Corporate Services Department  
Legal Services Division  
185 King Street, 3rd Floor  
Winnipeg MB R3B 1J1  
Facsimile No.: (204) 947-9155

## **SUBMISSIONS**

### **D6. INSURANCE**

- D6.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) all inclusive, with The City of Winnipeg being added as an additional insured, with a cross-liability clause, such liability policy to also contain a contractual liability, an unlicensed motor vehicle liability and a products and completed operations endorsement to remain in place at all times during the performance of the Work and throughout the warranty period;
  - (b) automobile liability insurance for owned and non-owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;
- D6.2 Deductibles shall be borne by the Contractor.
- D6.3 The Contractor shall provide the City Solicitor with a certificate of insurance of each policy, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than seven (7) Calendar Days from notification of the award of Contract.
- D6.3.1 The certificate of insurance for the commercial general liability insurance must clearly state "operations to include demolition work".
- D6.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least fifteen (15) Calendar Days prior written notice to the Contract Administrator.

## **D7. PERFORMANCE SECURITY**

- D7.1 If the Contract Price exceeds twenty-five thousand dollars (\$25,000.00), 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.
- D7.1.1 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.
- D7.2 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 Purchase Order and prior to the commencement of any Work on the Site.

## **SCHEDULE OF WORK**

### **D8. COMMENCEMENT**

- D8.1 The Contractor shall not commence any Work until he is in receipt of a Purchase Order from the Award Authority authorizing the commencement of the Work.
- D8.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
    - (i) evidence that the Contractor is in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
    - (ii) evidence of the workers compensation coverage specified in GC:6.14;
    - (iii) evidence of the insurance specified in D6; and
    - (iv) the performance security specified in D7.
  - (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.
- D8.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the Purchase Order.

### **D9. TOTAL PERFORMANCE**

- D9.1 The Contractor shall achieve Total Performance within forty-five (45) consecutive Working Days of the commencement of the Work as specified in D8.
- D9.2 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.

D9.3 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.

#### **D10. LIQUIDATED DAMAGES**

D10.1 If the Contractor fails to achieve Total Performance in accordance with the Contract by the day fixed herein for Total Performance, the Contractor shall pay the City two-hundred dollars (\$200.00) per Calendar Day for each and every Calendar Day following the day fixed herein for Total Performance during which such failure continues.

D10.2 The amount specified for liquidated damages in D10.1 is based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Total Performance by the day fixed herein for same.

D10.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

#### **D11. SCHEDULED MAINTENANCE**

D11.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

- (a) Shrubs and Plants as specified in Drawing No. L1;
- (b) Sodding as specified in Drawing No. L1.

D11.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

#### **CONTROL OF WORK**

##### **D12. JOB MEETINGS**

D12.1 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.

D12.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

##### **D13. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

D13.1 Further to GC:6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

## **WARRANTY**

### **D14. WARRANTY**

- D14.1 Notwithstanding GC:13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, unless extended pursuant to GC:13.2.1 or GC:13.2.2, in which case it shall expire when provided for thereunder.
- D14.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.
- D14.2 Notwithstanding GC:13.2, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.
- D14.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in GC:13.2 for the warranty period to begin.

**FORM H1: PERFORMANCE BOND**  
(See D7)

KNOW ALL MEN BY THESE PRESENTS THAT

\_\_\_\_\_ ,  
(hereinafter called the "Principal"), and

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

\_\_\_\_\_ dollars (\$\_\_\_\_\_.)

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

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

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for:

BID OPPORTUNITY NO. 500-2005

ENTRANCE CONCRETE DECK UPGRADE (FRONT & BACK)  
227 PROVENCHER BLVD.

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

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

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

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

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

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

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ .

SIGNED AND SEALED  
in the presence of:

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Name of Principal)

Per: \_\_\_\_\_ (Seal)

Per: \_\_\_\_\_

\_\_\_\_\_  
(Name of Surety)

By: \_\_\_\_\_ (Seal)  
(Attorney-in-Fact)

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT  
(PERFORMANCE SECURITY)  
(See D7)**

\_\_\_\_\_  
(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 500-2005

ENTRANCE CONCRETE DECK UPGRADE (FRONT & BACK)  
227 PROVENCHER BLVD.

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

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

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

\_\_\_\_\_ Canadian dollars.

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

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

Partial drawings are permitted.

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

\_\_\_\_\_  
(Address)

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

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

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

\_\_\_\_\_  
(Date)

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

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

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

\_\_\_\_\_  
(Name of bank or financial institution)

Per: \_\_\_\_\_  
(Authorized Signing Officer)

Per: \_\_\_\_\_  
(Authorized Signing Officer)

## **PART E - SPECIFICATIONS**

### **GENERAL**

#### **E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS**

E1.1 The following Drawings are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
C1	Partial Site Plan – Deck & Stair Demolition
L1	Partial Landscape Plan - Renovation
A1	Partial Front Entrance Plan – Renovation & Sections
S1	Entrance Deck Plans - Renovation
S2	Structural Sections
S3	Structural Sections

#### **E2. GENERAL PROVISIONS SECTION 01000**

##### **E2.1 SCOPE**

###### **E2.1.1 SITE**

- (a) Site is located at 227 Provencher Blvd., Winnipeg, Manitoba.

###### **E2.1.2 BUILDING CODES**

- (a) Notwithstanding anything contained in these documents, the current By-Laws and Building Codes applicable at the time construction takes place shall govern the Work.

##### **E2.2 COORDINATION AND COOPERATION**

- (a) Contractor must provide safe access to building for barrier free usage during construction. Provide working schedule when constructing upper deck surface.
- (b) Further to GC:6.25 specifications shall be read by all trades to acquaint themselves with the nature of the work required. Failure to do so will not relieve them of any responsibilities for cooperation in coordinating the Work and preventing delay and for the supply and installation of materials required for this Work.
- (c) Contractor must coordinate with Contract Administrator regarding any noise producing construction or demolition work during daytime hours when Provincial Courts are in session.

##### **E2.3 MATERIALS**

###### **E2.3.1 C.S.A.**

- (a) All materials, where applicable, shall be CSA approved.

##### **E2.4 SUBMITTALS**

###### **E2.4.1 SHOP DRAWINGS**

- (a) The Contractor shall submit for approval five (5) sets of detailed shop drawings for all Work as requested by the Contract Administrator at the initial Job meeting and as required thereafter.

##### **E2.5 QUALITY CONTROL**

###### **E2.5.1 INSPECTING AND TESTING MATERIAL**

- (a) The City reserves the right to inspect and test all materials at its own expense and to reject any materials which are not in accordance with the requirements of the specifications. The Contractor shall furnish, at the Contractor's expense, such specimens and samples of materials as may be required for testing.
- (b) The Contractor shall allow the City to test any equipment, and shall provide power, fuel or material required for these standard performance tests on the equipment.

## E2.6 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

### E2.6.1 SITE PROTECTION

- (a) Protect adjacent private and public property from damage during the performance of Work.
- (b) Be responsible and pay for all damage incurred due to improper protection.
- (c) Conform to all requirements of National Building Code with Manitoba amendments, relevant Worker's Compensation requirements and other authorities having jurisdiction.
- (d) WHMIS:
  - (i) Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.
  - (ii) Deliver copies of WHMIS data sheets to Contract Administrator on delivery of materials.
- (e) Maintain the building weathertight, against unauthorized entry and vandalism at all times. This includes "unusual" wind and rain storm.
- (f) Clean up Site daily, remove demolished or excavated materials on daily basis to prevent site accumulation.
- (g) Provide and erect hoarding as necessary to protect the public, workers, and property and adjacent property from contract activities, dust, injury or damage.
- (h) Provide all necessary guard railings, barricades and lighting required around the building, excavations, open areas, for demolition, etc., to protect workers and public from possible injury. Provide as required by local governing authorities, Workers Compensation Board, etc.

### E2.6.2 SITE FACILITIES

- (a) Contractor should provide a suitable latrine for the workers.

### E2.6.3 FIRE PROTECTION

- (a) Provide and maintain adequate temporary fire protection equipment during performance of Work, as required by insurance companies having jurisdiction and governing codes, regulations and by-laws.
- (b) Handle gasoline and like combustible materials with good, safe practice.
- (c) Remove combustible debris from Site daily.

### E2.6.4 LAYOUT OF WORK

- (a) The Contractor shall verify all dimensions on the drawings and report any discrepancies to the Contract Administrator before starting the Work.

### E2.6.5 AS FOUND CONDITIONS

- (a) The contract drawings attempt to depict the anticipated "as found" conditions insofar as such can be determined from details on available drawings and information

gathered during the preparation of the various documentation. However, the Contractor shall anticipate variations from the drawn details and make such additional cost allowances as he may deem necessary for contract completion without extras.

- (b) The Contractor shall anticipate having to make changes to the rough openings in order to accommodate the new construction.

#### E2.6.6 EXISTING SERVICES AND UTILITIES

- (a) Further to GC:3.1 of the General Conditions, it shall be the responsibility of the Contractor to verify the location of all existing utilities, pipes and other objects and if encountered, to adequately protect them during the construction period, and if disturbed or damaged by the Contractor, to have them replaced or reset in their original position after construction has been completed at the Contractor's cost.
- (b) The permanent power system of the building may be used when it is available, subject to approval of the City. Be responsible for all damages thereto. Pay for all costs of maintaining and providing temporary power and light when using permanent system and otherwise as negotiated with the City.

#### E2.7 CONTRACTOR TO NOTIFY UTILITIES AND OTHER AUTHORITIES

##### E2.7.1 UTILITIES

- (a) Whenever the Work requires that a public street or lane be cut for underground works, the Contractor shall before entering on the Work Site, make application to each utility, or other authorities, and shall give to the Superintendent of Traffic Services, Traffic Operations Section of the Public Works Department of the City of Winnipeg, not less than 48 hours written notice of the date on which Work is to commence. A copy of the application and of all notices are to be given to the Contract Administrator.
- (b) The Contractor shall be responsible for all costs of the Work to be done in the cut, the Work to restore all underground structures to their " as found " condition, and to restore the surface area to its original condition or better.
- (c) The Contractor shall supply, erect and maintain all applicable traffic control devices in accordance with the provisions of the latest edition of the " manual of temporary Traffic Control in Work Areas on City Streets" issued by the City of Winnipeg. The manual is available from the Public Works Department of the City of Winnipeg at 1155 Pacific Avenue.

#### E2.8 PROJECT INFORMATION SIGNS

##### E2.8.1 SIGNS

- (a) No project information signs shall be allowed without the written approval of the Contract Administrator. Any project information signs approved during construction are to be removed by the Contractor upon completion of project.

#### E2.9 REQUIREMENTS

##### E2.9.1 INSTRUCTION MANUALS

- (a) The Contractor shall provide the Contract Administrator with four copies of all manuals showing:
  - (i) Service Instruction - including a list of spare parts and replacement parts and the names and addresses of all suppliers.
  - (ii) Maintenance Instructions
  - (iii) Installation Instructions
  - (iv) Operating Instructions
  - (v) Electric Schematics

- (b) Detailed electrical and electronic circuit diagrams (wiring schematics) showing all wiring connections; all electrical component values; all component parts manufacturers; and servicing procedures for all electrical and electronic equipment utilized to approval of the City. Purchase of the equipment is contingent on the provision of the above information.

#### E2.9.2 OCCUPANCY PERMIT

- (a) The Contractor shall obtain the Occupancy Permit required under the Building By-Law, along with the mechanical and electrical Certificate of Inspection from the City of Winnipeg Permits Branch of the Planning, Property & Development Department.

#### E2.9.3 INSTRUCTION

- (a) The Contractor shall instruct the facility operating staff in the use of all the facility systems to the satisfaction, and in the presence, of the Contract Administrator.

#### E2.10 REQUIREMENTS

##### E2.10.1 AS-BUILT DRAWINGS

- (a) At Total Performance, the Contractor shall provide the Contract Administrator with two (2) sets of record drawings " As-Built" Drawings and Specifications bearing notations of all changes and variations from the originals.
- (b) The accuracy of these drawings shall be the responsibility of the Contractor, who shall bear all expenses of corrections thereto. Final Payment shall not be made until this requirement has been fulfilled.

### E3. CUTTING AND PATCHING SECTION 01045

#### E3.1 GENERAL

##### E3.1.1 REQUIREMENTS INCLUDED

- (a) Requirements and limitations for cutting and patching the Work.

##### E3.1.2 RELATED REQUIREMENTS

- (a) Individual Sections: cutting and patching incidental to Work of the section.

##### E3.1.3 SUBMITTALS

- (a) Submit written request in advance of cutting or alteration which affects:
  - (i) Structural integrity of any element of Projects.
  - (ii) Integrity of weather-exposed or moisture resistant elements.
  - (iii) Efficiency, maintenance, or safety of any operational element.
  - (iv) Visual qualities of sight-exposed elements.
- (b) Include in request:
  - (i) Identification of project.
  - (ii) Location and description of affected Work.
  - (iii) Statement on necessity for cutting or alteration.
  - (iv) Description of proposed Work and products to be used.
  - (v) Alternatives to cutting and patching.
  - (vi) Effect of Work on City.
  - (vii) Date and time Work will be executed.

#### E3.2 PRODUCTS

### E3.2.1 MATERIALS

- (a) Required for original installation.

### E3.3 EXECUTION

#### E3.3.1 GENERAL

- (a) Execute cutting, fitting and patching to complete the Work.
- (b) Fit the several parts together, to integrate with other Work.
- (c) Uncover Work to install ill-timed Work.
- (d) Remove and replace defective and non-conforming Work.
- (e) Provide openings for penetrations of mechanical and electrical work.

#### E3.3.2 INSPECTION

- (a) Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- (b) After uncovering, inspect conditions affecting performance of Work.
- (c) Beginning of cutting or patching means acceptance of existing conditions.

#### E3.3.3 PREPARATION

- (a) Provide supports to assure structural integrity of surroundings; devices and methods to protect other portions of project from damage.
- (b) Provide protection from elements for areas which may be exposed by uncovering Work.
- (c) Conduct Work to minimize interference with operation of existing facility.

#### E3.3.4 PERFORMANCE

- (a) Execute Work by methods to avoid damage to other Work and which will provide proper surfaces to receive patching and finishing.
- (b) Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements and sight-exposed surfaces.
- (c) Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed without prior written approval.
- (d) Restore Work with new products in accordance with requirements of Contract Documents.
- (e) Fit Work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- (f) At penetration of fire-rated wall, ceiling or floor construction, completely seal voids with fire-rated material, full thickness of the construction element.
- (g) Refinish surfaces to match adjacent finishes: for continuous surfaces refinish to nearest intersection or as indicated on schedule and drawings; for equipment refinish entire unit.
- (h) Restore surfaces and finishes in areas of electrical and mechanical work to match surrounding substrate as per above notes.

### E4. FIELD MEASUREMENT SECTION 01055

#### E4.1 GENERAL

##### E4.1.1 REQUIREMENTS INCLUDED

- (a) Verification of building dimensions.
- (b) Site measurement for construction.

E4.1.2 PROJECT CONDITIONS

- (a) The drawings in these bid documents are based on drawings of existing facility, actual Site dimensions may vary.

E4.2 EXECUTION

E4.2.1 SITE MEASUREMENT

- (a) Verify all fixed dimensions prior to commencing with Work.
- (b) Site check all dimensions prior to fabrication.
- (c) Notify Contract Administrator of any discrepancies between Site checked dimensions and drawing dimensions.

**E5. DEMOLITION SECTION 02050**

E5.1 GENERAL

E5.1.1 WORK INCLUDED

- (a) Disconnect all electrical components as required.
- (b) Remove all components and fixtures as shown on the drawings prior to demolition.
- (c) Demolish concrete stair and deck slab
- (d) Remove concrete toppings
- (e) Provide temporary support during demolition.

E5.1.2 RELATED WORK

- (a) Cast in Place Concrete Section 03300

E5.1.3 REFERENCE STANDARDS

- (a) Demolition shall be carried out in strict accordance with the Provincial Building Code, the Winnipeg Building By-Law 4555/87 and/or regulations having the force of law.
- (b) Obtain all permits and approvals as required for the Work.

E5.2 EXECUTION

E5.2.1 GENERAL

- (a) Provide all labour, plant, materials, methods, equipment and services necessary to complete the demolition work.
- (b) All debris and rubbish to be removed from Site.
- (c) Ensure that barrier free access is provided to building at all times.

E5.2.2 DEMOLITION

- (a) Provide any general demolition and removal as required by the Work.
- (b) Provide temporary bracing of beams/slabs and ramp prior to placement of new structure.
- (c) Some of the structural slab and deteriorated curbs shall be demolished in panel sections as shown on the drawings.
- (d) Due to vibration noise, all jack hammering shall be carried out in the evening after 4:30 p.m.

- (e) Care shall be exercised so remaining light fixtures and bulbs are not damaged during demolition.
- (f) Any items damaged during demolition such as lights and fixtures shall be replaced by the Contractor at no expense to the City.

#### E5.2.3 SALVAGED MATERIALS

- (a) All salvaged building materials resulting from the demolition including ordinary contents and fixtures, except items noted hereinafter shall become the property of the Contractor and shall be removed from the Site.

### E6. CONCRETE PILES SECTION 02465

#### E6.1 GENERAL

##### E6.1.1 WORK INCLUDED

- (a) Complete cast in place concrete piling including boring, concrete reinforcing, casing if required, removal of borings.

##### E6.1.2 RELATED WORK (specified elsewhere)

- (a) Cast-In-Place Concrete Section 03300

#### E6.2 PRODUCTS

##### E6.2.1 MATERIALS

- (a) Cement: to CSA A-5 - Use sulphate resisting cement (Type V).
- (b) Water and aggregates to CSA A23.
- (c) Reinforcing - new deformed intermediate grade steel to CSA G30.

##### E6.2.2 CONCRETE MIX

- (a) Except where specified otherwise use concrete mix designed to produce 30MPa compressive strength at 28 days. Maximum slump 90mm.
- (b) Admixtures to be approved by the Contract Administrator. Use of calcium chloride not permitted.
- (c) The concrete shall be mixed in a revolving type mixer, approved by the Contract Administrator. All the materials, including the water, shall be charged into the mixer before the truck leaves the batching plant. The mixer shall revolve between 8 and 10 rpm continuously and shall be equipped with an accurate counter. No water shall be added to the concrete after the mixer is charged at the plant. All concrete placed in any one day, on the same Contract, shall come from one central plant.

#### E6.3 EXECUTION

##### E6.3.1 BORING

- (a) Pile holes shall be bored true and plumb in the exact location to elevations as indicated on the drawings. The finished piles shall be minimum diameter as indicated on the drawings at any cross section of the pile.
- (b) The piles are designed as friction piles, and shall be placed to depths shown. Length of pile is measured from underside of grade beam, slab or wall.
- (c) If underground water, boulders or caving is encountered, the Contractor must arrange for its removal and proper concrete placing by methods approved by the Contract Administrator at no extra cost to the City. If piles cannot be placed to depth shown on drawings, then the Contract Administrator shall be notified and he shall determine the

modifications necessary. There will be no extra charge for this modification to the City.

- (d) Measure and record on as-built drawings the depth of all pile holes in the presence of the Contract Administrator before any concrete is poured. The Contractor will show the pile depths on the "As Built" drawings, of pile depths obtained in actual placement.
- (e) It shall be the Contractor's responsibility to check for underground utilities and investigate soil conditions for this project. All information shown on plans was used for design purposes only.

#### E6.3.2 REINFORCING

- (a) Pile reinforcing shall be rigidly fastened together and shall be held in position in such a manner as to insure its proper location in the finished pile.

#### E6.3.3 CONCRETE

- (a) Holes must be completely dry when pouring concrete, and completely filled.
- (b) Concrete pile tops shall be vibrated for a minimum depth of 3000mm.
- (c) In weather below freezing, the Contractor shall keep concrete in piles from freezing and if necessary shall provide heat on pile tops for 4 days.

#### E6.3.4 FIELD QUALITY CONTROL

- (a) A set of field specimens shall be prepared for approximately each day's run of concrete, or more often if required by the Contract Administrator. One set of cylinders shall be required for every 20 cubic metres of concrete poured.

A set shall consist of four specimens from the same batch of concrete as it goes into the Work. Two of the specimens shall be tested at seven (7) days and the remaining two at twenty-eight (28) days. The specimens shall be cylinders 150mm in diameter and 300mm long.

The Contractor shall transport the concrete test specimens, at his expense, not earlier than 24 hours or later than 4 days after they are made to the National Testing Laboratories, Winnipeg. The City shall pay the cost of laboratory tests.

- (b) The following strengths shall be met:
  - (i) The average of all tests representing each class of concrete shall exceed the specified strength by 15 percent minimum.
  - (ii) No three consecutive tests shall fall below the specified strength.
  - (iii) No strength test shall fall below 80 percent of the specified strength.
- (c) If the concrete tests fail to meet the strength requirements, the Contract Administrator may:
  - (i) Change the basic concrete mix for the remainder of the Work.
  - (ii) Require additional curing for the portions under strength.
  - (iii) Have cores drilled and test the cores, or
  - (iv) Have the concrete under strength removed.
- (d) Notify the Contract Administrator 48 hours before drilling or placing concrete.

### E7. TOPSOIL AND FINISH GRADING SECTION 02921

#### E7.1 GENERAL

##### E7.1.1 SOURCE QUALITY CONTROL

- (a) Advise Contract Administrator of sources of topsoil to be utilized 7 days in advance of starting work.
- (b) Contractor is responsible for soil analysis and requirements for amendments to supply topsoil as specified.

## E7.2 PRODUCTS

### E7.2.1 TOPSOIL

- (a) Top soil required shall consist of a well mixed and screened 3 way combination of:  
A clay-textured or loam-textured dark topsoil, a fertile, friable material neither of heavy clay nor of very light sandy nature containing by volume, a minimum of 4% for clay loams and 2% for sandy loams to a maximum 25% organic matter (peat, rotted manure or composted material) and capable of sustaining vigorous plant growth. Topsoil shall be free of subsoil contamination, roots, stones over 30 mm in diameter or subsoil clay lumps over 30 mm in diameter and other extraneous matter. Topsoil shall not contain quackgrass rhizomes, Canada thistle roots or other noxious weeds. Salinity rating shall be less than 2.5 mmhos/cm. The pH range shall be between 6.0 – 8.0.  
  
Top soil shall be placed as a seed bed to a minimum depth of 100 mm, compacted to 75 mm. Top soil is considered incidental and shall not be measured for separate payment.

### E7.2.2 SOIL AMENDMENTS

- (a) Peatmoss:
  - (i) Derived from partially decomposed species of Sphagnum Mosses.
  - (ii) Elastic and homogeneous, brown in colour.
  - (iii) Free of wood and deleterious material, which could prohibit growth.
  - (iv) Shredded particle minimum size: 5 mm.
- (b) Sand: washed coarse silica sand, medium to coarse textured.
- (c) Fertilizer:
  - (i) Complete, commercial, with 35% soluble nitrogen.

## E7.3 EXECUTION

### E7.3.1 STRIPPING OF TOPSOIL

- (a) Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.
- (b) Commence topsoil stripping of areas as directed by the Contract Administrator after area has been cleared of brushweeds and grasses and removed from site.
- (c) Strip topsoil to depths as indicated and as directed by the Contract Administrator. Avoid mixing topsoil with subsoil.
- (d) Stockpile in locations as directed by the Contract Administrator or as indicated. Stockpile height not to exceed 2 m.
- (e) Dispose of unused topsoil in location as indicated or as directed by the Contract Administrator off site.
- (f) Protect stockpiles from contamination and compaction.

### E7.3.2 PREPARATION OF EXISTING GRADE

- (a) Verify that grades are correct. If discrepancies occur, notify the Contract Administrator and do not commence work until instructed by the Contract Administrator.
- (b) Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
- (c) Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris, which protrudes more than 75 mm above surface. Dispose of removed material off site.
- (d) Course cultivate entire area which is to receive topsoil to depth of 150 mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

#### E7.3.3 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

- (a) Place topsoil after the Contract Administrator has accepted subgrade.
- (b) Spread topsoil in uniform layers not exceeding 150 mm, over unfrozen subgrade free of standing water.
- (c) For sodded areas keep topsoil 25 mm below finished grade.
- (d) Spread topsoil as indicated to following minimum depths after settlement and 80% compaction:
  - (i) 100 mm for seeded areas
  - (ii) 100 mm for sodded areas
  - (iii) 500 mm for flower beds
  - (iv) 500 mm for shrub beds
- (e) Manually spread topsoil/planting soil around trees, shrubs and obstacles.

#### E7.3.4 SOIL AMENDMENTS

- (a) For planting beds, turf: apply and thoroughly mix soil amendments and fertilizer into full specified depth of topsoil and top 50 mm of existing soil as recommended by topsoil supplier.

#### E7.3.5 FINISH GRADING

- (a) Grade to eliminate rough spots and low areas and ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.
- (b) Consolidate topsoil to required bulk density using equipment approved by Contract Administrator. Leave surfaces smooth, uniform and firm against deep footprinting.

#### E7.3.6 ACCEPTANCE

- (a) Contract Administrator will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

#### E7.3.7 RESTORATION OF STOCKPILE SITES

- (a) Restore stockpile sites acceptable to Contract Administrator.

#### E7.3.8 SURPLUS MATERIAL

- (a) Dispose of materials not required where directed by Contract Administrator off site.

### **E8. LANDSCAPE ROCK SECTION 02931**

#### E8.1 GENERAL

##### E8.1.1 RELATED WORK

(a) Section 02950 – Trees, Shrubs and Planting Beds

E8.2 PRODUCTS

E8.2.1 MATERIALS

- (a) Stone Mulch: 38 to 50 mm Ø washed round stone. No limestone permitted
- (b) Landscape Fabric: 'Weedpro' or approved equal
- (c) Edging: 'Black Diamond Edging' or approved equal

E8.3 EXECUTION

E8.3.1 INSTALLATION

- (a) The Contractor shall not install stone mulch until the finished grade is inspected and approved by the Contract Administrator.
- (b) Landscape fabric shall cover all areas to receive stone mulch and be completely covered by the mulch. The ends shall be buried so the fabric does not lift up. Fabric is to be cut in locations for plant material.
- (c) Wherever stone mulch meets turf, Black Diamond Edging is to be installed as per manufacturer's instructions.
- (d) Stone Mulch is to be spread evenly to a depth of 100 mm. Mulch is to be clean and no extraneous materials or debris is allowed.

**E9. SODDING SECTION 02932**

E9.1 GENERAL

E9.1.1 RELATED WORK

- (a) Section 02921 – Topsoil and Finishing Grading

E9.1.2 SOURCE QUALITY CONTROL

- (a) Obtain approval from the Contract Administrator of sod at source. Mixture variety shall be submitted to Contract Administrator for approval.
- (b) When proposed source of sod is approved, use no other source without written authorization.

E9.1.3 SAMPLES

- (a) Submit samples in accordance with Section 01300 – Submittals.

E9.1.4 TESTING

- (a) All sod supplied under this Specification shall be subject to inspection and testing by the Contract Administrator and/or the Contract Administrator's designated turf inspector. There shall be no charge to The City for any materials taken by the Contract Administrator or the Contract Administrator's designated turf inspector for inspection purposes.
- (b) Sod will be subject to tests for nitrate, phosphate, potassium, sulphate, pH, E.C. (salinity), mineral soil layer thickness and its organic matter content by a testing laboratory designated by the Contract Administrator.
- (c) Tests conducted to determine the thickness of the mineral soil layer of the sod and its percent of organic matter shall be done in accordance with standard operating procedures approved by the Contract Administrator for both receiving and analysing sod samples.

- (d) Any sod placed on the work site that in the opinion of the Contract Administrator does not conform to the specification detailed herein, shall be rejected by the Contract Administrator and replaced by, and at the expense of the Contractor.

#### E9.1.5 SCHEDULING

- (a) The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this specification.
- (b) Schedule sod laying to coincide with preparation of soil surface.
- (c) Schedule sod installation after frost has left ground and no later than September 30<sup>th</sup>.

#### E9.2 PRODUCTS

##### E9.2.1 MATERIALS

- (a) Topsoil
  - (i) Topsoil as specified in Section 02921
- (b) Turfgrass Nursery Sod types:

Turfgrass sod with a mineral soil layer containing a minimum of 70% inorganic soil. Salinity rating shall be less than 2.5 mm hos/cm. The pH range shall be between 6.0 – 8.0. Sod supplied shall have been sown in nursery fields with Canada Certified No. 1 or Canada Certified No. 2 grass seed meeting the following certified seed blends or mixtures:

  - (i) A blend composed of one hundred percent (100%) Kentucky Bluegrass or a mixture of ninety five percent (95%) Kentucky Bluegrass and five percent (5%) Creeping Red fescue.
  - (ii) Turfgrass sod shall be free of disease, turf damaging insects and any grass species, strains or cultivars other than specified herein.
  - (iii) At the time of delivery, the turfgrass sod shall not contain more than 10 broadleaf weeds per 50 square metres. Sod shall have been mowed to a height of 50 mm prior to delivery and be of sufficient density that no surface soil will be visible. Sod shall have a uniform inorganic soil layer thickness of not less than 12 mm and not greater than 19 mm and shall be consistent throughout all loads delivered to the work site. The organic thatch layer within the sod shall not exceed an uncompressed thickness of 12 mm. In all cases, the final rolled and compacted topsoil/sod growing medium shall be maintained at not less than 100 mm in depth.
- (c) Sod establishment support:
  - (i) Wooden pegs: 17 x 8 x 250 mm.
- (d) Water:
  - (i) Supplied by Applicator at designation source.
  - (ii) Potable, free of impurities
- (e) Fertilizer:
  - (i) To Canada "Fertilizers Act" and "Fertilizers Regulations".
  - (ii) Complete, synthetic, slow release with 65% of nitrogen content in water-insoluble form.

#### E9.3 EXECUTION

##### E9.3.1 PREPARATION

- (a) Verify that grades are correct and prepared in accordance with Section 02921 – Topsoil and Finish Grading. If discrepancies occur, notify the Contract Administrator and do not commence Work until instructed by the Contract Administrator.

- (b) Do not perform Work under adverse field conditions, such as frozen soil, excessively wet or dry soil or soil covered with snow, ice or standing water.
- (c) Fine grade surface free of humps and hollows to smooth, even grade, to contours and elevations indicated, to tolerance of plus or minus 8 mm, for Turfgrass Nursery Sod, surface to drain naturally.
- (d) Remove and dispose weeds, debris, stones 50 mm in diameter and larger, soil contaminated by oil, gasoline and other deleterious materials off site.
- (e) Cultivate fine grade approved by the Contract Administrator to 25 mm depth immediately prior to Sodding.

#### E9.3.2 SOD PLACEMENT

- (a) Lay sod within 36 hours of being lifted.
- (b) The sod shall be laid evenly and closely packed together, leaving no open joints and no overlap on adjacent pieces of sod. Joints in adjacent rows shall be staggered. A full row of sod, not less than 450 mm in width shall be placed along the perimeter of the sodded area, parallel to planting or walk areas. Small, broken or irregular pieces of sod will be rejected.
- (c) Where "Bid Roll" sod is to be installed, the Contractor shall ensure that any reinforcement netting that may be used to assist with the harvesting and/or installation of the sod roll is removed before final placement of the sod.
- (d) Immediately after installation of sod, the Contractor shall water the area in sufficient quantities to saturate sod and underlying topsoil to a minimum depth of 100 mm. All costs to provide water for sodded areas shall be borne by the Contractor. These costs may include hydrant permit and meter rental fees.
- (e) After the sod and topsoil has dried sufficiently to prevent damage, the areas shall be rolled (the edges pounded if necessary) to form a uniform even surface and level with adjoining existing grades, sidewalks and curbs. Heavy rolling to correct irregularities in grade will not be permitted. Sodded areas near existing fixtures that are unable to be rolled shall be thoroughly tamped to ensure a good bond between topsoil and sod.
- (f) Sodding operations shall be completed within two days (48 hours) after laying the sod. This shall be deemed to include watering, rolling, and repairing any visible joints and low or bare spots within the sodded area.
- (g) Sod shall not be laid in a frozen state, or when any other conditions unfavourable to the successful transplanting of sod exist.

#### E9.3.3 SOD PLACEMENT ON SLOPES

- (a) On embankments, sod shall be laid lengthwise across the face of the slope. On slopes of 1 vertical to 3 horizontal (18 degrees) or steeper, in every second row on the slope and at the foot of the slope, each piece of sod shall be pegged with minimum two 250 mm long wooden pegs driven into the soil layer of the sod.

#### E9.3.4 FERTILIZING PROGRAM

- (a) Fertilize during establishment and warranty period as recommended by sod supplier.

#### E9.3.5 MAINTENANCE DURING ESTABLISHMENT PERIOD

- (a) Given Substantial Performance, immediately after the sod has been laid to the satisfaction of the Contract Administrator, the Contractor shall provide and pay for continuous maintenance of the sodded area for thirty days, or longer, if the Contractor Administrator detects deficiencies in the sodded areas.
- (b) The Contract Administrator will not allow the Thirty (30) Day Maintenance Period to commence until the following requirements are met:

- (i) The nursery sod supplied shall meet the seed mixture requirements specified herein
  - (ii) Sod is free of bare and dead spots
  - (iii) The nursery sod shall not contain more than 10 broadleaf weeds per 50 sq. m.
  - (iv) Sodded area shall be rolled to form a firm, uniform even surface.
  - (v) The sod shall have sufficient shoot density that no surface soil is visible within sod.
  - (vi) The height of the top growth of the sod shall be 50 – 60 mm.
  - (vii) The sodded area shall be free of any visual obstructions such as leaves
  - (viii) Sodded area shall be free of any turf damaging insects.
- (c) Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to depth of 75 to 100 mm.
- (d) Cut grass to 40 mm when it reaches height of 60 mm. Remove clippings which will smother grassed areas as directed by the City of Winnipeg.
- (e) Any deficient or damaged areas shall be resodded by the Contractor within three (3) working days after receiving notification from the Contract Administrator, and the area so resodded shall be further maintained until it meets the criteria specified herein.
- (f) The Contractor shall apply herbicide when broadleaf weeds start developing in competition with grass. Apply herbicide in accordance with the manufacturer's instructions and the Manitoba Agriculture Guide to Crop Protection and Herbicide Recommendations for Landscape Applicators, latest editions and the following criteria:
- (i) Use 2, 4-D Amine or MCPA Amine herbicide for susceptible broadleaf weeds.
  - (ii) Use a mixture containing 2, 4-D Amine or MCPA Amine, Mecoprop and Dicamba for 2, 4-D resistant plants.
  - (iii) Do not apply to newly seeded areas until after the second or third mowing.
  - (iv) Do not water within 24 hours after application.
  - (v) Apply when winds are less than 20 km/h and air temperature is above 10° C.
  - (vi) Avoid use of pure Dicamba solutions near trees and shrubs.
- (g) Given the need for insect control, the Contractor shall have in his possession a Pesticide Applicator's License and a Pesticide Use Permit for pesticide applications related to this specification. Use standard commercial products in accordance with the manufacturer's instructions and the Manitoba Agriculture Guide to Crop Protection (latest edition) for the particular insect/insects involved.

Copies of the Pesticide Applicator's License and the Pesticide Use Permit must be submitted to the Contract Administrator prior to commencement of pesticide application.

All persons handling insecticides shall be fully aware of toxicological rules and regulations governing their use.

The Contractor shall inform the Contract Administrator immediately of any dangerous occurrence.

- (h) Fertilize areas in accordance with fertilizing program. Spread half the required amount of fertilizer in one direction and remainder at right angles, and water in well.

#### E9.3.6 SITE CLEAN UP

- (a) During both the installation and maintenance of sod, all sidewalks, streets, approaches, driveways and properties near the Sodding operation shall be kept clean at all times by the Contractor.

- (b) Upon completion of the project, the Contractor shall immediately remove all excess material and debris from the work site.

#### E9.3.7 ACCEPTANCE

- (a) Total Performance shall be granted at the end of the maintenance period provided the requirements set out in E9.3.5(b) are met.
- (b) Areas sodded in fall will be accepted in following spring one month after start of growing season provided acceptance conditions are fulfilled.

#### E9.3.8 WARRANTY PERIOD

- (a) The Warranty Period of one (1) year shall commence at Total Performance.

### **E10. SHRUBS AND PLANTING BEDS SECTION 02950**

#### E10.1 GENERAL

##### E10.1.1 RELATED WORK

- (a) Section 02921 – Topsoil and Finishing Grading

##### E10.1.2 GENERAL

- (a) This specification shall cover the supply and installation of shrubs.
- (b) The Contractor shall furnish all labour, materials, equipment and services necessary, including all things necessary for and incidental to the satisfactory performance and completion of the work as specified herein.

##### E10.1.3 SOURCE QUALITY CONTROL

- (a) Obtain approval from the Contract Administrator of plant material at source prior to diggings.\

##### E10.1.4 PROTECTION

- (a) Coordinate shipping of nursery stock and excavation of holes to ensure minimum time lapse between digging and planting. Tie branches of nursery stock securely, and protect plants against abrasion, exposure and extreme temperature change during transit. Avoid binding of plants with rope or wire, which would damage bark, break branches or destroy natural shape of plant. Give full support to root ball of nursery stock during lifting. Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat moss, saw dust or other acceptable material to prevent loss of moisture during transit and storage. Remove broken and damaged roots with sharp pruning shears. Make clean cuts, and cover cuts over 10 mm diameter with a tree wound dressing.

#### E10.2 PRODUCTS

##### E10.2.1 PLANTING BEDS AND PLANTING SOIL

- (a) Planting bed depth shall be 300 mm unless otherwise stated.
- (b) Soil shall be as specified in Section 02921 – Topsoil and Finishing Grading.

##### E10.2.2 PLANT MATERIAL

- (a) Plant material shall be as specified on the Plant Specification List on the Landscape Plan. All sizes shown are minimum. Plant form, habit, etc. shall be in accordance with the most recent Canadian Nursery Landscape Association (CNLA) publications.
- (b) Quality and source are to comply with the Canadian Standards for Nursery Stock, Seventh Edition of CNLA referring to size and development of plant material and root ball. Measure trees when branches are in their natural position. Height and spread

dimensions refer to main body of trees and not from branch top to branch top. Use trees of No. 1 grade. Unless specified as multi-stem, trees are to have only one, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader. Evergreens are to be full and bushy to grade with single leader only. Height to be measured to previous year's growth.

- (c) Trees and shrubs are to be free of disease, insect infestation, rodent damage, sun scald, frost cracks, abrasions, unhealed scars, scars exceeding 5cm in diameter, major forks or crooks in the trunk, broken branches, or angled leaders. Bare root is not acceptable. Plants having the above defects will not be accepted by the Contract Administrator.
- (d) Nursery stock is to be grown in nurseries under proper cultural practices as recommended by the Canadian Nursery Trades Association. Only nursery stock grown for at least the last four (4) years in nurseries located in an Agriculture Canada Plant Hardiness Zone of 2 (a or b) or 3 (a or b) will be accepted. Nursery stock that has grown in plant hardiness zones 1 and 4 or greater will be rejected.

#### E10.2.3 WATER

- (a) Water is to be potable and free of minerals, which may be detrimental to plant growth.

#### E10.2.4 FERTILIZER

- (a) Fertilizer is to be a slow release formulation of low nitrogen and high phosphorus e.g. 10-50-12. Apply quantities at rates stated by product manufacturer.

#### E10.2.5 MULCH

- (a) Stone Mulch: 38 to 50 mm  $\varnothing$  washed round stone. No limestone permitted.
- (b) Samples must be supplied for approval prior to installation. No debris permitted.

### E10.3 EXECUTION

#### E10.3.1 INSTALLATION

- (a) Shrubs are to be planted according to the Landscape Plan and planting details.
- (b) Location of nursery stock will be staked out or painted on site by the Contractor in consultation with the Contract Administrator.
- (c) The Contractor shall coordinate operations, keeping the site clean and the planting holes drained. The Contractor shall immediately remove soil or debris spilled onto street pavement, grass or sidewalk.
- (d) Installation shall be done during periods of suitable weather conditions and in accordance with locally accepted practice. Trees are to be planted within forty-eight (48) hours of excavation from the nursery. No tree pit is to be left open at the end of the Contractor's work day. The planting program is to be planned to ensure that trees delivered to the site at designated planting locations are installed and thoroughly watered the same day as delivery.
- (e) Plant shrubs vertically. Orient plants to give best appearance in relation to structures, roads and sidewalks. Place nursery stock to depth equal to depth they were originally growing in nursery. With balled and burlapped root balls and root balls in wire baskets, loosen burlap and cut away the top 1/3 without disturbing root ball. Do not pull burlap or rope from under root ball. Non-biodegradable wrapping must be removed. Tamp planting soil around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.

- (f) Each tree is to have an earth saucer at its base having a diameter as large as the excavation with a 100 mm lip formed at the perimeter of the saucer and retain water. When planting is completed, give surface of planting saucer dressing of fertilizer and mix fertilizer thoroughly with top layer of planting soil and water in well.

#### E10.3.2 MULCH

- (a) Stone mulch is to be installed to 100 mm depth over landscape fabric in locations shown on the Landscape Plan.
- (b) Ensure soil settlement has been corrected prior to mulching.
- (c) Landscape Fabric shall be completely covered by the mulch and the ends shall be buried so the fabric does not lift up.

#### E10.3.3 MAINTENANCE

- (a) Substantial Performance shall be achieved once all materials are in place. The Contractor shall maintain the plant material for one (1) year after the completion of the installation.
- (b) Water plantings sufficiently and regularly to maintain optimum growth and health of plants without causing erosion. For evergreen plant material, water thoroughly in late fall prior to freeze-up to saturate soil around root system.
- (c) Remove weeds using control methods acceptable to Contract Administrator.
- (d) Maintain tree guards, guy wires and wrappings in proper repair.
- (e) Replace or re-spread damaged, missing or disturbed mulch. Maintain proper mulch depths.

#### E10.3.4 ACCEPTANCE

- (a) Total Performance shall be granted at the end of the maintenance period.

#### E10.3.5 WARRANTY PERIOD

- (a) The Warranty/Maintenance Period of one (1) year shall commence at Total Performance. Plant material shall be replaced as instructed by the Contract Administrator. All plant material that is replaced during the maintenance period shall be of the same size, calliper and species as the original plant material unless otherwise agreed to, in writing, by the Contract Administrator. Plant material that is replaced will receive an additional 1year Warranty/Maintenance, which will commence on the date of replacement.

### **E11. CONCRETE REINFORCEMENT SECTION 03200**

#### E11.1 GENERAL

##### E11.1.1 WORK INCLUDED

- (a) Supply and install all reinforcing steel as shown on the drawings for all walls, beams, and deck slabs.
- (b) Chairs, hangers, ties, spacers.

##### E11.1.2 RELATED WORK (specified elsewhere)

- (a) Concrete Piles Section 02465
- (b) Cast in Place Concrete Section 03300

##### E11.1.3 REFERENCE STANDARDS

- (a) CSA A23 Standards for concrete and reinforced concrete.

- (b) CSA W186 Welding of Reinforcing.

#### E11.1.4 SHOP DRAWINGS

- (a) Submit shop drawings in accordance with Section 01000.

### E11.2 PRODUCTS

#### E11.2.1 MATERIALS

- (a) Reinforcing bars, deformed billet steel intermediate grade to CSA G30.
- (b) Bar supports, spacers, steel adequate for strength and rigidity.

### E11.3 EXECUTION

#### E11.3.1 PLACING REINFORCEMENT

- (a) The bars shall be placed in the exact position and with the spacing shown or required and shall be securely fastened in place at intersections to prevent displacement during the placing of concrete. The bars shall be fastened with annealed wire or other approved devices. Bar supports and spaces shall be set at approved intervals in all beams and slabs to keep the reinforcement in the required position.
- (b) All steel reinforcement shall be delivered free from rust other than that which may have accumulated during transit to the Work. Bars having a rust, scale, or other material that may reduce the bond shall be thoroughly cleaned before placing concrete. After delivery at the Work Site, bars shall be stored on racks and protected from the weather.
- (c) Steel reinforcement bars shall be cut and bent cold in the shop and delivered at the Work Site ready for placing in position.
- (d) Complete detailed placing drawings and schedules shall be submitted by the Contractor to the Contract Administrator for approval. No material shall be ordered until the Contract Administrator has approved said drawings and schedules.
- (e) All existing reinforcing shall be cleaned by sandblasting or by power brushing to remove all rust and debris from steel. Prior to concrete placement, exposed reinforcing shall be coated with a two component corrosion inhibitor such as MCI 2023 Passivating Grout by Cortec Corporation or equal.

## E12. CAST-IN-PLACE CONCRETE SECTION 03300

### E12.1 GENERAL

#### E12.1.1 WORK INCLUDED

- (a) Concrete Work including walls, beams and deck slabs.
- (b) Formwork, void forms.
- (c) Accessories - control joints, inserts.
- (d) Coordinate and cooperate with other trades. Install imbedded items, sleeves, anchors, and miscellaneous metal.

#### E12.1.2 RELATED WORK (specified elsewhere)

- (a) Concrete Reinforcement Section 03200
- (b) Concrete Piles Section 02465

#### E12.1.3 REFERENCE STANDARDS

- (a) CAN/CSA A5-[93], Portland Cement

- (b) CAN/CSA A23.1-[M90], Concrete Materials and Methods of Concrete Construction

#### E12.1.4 GUARANTEE

- (a) All concrete floors shall be guaranteed against dusting, disintegration or any other defects coming within the Contractor's control for a period of 12 months after final acceptance.

### E12.2 PRODUCTS

#### E12.2.1 MATERIALS

- (a) Cement: to CAN/CSA A5 - Use sulphate resistant cement (Type V) in walls and beams below grade.
- (b) Water and aggregates: to CAN/CSA A23.1.

#### E12.2.2 CONCRETE MIX

- (a) Use concrete mix designed to produce 25MPa compressive strength at 28 days except as noted on drawings.
- (b) Slump: 100mm maximum for walls, beams, and slabs.
- (c) Admixtures to be approved by Contract Administrator. **Use of calcium chloride not permitted.**
- (d) The concrete shall be mixed in a revolving type mixer, approved by the Contract Administrator. All the materials, including the water, shall be charged into the mixer before the truck leaves the batching plant. The mixer shall revolve between 8 and 10 rpm continuously from the time it leaves the plant until discharged at the job, and shall be equipped with an accurate counter. No water shall be added to the concrete after the mixer is charged at the plant. All concrete placed in any one day, on the same contract, shall come from one central plant.

#### E12.2.3 FORMWORK

- (a) For exposed concrete surfaces, forms shall be of G.1.S. fir plywood or steel forms.

### E12.3 EXECUTION

#### E12.3.1 FORMWORK

- (a) Forms shall be set to line and grade and shall be so braced and fastened together as to maintain position and shape and to produce true lines. Special care shall be taken to prevent bulging, but if this occurs, the disturbed surfaces shall be corrected without extra cost to the City.
- (b) Internal spacers and ties shall be made up of bolts and special nuts so arranged that when the forms are removed no holes shall extend through the concrete and no metal remaining in the concrete shall be within one inch (1") of any concrete surfaces. Wire ties shall not be used. The use of wooden spreaders between the forms will not be permitted where such spreaders will remain in the concrete.
- (c) The inside of the forms shall be coated with non-staining mineral oil and this coating shall be applied before the steel reinforcement bars are placed.
- (d) Deviation of all cast-in-place concrete shall not be greater than 6mm in 3500mm in vertical and horizontal line. Deviation from a plane surface for grade beams and floors of 4mm in 3000mm is permitted. Variation in cross-section dimension shall be less than 3mm for 150mm members and 6mm for members thicker than 150mm.
- (e) Stripping of formwork on supporting members shall not be carried out until after concrete has attained a strength of at least 3/4 of design requirements.

- (f) In special cases when rub finish is specified, vertical forms may be removed in not less than 12 hours, providing weather conditions for the curing have been ideal.
- (g) Extreme care shall be exercised at all times in the removal of forms to the end that the concrete is not chipped, jarred or damaged in any way.
- (h) If excessive construction loads are anticipated, all Work shall be shored to prevent overloading of the members.
- (i) When the atmospheric temperature at the Site of the Work is continuously above 10°C, forms and structures shall be held in place at least four days after placing of concrete, and longer if so required by the Contract Administrator.

When the temperature at the Site of the Work is continuously or intermittently below 10°C, the forms shall be required held in place for longer periods of time and shall not be struck without the consent of the Contract Administrator.

#### E12.3.2 FALSEWORK

- (a) Falsework shall be built on foundations of sufficient strength to carry construction loads without settlement.
- (b) Before construction is started on any falsework, detailed drawings and supporting calculations based on ACI 347 and CSA 043 or current edition thereof must be submitted to the Contract Administrator. These calculations and drawings must be stamped by a structural engineer, registered in the Province of Manitoba. Before any load is placed on the falsework, the Contract Administrator must be furnished with a written statement from the structural engineer who stamped the falsework calculations, that he has examined the falsework on Site and is satisfied that it can carry the construction loads.  
Approval by the Contract Administrator of falsework drawings shall in no way relieve the Contractor or his structural engineer of responsibility for the adequacy and safety of the falsework.

#### E12.3.3

- (a) Prior to placement of new 3" concrete topping on front entrance deck, Contractor shall provide a liquid, cold applied waterproof membrane system to structural deck below topping.
- (b) Existing concrete surface shall be cleaned in accordance with membrane manufacture's recommendations.
- (c) Waterproof membrane system shall be single component; polyurethane based waterproofing system, such as Sonoshield HLM 5000, or equal and shall be applied in accordance with manufacturer's recommendations.

#### E12.3.4

##### CONCRETE

- (a) All equipment for transporting the concrete shall be cleaned of hardened concrete and foreign materials before placement of concrete. Remove all debris and ice from the location to be occupied by the concrete. All forms shall be soaked with water, except in freezing weather. Chemicals shall not be used to remove ice from the hardened concrete or the forms.
- (b) Concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable, by methods which will prevent the separation or loss of the ingredients. Concrete shall be deposited in the forms, as nearly as practicable, in its final position to avoid rehandling or flowing. Under no circumstances shall concrete that has partially hardened be deposited in the forms.
- (c) When concreting is once started, it shall be carried on as a continuous operation until the placing of the section is completed.

- (d) Concrete shall be thoroughly compacted by puddling with suitable tools, during placing operations. It shall be thoroughly worked around the reinforcement, imbedded fixtures, and into the corners of the forms.
- (e) Concrete in walls and tie beams shall be compacted by internal and external mechanical vibrations. Concrete slabs and beams shall be compacted by internal vibrations. Internal vibrators shall operate at a speed of not less than 5,000 vibrations per minute and shall be applied at the point of deposit and in the area of freshly placed concrete.
- (f) Concrete in columns shall be placed through galvanized iron chutes. Chutes shall be of such length and so placed that the concrete does not have a free fall or more than 1500mm. Concrete shall not be raised at a rate of more than 1000mm per hour.
- (g) Pouring concrete during rain will not be permitted. The concrete surfaces shall be protected from rain until the initial set occurs. No concrete to be placed over frozen ground or fill.
- (h) All exposed concrete surfaces shall be covered and protected for proper concrete curing. Slabs shall be well watered and covered with burlap or
- (i) As soon as forms are stripped, all exposed concrete surfaces shall be carefully inspected, mortar projections removed and projecting forming devices removed at least 15mm below surface and patched. Honeycomb areas shall be chipped out to sound concrete, area thoroughly wetted and patched with a mortar. The patch should be kept wet for five (5) days to reduce shrinkage. If honeycombing is excessive, the Contract Administrator may reject the member in question and it shall be replaced by the Contractor.
- (j) All joints in new concrete shall be sealed using a self-levelling exterior grade two-component polyurethane caulking, such as Sikaflex 2C SL or equal.

#### E12.3.5 COLD WEATHER PROTECTION

- (a) The concrete shall reach the forms at a temperature of not less than 20°C and not more than 38°C. Effective means shall be provided for maintaining the temperature of the concrete at all surfaces at not less than 20°C for three (3) days or not less than 10°C for five (5) days after placing.
- (b) Concrete shall be kept above freezing for seven (7) days and shall be kept from alternate freezing and thawing for at least fourteen (14) days after placement.
- (c) At the end of the specified protection period, the temperature of the concrete shall be reduced gradually at a rate not exceeding 10°C per day until the outside air temperature has been reached.
- (d) The Contractor must keep a record of the temperatures inside the enclosure and the outside air temperature. The record shall include the temperatures at several critical points in the enclosure.
- (e) CSA combustion type heaters may be used but shall be so constructed and so placed that their combustion gases will not come in contact with surfaces of the concrete. Adequate fire extinguisher and constant attendance shall be maintained to ensure a safe and continuous heating operation. Heaters must be so placed as to prevent local overheating. No direct fired heating units will be accepted. Before any concrete is placed, the enclosure shall be heated for at least twenty four (24) hours and all surfaces coming in contact with the concrete must be at least 5°C.

#### E12.3.6 CONCRETE FINISHING

- (a) Unless otherwise shown, all concrete surfaces shall receive an ordinary finish. Normally, after forms are removed, concrete fins and projections are to be removed, all form ties filled and all defects repaired.

- (b) All finished floor surfaces shall conform to the required grade when checked with a straight edge and shall not vary more than 4mm in 3000mm.

#### E12.3.7 CONTROL JOINTS

- (a) Provide full depth by 13mm wide impregnated fiberboard control joint in slabs where indicated on drawings. The material to be kept 13mm below top of slab. Seal top of control joint with exterior grade caulking.
- (b) Provide sawcuts twenty percent (20%) of floor slab thickness where shown on drawings.

#### E12.3.8 FIELD QUALITY CONTROL

- (a) A set of field specimens shall be prepared for approximately each day's run of concrete, or more often if required by the Contract Administrator. Generally the number of sets or cylinders required shall be as follows:

<u>Size of Pour</u>	<u>Minimum of Tests</u>
76m <sup>3</sup> or less	1 set per 38m <sup>3</sup>
76 to 760m <sup>3</sup>	1 set per 153m <sup>3</sup>

A set shall consist of four specimens from the same batch of concrete as it goes into the Work. Two of the specimens shall be tested at seven (7) days and the remaining two at twenty eight (28) days. The specimens shall be cylinders 150mm in diameter and 300mm in length.

The concrete test specimens shall be transported by the Contractor, at his own expense, not earlier than twenty four (24) hours or later than four (4) days after they are made to the National Testing Laboratories, Winnipeg. The cost of laboratory tests shall be paid by the City.

- (b) The following strengths shall be met:
  - (i) The average of all tests representing each class of concrete shall exceed the specified strength.
  - (ii) No three consecutive tests shall fall below the specified strength.
  - (iii) No strength test shall fall below eighty percent (80%) of the specified strength.
- (c) If the concrete tests fail to meet the strength requirements, the structural engineer may:
  - (i) Change the basic concrete mix for the remainder of the Work.
  - (ii) Require additional curing for the portions under strength.
  - (iii) Have cores drilled and test the cores.
  - (iv) Have the concrete under strength removed.