



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 585-2006**

**CINDY KLASSEN RECREATION COMPLEX TENNIS COURTS REDEVELOPMENT**

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## **PART B - BIDDING PROCEDURES**

### **B1. PROJECT TITLE**

B1.1 CINDY KLASSEN RECREATION COMPLEX TENNIS COURTS REDEVELOPMENT

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, September 26, 2006.

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

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

### **B3. SITE INVESTIGATION**

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

B3.2 The Bidder is advised that the hockey rink site lies over recently filled house foundations.

### **B4. ENQUIRIES**

B4.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

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

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

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

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

### **B5. ADDENDA**

B5.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.

B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

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

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

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

## **B6. SUBSTITUTES**

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

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

B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.

B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:

- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
- (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
- (c) identify any anticipated cost or time savings that may be associated with the substitute;
- (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
- (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.

B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.

B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.

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

B6.8 If the Contract Administrator approves a substitute as an "approved alternative", any Bidder bidding that approved alternative shall base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.

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

**B7. BID SUBMISSION**

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

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

B7.2 All components of the Bid Submission shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely in ink, to constitute a responsive Bid.

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

B7.3.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.

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

B7.5 Bid Submissions shall be submitted to:

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

**B8. BID**

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

B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

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

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

B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

- B8.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
  - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
  - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;
  - (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B8.4.1 The name and official capacity of all individuals signing Form A: Bid shall be printed below such signatures.
- B8.4.2 All signatures shall be original and shall be witnessed except where a corporate seal has been affixed.
- B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid Submission and the Contract, when awarded, shall be both joint and several.

## **B9. PRICES**

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

## **B10. QUALIFICATION**

- B10.1 The Bidder shall:
- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
  - (b) be responsible and not be suspended, debarred or in default of any obligation to the City;
  - (c) be financially capable of carrying out the terms of the Contract;
  - (d) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract;
  - (e) have successfully carried out work, similar in nature, scope and value to the Work;
  - (f) employ only Subcontractors who:
    - (i) are responsible and not suspended, debarred or in default of any obligation to the City (a list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>); and
    - (ii) have successfully carried out work similar in nature, scope and value to the portion of the Work proposed to be subcontracted to them, and are fully capable of performing the Work required to be done in accordance with the terms of the Contract;

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

B10.2 Further to B10.1(g), the Bidder shall, within three (3) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

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

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

B10.4 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

## **B11. BID SECURITY**

B11.1 The Bidder shall provide bid security in the form of:

- (a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or
- (b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or
- (c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.

B11.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B11.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

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

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



B11.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

## **B12. OPENING OF BIDS AND RELEASE OF INFORMATION**

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

B12.1.1 Bidders or their representatives may attend.

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

B12.2 After the public opening, the names of the Bidders and their Total Bid Prices as read out (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

B12.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

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

## **B13. IRREVOCABLE BID**

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

B13.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

## **B14. WITHDRAWAL OF BIDS**

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

B14.1.1 Notwithstanding GC:23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B14.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B14.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials 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 12 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B14.1.3(b), declare the Bid withdrawn.

**B14.2** A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B13.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

## **B15. EVALUATION OF BIDS**

**B15.1** Award of the Contract shall be based on the following bid evaluation criteria:

- (a) compliance by the Bidder with the requirements of the Bid Opportunity (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B10 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B6.

**B15.2** Further to B15.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements if the interests of the City so require.

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

**B15.4** Further to B15.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

**B15.4.1** If the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder is within the budgetary provision for the Work, no adjustment will be made to the Total Bid Price; or

**B15.4.2** If the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder exceeds the budgetary provision for the Work, the Total Bid Price of all responsive Bids submitted by the responsible and qualified Bidders will be adjusted by progressively deducting items listed as Separate Prices in Form B: Prices, in the order listed herein until a Total Bid Price within the budgetary provision is achieved.

<u>Item</u>	<u>Description</u>
N.1	Picnic Benches (2)
N.2	Trash Receptacles (2)
N.3	Bicycle Rack
N.4	Trees a) Silver Maple b) Manchurian Ash c) Bur Oak

<u>Item</u>	<u>Description</u>
N.5	d)'Harvest Gold' Little Leaf Linden Shrubs a) Redosier Dogwood b) Donald Wyman Lilac c) Mount Baker Lilac d) Nannyberry e) Highbush Cranberry f) Emerald Mound Honeysuckle g) Golden Flowering Currant h) Bailey's Compact Cranberry
N.6	General Plant Material and Planting Bed Maintenance

**B16. AWARD OF CONTRACT**

- B16.1 The City will give notice of the award of the Contract by way of a letter of intent, or will give notice that no award will be made.
- B16.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.
- B16.2.1 Without limiting the generality of B16.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
  - (b) the prices are materially in excess of the prices received for similar work in the past;
  - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
  - (d) only one Bid is received; or
  - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B16.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid.

## **PART C - GENERAL CONDITIONS**

### **C1. GENERAL CONDITIONS**

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

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

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

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

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

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

- D2.1 The Work to be done under the Contract shall consist of construction of six new tennis courts complete with Plexipave surfacing and re-lamped lighting; pre-cast paving stone access areas; a parking lot re-using existing tennis court base and asphalt, and associated drainage works and landscaping.
- D2.2 The major components of the Work are as follows:
- (a) Removal of existing asphalt tennis courts as indicated on the Construction Drawings and related chain link fencing, in areas as noted on Drawing L1, including sawcutting and preservation of part of the existing asphalt.
  - (b) Preservation of existing light poles and electrical cabling designated “to remain”.
  - (c) Site excavation, grading and drainage works, including asphalt and grass swales and new catchpit, and grouted riprap splash pad.
  - (d) Construction of six (6) new tennis courts, including geotextile fabric, granular sub-base and base materials, asphalt with 10mm aggregate, Plexipave surfacing and Plexi-colour line painting, complete with new tennis court posts and nets.
  - (e) Construction of concrete net post piles, 6.0 m deep.
  - (f) Construction of asphalt parking lot (23 stalls) overlaying existing tennis court surfacing, complete with parking stalls line painting and concrete curb stops.
  - (g) Supply and installation of new chain link fencing, 3.05 metre height, complete with 4 gates.
  - (h) Supply and installation of new lamps for tennis court lighting and parking lot lighting on existing lighting poles to remain, including related electrical cabinet and cabling.
  - (i) Supply and installation of concrete pre-cast paving stone, complete with granular base course and pre-cast concrete edging.
  - (j) Supply and installation of post fencing, removable bollard and steel bollards filled with concrete.
  - (k) Supply and installation of nursery sod complete with 75mm topsoil and fine grading.
  - (l) Construction of planting beds, with wood chip mulch.

- (m) Supply and installation of picnic benches, trash receptacles, bicycle rack, and trees and shrubs (Separate Price Items).
- (n) Supply and installation of plant material, trees and shrubs, with 2-year maintenance.

D2.3 The Contractor shall coordinate the new tennis court and parking lot construction with work related to the construction of adjacent skateboard park and baseball diamond.

**D3. CONTRACT ADMINISTRATOR**

D3.1 The Contract Administrator is UMA Engineering Ltd., represented by:

Don Hester, FCSLA, MCIP  
Senior Planner & Landscape Architect  
1479 Buffalo Place, Winnipeg, MB R3T 1L7

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

D3.2 At the pre-construction meeting, Don Hester will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

**D4. CONTRACTOR'S SUPERVISOR**

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

D4.2 The designated supervisor shall remain on the Site at all times during the Work and shall be authorized by the Contractor to make legally binding decisions on behalf of the Contractor.

**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

## **D6. FURNISHING OF DOCUMENTS**

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

## **SUBMISSIONS**

### **D7. SAFE WORK PLAN**

- D7.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.
- D7.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

### **D8. INSURANCE**

- D8.1 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 and UMA Engineering Ltd. 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;
- D8.2 Deductibles shall be borne by the Contractor.
- D8.3 The Contractor shall provide the City Solicitor with a certificate of insurance of each policy, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.
- D8.4 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.

### **D9. PERFORMANCE SECURITY**

- D9.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
- (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or
- (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.

D9.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D9.2 If the bid security provided in his Bid Submission was not a certified cheque or draft pursuant to B11.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.

## **SCHEDULE OF WORK**

### **D10. COMMENCEMENT**

D10.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

D10.2 The Contractor shall not commence any Work on the Site until:

- (a) the Contract Administrator has confirmed receipt and approval of:
  - (i) evidence that the Contractor is in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
  - (ii) evidence of the workers compensation coverage specified in GC:6.14;
  - (iii) the Safe Work Plan specified in D7;
  - (iv) evidence of the insurance specified in D8;
  - (v) the performance security specified in D9;
- (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.

D10.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D10.4 The City intends to award this Contract by October 6, 2006.

### **D11. CRITICAL STAGES**

D11.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

- (a) Complete the following work by November 30, 2006:



- (i) all removals, including existing fencing, lighting, asphalt tennis courts and base materials as indicated on the Construction Drawings
  - (ii) excavations for Plexipave tennis courts, parking lot, pre-cast concrete paving stone and asphalt swale
  - (iii) installation of tennis net post piles
  - (iv) Installation of electrical floodlight pole feeder line/conduit along the centre line of the Plexipave tennis courts
  - (v) supply and installation of granular sub-base, only, for tennis courts
- (b) Install temporary fencing around all work left uncompleted over the winter months.

## **D12. SUBSTANTIAL PERFORMANCE**

- D12.1 The Contractor shall achieve Substantial Performance by June 15, 2007.
- D12.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D12.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

## **D13. TOTAL PERFORMANCE**

- D13.1 The Contractor shall achieve Total Performance by July 6, 2007.
- D13.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D13.3 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.

## **D14. LIQUIDATED DAMAGES**

- D14.1 If the Contractor fails to achieve Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:
- (a) Substantial Performance – one thousand dollars (\$1,000.00);
  - (b) Total Performance – five hundred dollars (\$500.00)
- D14.2 The amounts specified for liquidated damages in D14.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.
- D14.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

## **D15. SCHEDULED MAINTENANCE**

D15.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

- (a) Long-term schedule maintenance of plant material, planting beds, sod, seeded grass as specified in E27.

D15.2 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**

### **D16. JOB MEETINGS**

D16.1 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.

D16.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

### **D17. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

D17.1 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**

### **D18. WARRANTY**

D18.1 Notwithstanding GC:13.2, the warranty period shall begin on the date of Substantial Performance and shall expire one (1) year thereafter unless extended pursuant to GC:13.2.1 or GC:13.2.2, in which case it shall expire when provided for thereunder.

**FORM H1: PERFORMANCE BOND**  
(See D9)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

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

BID OPPORTUNITY NO. 585-2006

CINDY KLASSEN RECREATION COMPLEX TENNIS COURTS REDEVELOPMENT

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

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

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

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

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

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

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

SIGNED AND SEALED  
in the presence of:

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

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

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

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

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

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

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT  
(PERFORMANCE SECURITY)  
(See D9)**

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

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 585-2006

CINDY KLASSEN RECREATION COMPLEX TENNIS COURTS REDEVELOPMENT

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

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

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

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

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

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

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

Partial drawings are permitted.

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

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

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

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

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

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

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

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

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

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

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

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

## PART E - SPECIFICATIONS

### GENERAL

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

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
L1	Existing Features Plan and Removals
L2	Site Layout and Planting Plan
L3	Site Grading Plan
L4	Landscape Details
L5	Paving Details
E1	Partial Site Plan - Legend and Luminaire Schedule
E2	Distribution/Control Enclosure - Single Line, Control Schematic & Details

### GENERAL REQUIREMENTS

#### E2. PROTECTION OF EXISTING TREES AND SHRUBS

- E2.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing trees within the limits and adjacent to the construction area:
- The Contractor shall not stockpile materials and soil or park vehicles and equipment within 2 metres of existing trees and large shrubs.
  - Trees identified to be at risk by the Contract Administrator are to be strapped with 25mm x 100mm x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.
  - Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.
  - Operation of equipment within the drip-line of the trees or shrubs shall be kept to the minimum required to perform the Work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the drip-lines of trees. The drip-line of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.

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

E2.2 All damage to existing trees and shrubs caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator.

E2.3 No separate measurement or payment will be made for the protection of trees and shrubs.

E2.4 Elm trees cannot be trimmed between April 1 and July 31, inclusive.

### **E3. TRAFFIC CONTROL**

E3.1 Further to clauses 3.6 and 3.7 of CW 1130-R1:

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

### **E4. TRAFFIC MANAGEMENT**

E4.1 Should the Contractor be unable to maintain an existing access to a residence or business, he shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.

E4.1.1 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

### **E5. WATER USED BY CONTRACTOR**

E5.1 Further to Clause 3.7 of CW 1120, the Contractor shall pay for all costs associated with obtaining water in accordance with the Waterworks By-law. Sewer charges will not be assessed for water obtained from a hydrant.

### **E6. SURFACE RESTORATIONS**

E6.1 Further to clause 3.3 of CW 1130, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

### **E7. AFTER HOURS WORK**

E7.1 Further to Section 3.10 of CW 1130 of the General Requirements, the Contractor shall obtain written permission from the Contract Administrator for any Work to be performed after regular hours of work. Regardless of the contract Administrator's approval, any such Work done by the Contractor between these hours shall conform to all applicable Laws, By-Laws and Ordinances.



## **E8. EXISTING SERVICES AND UTILITIES**

- E8.1 Further to Section 3.3 of CW 1120 of the General Requirements, information shown on the drawings is supplied by the City to the best of their knowledge from record information. It is hereby expressly understood that the information provided with respect to the type of, or location of services shall be accepted by the Contractor at his own risk, and the City shall assume no responsibility for the accuracy or completeness of the information contained therein.
- E8.2 Existing municipal infrastructure piping depths, are unknown at some locations, and have been estimated for design purposes. When requested by the Contract Administrator, the Contractor shall expose existing piping at the proposed tie-in locations and any other locations as directed, at the commencement of construction to allow for design grade elevations to be modified.
- E8.3 When working in close proximity to shallow-bury utilities, Contractor shall contact the utility and obtain confirmation if site supervision from the utility is required. Requirements for utility supervision, utility coordination and locates, exposing of utility by means of hand or hydro-vac excavation, and similar requirements shall be the responsibility of the Contractor.
- E8.4 All costs associated with this work item shall be incidental and shall be included in the unit price bid for installation of gravity sewer piping.

## **E9. RELOCATION OF EXISTING SERVICES**

- E9.1 Further to Section 3.4 of CW 1120 of the General Requirements, the City will be responsible for the costs of relocating existing services.

## **E10. SAFETY PRECAUTIONS**

- E10.1 Further to Section 3.1 of CW 1130 of the General Requirements, the Contractor shall ensure that any excavation left open or exposed overnight, over a weekend or any length of time unattended shall have full and adequate safety precautions provided. These precautions shall include but not be limited to covering the excavation with timber planks or steel plates and erecting a barricade completely around the excavation complete with signing in accordance with the City of Winnipeg Manual of Temporary Traffic Control.

## **E11. ENCROACHMENT ON PRIVATE PROPERTY**

- E11.1 Further to Section 3.11 of CW 1130 of the General Requirements, the Contractor shall confine his work to the Cindy Klassen Recreation Complex site and adjacent public rights-of-way at all times, except if he has received written permission from the property owner. The Contractor shall provide the Contract Administrator with a copy of any written permission he has received to enter onto private property.
- E11.2 The Contractor's construction activities shall be confined to the minimum area necessary for undertaking the Work and he shall be responsible for all damage to private property resulting from his work. Particular care shall be taken to assure no damage is done to adjacent buildings, fencing, trees and plants, and provision shall be made to maintain full drainage to adjacent properties during construction.
- E11.3 All repairs to damaged private property shall be to the satisfaction of the property owner and the Contract Administrator with all costs borne by the Contractor.

## **E12. DAMAGE TO EXISTING STRUCTURES AND PROPERTY**

- E12.1 Further to Section 3.13 of CW 1130 of the General Requirements, special care shall be taken to avoid damage to existing adjacent structures and properties during the course of the Work.

E12.2 Any damage caused by the Contractor or his Subcontractors to the adjacent structures or properties shall be promptly repaired by the Contractor at his own expense to the satisfaction of the Contract Administrator.

### **E13. CLEARING AND GRUBBING/REMOVALS**

E13.1 Description

- (a) This Specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3010 "Clearing and Grubbing", and shall cover all aspects of removal of shrubs and sod as indicated on the Construction Drawings

E13.2 Construction Methods

- (a) As per CW 3010. Remove existing shrubs within the limits of Construction.
- (b) Remove existing ground cover/sod in all areas indicated on the Planting Plan to be resodded.

E13.3 Method of Measurement and Basis of Payment

- (a) Clearing and Grubbing will be measured on a lump sum basis and paid for at the Contract Price for "Clearing and Grubbing including Removal of Existing Shrubs".

### **E14. GRADING, SUB-GRADE, SUB-BASE AND BASE COURSE CONSTRUCTION**

E14.1 Description

- (a) This Specification shall amend and supplement City of Winnipeg Standard Construction Specifications CW 3110 "Sub-grade, Sub-base and Base Course Construction", and CW 3170 "Earthwork and Grading" and shall cover all aspects of excavation and removal of existing tennis courts surfacing and base materials; excavation in new tennis court and paving stone areas; supply and installation of granular materials in the new tennis courts and paving stone areas, including preparation of sub-grade and compaction, and site grading.

E14.2 Materials

- (a) Use clean clay fill material in areas requiring non-aggregate backfill or to replace unacceptable material excavated from the site.
- (b) Granular sub-base material as per CW 3110 shall be used as sub-base for Plexipave tennis courts.
  - (i) Use 50mm down crushed limestone, 300mm depth, as sub-base for the six new tennis courts.
- (c) Granular base course material as per CW 3110 shall be used as base for the asphalt tennis courts, pre-cast concrete paving stone areas and asphalt swale.
  - (i) Use 20mm down crushed limestone as base course
    - ◆ 75mm depth for new tennis courts, over compacted sub-base granular material
    - ◆ 100mm for new parking lot area
    - ◆ 200mm depth for pre-cast concrete paving stone areas
    - ◆ 100mm depth for asphalt swale

### E14.3 Construction Methods

#### E14.3.1 Removal of Existing Chain Link Fencing

- (a) Remove existing chain link fencing, including posts, rails, chain link material and concrete bases and recycle or legally dispose off-site.

#### E14.3.2 Removal of Asphalt Tennis Courts Asphalt and Base

- (a) As per CW 3110.
- (b) Sawcut existing tennis courts asphalt to separate the area to be preserved for parking lot with asphalt overlay from the area to be removed.
- (c) Remove existing tennis courts asphalt and base materials only in the area designated on the Construction Drawings. Preserve asphalt and base in the parking lot overlay area.
- (d) Remove excavated materials and recycle or legally dispose off-site.

#### E14.3.3 Excavations

- (a) As per CW 3110.
- (b) Remove all rubble, stones, silts, rubbish and any surplus material off-site to a location approved by the City of Winnipeg.
- (c) Support excavations over 1 metre in depth as required in order to prevent slumping in surrounding areas.

#### E14.3.4 Preparation of Sub-grade

- (a) As per CW 3110.
- (b) Use clean fill (suitable sub-base material) compacted to 98% SPD where necessary to obtain required sub-grade elevations, particularly in areas to be sodded.

#### E14.3.5 Supply and installation of Geotextile Fabric for Plexipave Tennis Courts and Pre-cast Paving Stone Areas

- (a) As per CW 3130 "Separation/Reinforcement Geotextile Fabric".

#### E14.3.6 Supply and Installation of Granular Materials for Plexipave Tennis Courts Sub-base and Base Course; Asphalt Parking Lot, Pre-cast Concrete Paving Stone and Asphalt Swale Base Course

- (a) As per CW 3110.
- (b) Install sub-base and base course materials to depths as indicated in 15.2, above.

#### E14.3.7 Grading of the Surrounding Site

- (a) As per CW 3170 "Earthwork and Grading".
- (b) Grade to provide finish elevations as indicated on the Construction Drawings, taking account of finishing material depths.
- (c) Grading requirements over 150mm depth will be considered over-excavation.

### E14.4 Method of Measurement

#### E14.4.1 Saw-cutting of Existing Tennis Courts Asphalt

- (a) On a linear metre basis. The area to be paid for shall be the total number of linear metres of sawcut completed in accordance with this Specification, acceptable to the Contract Administrator.

- E14.4.2 Removal of Existing Tennis Courts and Arena Northeast Area Chain Link Fencing
- (a) On a linear metre basis, including posts, rails, chain link fabric and concrete bases, and gates. The area to be paid for shall be the total number of linear metres removed in accordance with this Specification, acceptable to the Contract Administrator.
- E14.4.3 Removal of Existing Asphalt Tennis Courts and Base Materials
- (a) On an area basis as per CW 3110. The area to be paid for shall be the total number of square metres removed in accordance with this Specification, acceptable to the Contract Administrator.
- E14.4.4 New Plexipave Tennis Courts, Asphalt Parking Lot, Pre-cast Paving Stone Areas and Asphalt Swale Excavation
- (a) On an area basis. The area to be paid for shall be the total number of square metres excavated in accordance with this Specification, acceptable to the Contract Administrator.
- E14.4.5 Over Excavation (Approved)
- (a) Over excavation to remove unsuitable sub-base will be measured on a volume basis. The volume to be paid for shall be the total number of cubic metres of unsuitable material removed in accordance with this Specification and approved by the Contract Administrator.
- E14.4.6 Clean Fill (Suitable Sub-base Material)
- (a) Additional clean fill (clean clay or other suitable sub-base material) will be measured on a volume basis. The area to be paid for shall be the total number of cubic metres of clean clay fill supplied and placed in accordance with this Specification, acceptable to the Contract Administrator.
- (b) Clean fill will be used in areas where grading exceeds 150mm depth.
- E14.4.7 Sub-grade Preparation for Plexipave Tennis Courts, Asphalt Parking Lot, Pre-cast Concrete Paving Stone and Asphalt Swale
- (a) On an area basis. The area to be paid for shall be the total number of square metres compacted and prepared in accordance with this Specification, acceptable to the Contract Administrator.
- E14.4.8 Supply and Installation of Geotextile Fabric for Plexipave Tennis Courts
- (a) Geotextile fabric will be measured on an area basis. The area to be paid for shall be the total number of square metres placed in accordance with this Specification, acceptable to the Contract Administrator. No payment will be made for geotextile fabric placed outside the limits of the Plexipave tennis courts.
- E14.4.9 Supply and Installation of Granular Sub-base for Plexipave Tennis Courts
- (a) Granular sub-base material will be measured on a volume basis. The volume to be paid for shall be the total number of cubic metres placed in accordance with this Specification, acceptable to the Contract Administrator. No payment will be made for material placed outside the limits of excavation.
- E14.4.10 Supply and Installation of Granular Base Course for Plexipave Tennis Courts, Asphalt Parking Lot, Pre-cast Paving Stone and Asphalt Swale
- (a) Granular base course material will be measured on an area basis. The area to be paid for shall be the total number of square metres placed in accordance with this Specification, acceptable to the Contract Administrator. No payment will be made for material placed outside the limits of the tennis courts, paving stone or swale areas.

E14.4.11 Grading of the Surrounding Site

- (a) Grading will be measured on a square metre basis. The area to be paid for shall be the total number of square metres graded in accordance with this Specification, acceptable to the Contract Administrator. No payment shall be made for grading outside the limits of the Contract Area unless approved in writing by the Contract Administrator.

E14.5 Basis of Payment

E14.5.1 Saw-cutting of Existing Tennis Courts Asphalt

- (a) Saw-cutting of existing tennis courts asphalt will be paid for at the Contract Unit Price per lineal metre for "Saw-cutting of Existing Tennis Courts Asphalt", measured as specified herein and including all other items of related work.

E14.5.2 Removal of Existing Tennis Courts and Arena Northeast Area Chain Link Fencing

- (a) Removal of existing tennis courts chain link fencing will be paid for at the Contract Unit Price per lineal metre for "Removal of Existing Tennis Courts and Arena Northeast Area Chain Link Fencing", measured as specified herein and including all other items of related work.

E14.5.3 Removal of Existing Asphalt Tennis Courts

- (a) As per CW 3110 for "Existing Tennis Courts Asphalt and Base Removal", measured as herein specified and including all other items of related work.

E14.5.4 Over Excavation (Approved)

- (a) Over excavation required to remove unsuitable sub-base material, and approved by the Contract Administrator will be paid for at the Contract Unit Price for "Over Excavation (Approved)", measured as herein specified and including all other items of related work.

E14.5.5 Clean Fill (Suitable Sub-base Material)

- (a) Clean fill required to achieve design grades and in areas of over-excavation approved by the Contract Administrator or where grading exceeds 150mm depth will be paid for at the Contract Unit Price for "Clean Fill (Suitable Sub-base Material)", measured as herein specified and including all other items of related work.

E14.5.6 Plexipave Tennis Courts Excavation and Sub-grade Preparation

- (a) As per CW 3110 for "Tennis Courts Excavation" and "Tennis Courts Sub-grade Preparation", measured as herein specified and including all other items of related work.

E14.5.7 Asphalt Parking Lot Excavation and Sub-grade Preparation

- (a) As per CW 3110 for excavation to be paid for at the Contract Unit Prices for "Asphalt Parking Lot Excavation" and "Asphalt Parking Lot Sub-grade Preparation", measured as herein specified and including all other items of related work.

E14.5.8 Asphalt Swale Excavation and Sub-grade Preparation

- (a) As per CW 3110 for excavation to be paid for at the Contract Unit Prices for "Asphalt Swale Excavation" and "Asphalt Swale Sub-grade Preparation", measured as herein specified and including all other items of related work.

E14.5.9 Pre-cast Concrete Paving Stone Areas Excavation and Sub-grade Preparation

- (a) As per CW 3110 for "Pre-cast Paving Stone Excavation" and "Pre-cast Paving Stone Sub-grade Preparation", measured as herein specified and including all other items of related work.

- E14.5.10 Supply and installation of Geotextile Fabric for New Tennis Courts and Pre-cast Paving Stone Areas
- (a) The supplying and placing of geotextile fabric will be paid for at the Contract Unit Price per square metre for "Geotextile Fabric", measured as herein specified and including all other items of related work.
- E14.5.11 Supply and Installation of Granular Sub-base for Plexipave Tennis Courts
- (a) The supplying, placing and compaction of granular sub-base material will be paid for at the Contract Unit Price per cubic metre for "Tennis Courts Sub-base (300mm)", measured as specified herein, and including all other items of related work.
- E14.5.12 Supply and Installation of Granular Base Course for Plexipave Tennis Courts, Asphalt Parking Lot, Asphalt Drainage Swale and Pre-cast Concrete Paving Stone
- (a) The supplying, placing and compaction of granular base material will be paid for at the Contract Unit Price per square metre for "Tennis Courts Base Course (75mm)", "Asphalt Parking Lot (100mm)", "Asphalt Swale Base Course (100mm)" and "Base Course for Pre-cast Concrete Paving Stone (200mm)", measured as specified herein, and including all other items of related work.
- E14.5.13 Grading of the Surrounding Site Areas
- (a) Grading of the surrounding areas will be paid for at the Contract Unit Price per square metre for "Site Grading" measured as specified herein and including all other items of related work.

## **E15. CONCRETE CATCHPIT AND DRAINAGE PIPE**

### **E15.1 Description**

- (a) This Specification shall amend and supplement City of Winnipeg Standard Construction Specification CW "Gravity Sewers", and shall cover all aspects of supply and installation of catchpit and drainage pipe for area adjacent to tennis courts.

### **E15.2 Materials**

- (a) 450mm Catchpit as per CW 2130, pre-cast concrete sections as indicated on SD -023 to CSA A257.4 and ASTM Standard C 76 Class II and C 478 (circular sections).
- (b) Standard frame (AP-004) with grated cover (AP-006).
- (c) 250mm Drainage Pipe as per CW 2130.

### **E15.3 Construction Methods**

- (a) 450mm Catchpit as per CW 2130.
- (b) 250mm Drainage pipe as per CW 2130.
- (c) Remove existing catchbasin east of the Arena.

### **E15.4 Method of Measurement**

- (a) Catchpit as per CW2130.
- (b) Drainage Pipe as per CW2130.
- (c) Removal of the existing catchbasin and asphalt repair will be measured on a lump sum basis for work performed in accordance with this Specification, acceptable to the Contract Administrator.

## E15.5 Basis of Payment

### E15.5.1 Catchpit

- (a) Supply and installation of the catchpit will be paid for at the Contract Unit Price for "Catchpit (450mm)", measured as specified herein and including all other items of related work.

### E15.5.2 Drainage Pipe

- (a) Supply and installation of drainage pipe will be paid for at the Contract Unit Price for "Drainage Pipe (250mm)", measured as specified herein and including all other items of related work.

### E15.5.3 Removal of Existing Catchbasin

- (a) Removal of the existing catchbasin will be paid for at the Lump Sum Contract Price for "Removal of Existing Catchbasin and Asphalt Repair", measured as specified herein and including all other items of related work.

## E16. ASPHALT CONCRETE PAVEMENTS

### E16.1 Description

- (a) This Specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3410 "Asphaltic Concrete Pavement Works", and shall cover all aspects of supply and installation of asphalt for tennis courts, parking lot and swale paving.

### E16.2 Materials

- (a) Tennis courts as per CW 3410. Use 10mm aggregate in asphalt mix. Tennis courts special asphalt mix to be 75mm depth.
- (b) Parking Lot Asphalt as per CW3410. Parking lot asphalt to be 75mm depth.
- (c) Asphalt swale paving as per CW 3410. Swale asphalt to be 50mm depth.
- (d) Parking lot asphalt overlay as per CW 3410. Overlay to be 50 to 75mm depth and feathered into surrounding asphalt areas.

### E16.3 Construction Methods

- (a) Plexipave tennis courts asphalt paving shall be as per CW 3410. The placing of the asphalt paving shall be consistent with design specifications for the "Plexipave" system (see E18 Plexipave Surfacing and Plexi-color Line Painting for Tennis Courts).
- (b) Sub-base and base course granular materials for Plexipave tennis courts shall extend 600mm beyond the edges of the asphalt surfacing.
- (c) Tennis courts asphalt paving shall be feathered out to nothing at 100mm outside the line of the tennis court fencing.
- (d) Parking lot asphalt paving and overlay shall be as per CW 3410.

### E16.4 Method of Measurement

- (a) Measure Plexipave tennis courts asphalt paving on an area basis for each square metre of 10mm aggregate, 75mm minimum depth, asphalt surfacing supplied and installed in accordance with the Construction Drawings and Specifications, and approved by the Contract Administrator.
- (b) Measure asphalt parking lot paving and overlay, each on an area basis for each square metre of parking lot asphalt and parking lot overlay supplied and installed in accordance with the Construction Drawings and Specifications, and approved by the Contract Administrator.

- (c) Measure asphalt swale paving on an area basis for each square metre of paved swale supplied and installed in accordance with the Construction Drawings and Specifications, and approved by the Contract Administrator.

#### E16.5 Basis of Payment

- (a) Plexipave tennis courts asphalt paving will be paid for at the Contract Unit Price per square metre of surface area for "Tennis Courts Asphalt Paving (75mm) c/w 10mm aggregate", as per CW 3410
- (b) Parking lot overlay paving will be paid for at the Contract Unit Price per square metre of surface area for "Parking Lot Asphalt Overlay/Transition", as per CW 3410.
- (c) Parking lot asphalt paving will be paid for at the Contract Unit Price per square metre of surface area for "Parking Lot Asphalt Paving (75mm)", as per CW 3410.
- (d) Asphalt swale paving will be paid for at the Contract Unit Price per square metre of surface area for "Swale Asphalt Paving (50mm)", as per CW 3410.

### **E17. PLEXIPAVE SURFACING AND PLEXI-COLOR LINE PAINTING FOR TENNIS COURTS AND PARKING LOT LINE PAINTING**

#### E17.1 Description

- (a) This Specification shall cover all aspects of supply and installation of Plexipave surfacing and line painting in tennis court areas, and parking lot line painting.

#### E17.2 Materials

- E17.2.1 Patching Mix (Court Patch Binder): for use in cracks, holes, depressions and other imperfections in the asphalt surface. This material will be used in accordance with the manufacturer's specifications with regard to sand sizes, prime coats, and depth of depression, hole or crack.
- E17.2.2 Crack filler: for use in fine cracks and for minor cosmetic thin repairs and fills prior to filler course.
- E17.2.3 100% Acrylic Filler Course (Acrylic Resurfacer)
  - (a) The filler course shall be California Acrylic Resurfacer, or an approved equal, and consist of a 100% acrylic emulsion binder containing no vinyl constituent and no asbestos fillers. The product shall contain no less than 4% attapalgitite and have a pigment volume concentration not to exceed 9.5%.
- E17.2.4 Acrylic Color Playing Surface
  - (a) Job Mixed Fortified Plexipave, a field-mixed combination of California Products Corporation's Plexichrome and Plexipave Color Base, or approved equal, blended in accordance with the manufacturer's specifications, consisting of lightfast mineral oxide pigments and fillers uniformly dispersed in a non-oxidizing 100% acrylic base.
  - (b) Tennis courts inside surfacing colour to be Dark Green
  - (c) Surrounding surfacing colour to be Maroon
- E17.2.5 Parking Lot Line Paint:
  - (a) Line paint shall be to CGSB 1-GP-74M, alkyd traffic paint. Colour: to CGSB 1-GP-12C, white 513-301.
  - (b) Thinner: to CGSB 1-GD-5M.
- E17.2.6 Samples
  - (a) Submit material sample quantities at least 4 weeks prior to commencing painting work.



- (i) Two 1L samples of paint.
- (ii) Sampling shall be to CGSB 1-GP-71.
- (iii) Mark samples with name of project and its location, paint manufacturers name and address, name of paint, CGSB specification number and formulation number and batch number.

### E17.3 Construction Methods

E17.3.1 Clean all asphalt surfaces of loose dirt, oil, grease, leaves and other debris in strict accordance with manufacturer's directions.

E17.3.2 Clean holes and cracks.

E17.3.3 Depressions holding enough water to cover a five cent piece shall be filled with Court Patch binder mix. This step shall be accomplished prior to the squeegee draining. Define and mark all areas holding enough water to cover a nickel. Spread court patch binder mix true to grade using a straight edge for strike off. Steel trowel or wood float the patch so that the texture matches the surrounding area. Never add water to mix. Light misting on surface and edges to feather in allowed as needed to maintain workability. All areas should be allowed to dry thoroughly and cure.

E17.3.4 Filler course shall be applied to the clean underlying surface in one application to obtain a total quantity of not less than 47.3 to 63.2 square metres per litre (15 to 20 square yards per gallon) based on the material prior to any dilution. Acrylic Resurfacer may be used to pre-coat depression and crack/hole repairs to achieve better planarity prior to filler course application.

E17.3.5 Over a properly prepared surface of asphalt apply one coat of acrylic resurfacer according to the following mix:

Acrylic Resurfacer	208.2 litres (55 gallons)
Water	75.7 litres to 151.4 litres (20 to 40 gallons)
Sand	272.2 Kg. to 408.2 Kg. (600 to 900 pounds)
Liquid Yield	424 litres to 522.4 litres (112 to 138 gallons)

- (a) Mix the ingredients thoroughly using accepted mixing devices and use a 70 Durometer rubber blade squeegee to apply each coat of acrylic resurfacer as required
- (b) Allow the application of acrylic resurfacer to dry thoroughly. Scrape off all edges and rough spots prior to any subsequent application of acrylic resurfacer or subsequent cushion or color surface system.

### E17.3.6 Line Painting Equipment Requirements

- (a) Paint applicator to be an approved pressure type mobile distributor capable of applying paint in single, double and dashed lines. Applicator to be capable of applying marking components uniformly, at rates specified, and to dimensions as indicated, and to have positive shut-off.

### E17.3.7 Condition of Surfaces for Line Painting

- (a) Asphalt pavement surface to be dry, free from ponded water, frost, ice, dust, oil, grease and other foreign materials. Clean and dry the surface using a power broom or air-blower.

### E17.3.8 Line Paint Application

- (a) Pavement markings to be laid out in accordance with the Construction Drawings.

- (b) Apply paint only when air temperature is above 10°C, wind speed is less than 60 km/h and no rain is forecast within the next four hours.
- (c) Apply traffic paint evenly at rate of 3 m<sup>2</sup>/L.
- (d) Paint lines to be of uniform colour and density with sharp edges.
- (e) Do not thin paint.
- (f) Symbols and letters to conform to dimensions indicated.
- (g) Thoroughly clean distributor tank before refilling with paint of different colour.
- (h) Remove conflicting markings.

E17.3.9 Tolerance

- (a) Paint markings to be within plus or minus 12 mm of dimensions indicated.
- (b) Remove incorrect markings as directed by Consultant.

E17.3.10 Protection of Completed Work

- (a) Protect pavement markings until dry.
- (b) Maintain markings in new condition until Total Performance of the Work is achieved.

E17.4 Method of Measurement

- (a) Fortified Plexipave will be measured on an area basis per square metre of surface area constructed as in accordance with the Construction Drawings and this Specification, including all requirements for preparation of asphalt surfacing.
- (b) Plexi-color line painting for tennis courts will be measured on a per court basis.
- (c) Line painting for the asphalt parking lot will be measured on a per stall basis, including painted islands as stalls. The unit price shall include materials, applying, protecting, and all Work incidental thereto.

E17.5 Basis of Payment

- (a) Fortified Plexipave will be paid for at the Contract Unit Price per square metre of surface area for "Tennis Courts Plexipave Surfacing", measured as specified herein and including all other items of related work including preparation of the asphalt surface.
- (b) Plexi-color line painting for tennis courts will be paid for at the Contract Unit Price for "Tennis Courts Plexi-color Line Painting", measured as specified herein and including all other items of related work.
- (c) Line painting for parking lot will be paid for at the Contract Unit Price for "Parking Lot Line Painting", measured as specified herein and including all other items of related work.

**E18. PRECAST CONCRETE PAVING STONES, CAST-IN-PLACE CONCRETE EDGING AND TENNIS NET POST PILES AND WHEEL STOPS**

E18.1 Description

- (a) This Specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3330 "Installation of Interlocking Paving Stones", and shall cover all aspects of supply and installation of pre-cast concrete paving stone in tennis court entry areas, complete with cast-in-place concrete edging; construction of tennis net post piles, and supply and installation of pre-cast concrete wheel stops in parking lot areas.

E18.2 Shop Drawings

- (a) Submit Shop Drawings for electrical cabinet base and tennis court net post piles, indicating concrete reinforcing and connections for cabinet and net posts.

### E18.3 Materials

- (a) Barkman Concrete Roman Series Pre-cast Concrete Paving Stone: Sierra Grey colour, set in Pattern 1 Random.
- (b) Cast-in-place concrete edging, electrical cabinet base and tennis court net post piles to conform to CW 3310 and the Construction Drawings.
  - (i) Use Type (A) 32 MPa Concrete, minimum cementitious content 340 Kg/m<sup>3</sup>.
  - (ii) Electrical cabinet base: 600mm deep, 762mm wide, reinforced slab as shown on the Construction Drawings. The base should extend 100mm beyond the ends of the electrical cabinet.
  - (iii) Tennis court net post piles: 6.0 metre deep, 450mm diameter reinforced concrete piles as shown on the Construction Drawings.
- (c) Barkman Concrete pre-cast concrete bumper curbs, Item #43-30000 Parking, complete with anchor pins.

### E18.4 Construction Methods

- (a) Install Roman Series pavers in accordance with CW 3330 and the manufacturer's recommended installation specifications. Install pavers with 30mm levelling sand over compacted granular base. Minimize saw-cutting.
- (b) Install cast-in-place concrete edging, electrical cabinet base and tennis court net post piles in accordance with CW 3310 and the Construction Drawings.
  - (i) Carefully centre the electrical cabinet on the concrete base. Anchor tennis court net posts to 6.0 metre deep piles in accordance with the manufacturer's recommended installation.
- (c) Pin pre-cast concrete bumper curbs to the asphalt parking lot surface centred on the centreline of each parking stall and 0.5 metres from the front end of the stalls.

### E18.5 Method of Measurement

- (a) Pre-cast concrete paving stone surfacing will be measured on an area basis. The area to be paid for shall be the total number of square metres of pre-cast concrete paving stone placed in accordance with the Construction Drawings and this Specification, approved by the Contract Administrator, including sand levelling course.
- (b) Concrete edging will be measured on a linear measure basis. The length to be paid for shall be the total number of linear metres of concrete edging constructed in accordance with the Construction Drawings and this Specification, approved by the Contract Administrator.
- (c) Concrete base for electrical cabinet will be measured on a lump sum basis for concrete base constructed in accordance with the Construction Drawings and this Specification, approved by the Contract Administrator.
- (d) Tennis court net post piles will be measured on a unit basis. The number of 6.0 metre depth reinforced piles to be paid for shall be the total number of piles constructed in accordance with the Construction Drawings and this Specification, approved by the Contract Administrator.
- (e) Pre-cast concrete bumper curbs will be measured on a unit basis. The number to be paid for shall be the total number of pre-cast concrete bumper curbs placed in accordance with the Construction Drawings and this Specification, approved by the Contract Administrator, including anchor pinning.

#### E18.6 Basis of Payment

- (a) Roman pavers will be paid for at the Contract Unit Price per square metre of surface area for "Pre-cast Concrete Paving Stone", measured as specified herein and including sand levelling course and all other items of related work.
- (b) Concrete edging will be paid for at the Contract Unit Price for each linear metre of "Concrete Edging", measured as herein specified and including all other items of related work.
- (c) Electrical cabinet base will be paid for at the Lump Sum Contract Price for "Concrete Base for Electrical Cabinet", measured as herein specified and including all other items of related work.
- (d) Tennis court net post piles will be paid at the Contract Unit Price for "Concrete Net Posts Piles", measured as herein specified and including all other items of related work.
- (e) Pre-cast concrete bumper curbs will be paid for at the Contract Unit Price for "Pre-cast Concrete Bumper Curbs" measured as herein specified and including anchor pinning and all other items of related work.

### **E19. TENNIS COURTS POSTS AND NETS**

#### E19.1 Description

- (a) This Specification shall cover all aspects of supply and installation of tennis court posts and nets

#### E19.2 Materials

- (a) Douglas Tennis Post Premier XS tennis posts, 73mm (2 7/8") o. d. round 8-gauge steel, complete with welded lacing rods for securing nets to posts. Caps and gear housings die-cast zinc; baked-on polyester powder coat. Stainless steel gears #63034SS. Chrome finish hardware. Posts colour to be black. Posts to include stainless steel anchor plates and anchor bolts, and heavy duty tennis net cable.
- (b) Douglas Championship Tennis Nets TN-36, Order # 20036. Nets to be 44.5mm (1 3/4") square mesh, fabricated with 3.5mm braided polyethylene netting. Vinyl-coated polyester 2-ply headband lock sewn with 4 runs of 32# white polyester thread. Weight, 65 oz. Championship nets with 5-year limited warranty.

#### E19.3 Construction Methods

- (a) Install Douglas tennis posts and nets in accordance with the manufacturer's recommendations and the Construction Drawings and Specifications.

#### E19.4 Method of Measurement

- (a) Tennis posts and nets will be measured on a unit basis for each pair of posts and each net installed in accordance with the Construction Drawings and this Specification and approved by the Contract Administrator.

#### E19.5 Basis of Payment

- (a) Tennis posts and nets will be paid for at the Contract Unit Prices for "Tennis Courts Posts" and "Tennis Courts Nets", measured as herein specified, including all other items required to suitably construct the Work.

## **E20. CHAIN LINK FENCING**

### **E20.1 Description**

- (a) This Specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3550 "Chain Link Fencing" and shall cover the supply and installation of 3.05 metre high chain link fencing for tennis courts.

### **E20.2 Materials**

- (a) Chain link fencing, 3.05 metres high, as per CW 3550, complete with gates.

### **E20.3 Construction Methods**

- (a) Supply and install chain link fencing in accordance with CW 3550 and the Construction Drawings.
- (b) Supply and install gates in accordance with the Construction Drawings and this Specification.

### **E20.4 Method of Measurement**

- (a) Measure chain link fencing on a lineal metre basis, determining the number of lineal metres supplied and installed in accordance with the Construction Drawings and this Specification and approved by the Contract Administrator.
- (b) Measure gates on a unit basis for each gate installed in accordance with the Construction Drawings and this Specification and approved by the Contract Administrator.

### **E20.5 Basis of Payment**

- (a) Chain link fencing will be paid for at the Contract Unit Price for "Chain Link Fencing (3.05 metre height)", measured as herein specified, which price will be payment in full for supplying all materials and performing all operations herein required and all other items required to suitably construct the tennis court fencing.
- (b) Gates will be paid for at the Contract Unit Price for "Gates in Tennis Court Fencing", measured as herein specified, which price will be payment in full for supplying all materials and performing all operations herein required and all other items required to suitably construct gates.

## **E21. POST FENCING AND BOLLARDS**

### **E21.1 Description**

- (a) This Specification shall cover all aspects of the supply and installation of wood posts, removable steel bollards and fixed steel bollards as shown on the Construction Drawings.

### **E21.2 Materials**

- (a) See Construction Drawings.
- (b) Bollards galvanized steel to be painted black.

### **E21.3 Construction Methods**

- (a) See Construction Drawings.
- (b) Post fencing and bollards shall be installed true and plumb.
- (c) Tops of fence posts shall follow final site grades.
- (d) Backfill post holes and bollard excavations with 20mm granular material. Tamp material thoroughly.
- (e) Fill steel bollards around the electrical cabinet with concrete.

#### E21.4 Method of Measurement

- (a) Measure wood posts, removable bollards and fixed steel bollards on a unit price basis, for each post and bollard supplied and installed in accordance with the Construction Drawings and this Specification and approved by the Contract Administrator.

#### E21.5 Basis of Payment

- (a) Wood posts will be paid for at Contract Unit Price for "Post Fencing" and measured as herein specified, which price will be payment in full for supplying all materials and performing all operations herein required and all other items required to suitably construct the post fencing.
- (b) Removable steel bollard and fixed steel bollards will be paid for at Contract Unit Prices for "Removable Steel Bollard" and "Fixed Steel Bollards" measured as herein specified, which price will be payment in full for supplying all materials and performing all operations herein required and all other items required to supply and install bollards.

### E22. GROUTED RIPRAP

#### E22.1 Description

E22.1.1 This Specification shall amend and supplement Standard Specification CW 3615.

#### E22.2 Materials

##### E22.2.1 Riprap

- (a) Rock for riprap shall consist of hard, dense, durable rock. The rock shall be angular crushed limestone, resistant to the action of air and water and suitable in all other respects for the purpose intended.
- (b) The stones shall range in size from 100mm to 300mm in diameter with 75% by count between 200mm and 300mm and 25% by count between 100mm and 200mm.
- (c) Crushed limestone when subjected to the Los Angeles abrasion test shall have a loss of not more than thirty-two percent (32%).
- (d) Crushed limestone when subjected to the Magnesium Sulphate Soundness test shall have a loss of not more than eighteen percent (13%).
- (e) The sample material shall be crushed to 37.5 mm maximum aggregate size and tested in accordance with ASTM C131 – Resistance to Degradation of Small size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine and ASTM C88 – Soundness of Aggregates by Use of Magnesium Sulphate.
- (f) The rock for riprap shall be approved by the Contract Administrator prior to riprap installation.

##### E22.2.2 Geotextile

- (a) Geotextile shall be a non-woven geotextile fabric, meeting or exceeding the following properties:

PROPERTY	TEST METHOD	MINIMUM AVERAGE ROLL VALUE
Grab Tensile	ASTM-D-4632	0.900 kN
Grab Elongation	ASTM-D-4632	50%
Mullen Burst	ASTM-D-3786	2619 kPa
Puncture	ASTM-D-4833	0.575 kN
Trapezoidal	ASTM-D-4533	0.355 kN
UV Resistance	ASTM-D-4355	70% at 500 hrs
Apparent Opening Size <sup>(1)</sup>	ASTM-D-4751	0.15 mm
Permeability	ASTM-D-4491	1.5 sec <sup>-1</sup>
Flow Rate	ASTM-D-4491	4470 L/min/m <sup>2</sup>

Note (1) – Maximum Average Roll Value

### E22.3 Construction Methods

#### E22.3.1 Geotextile

- (a) Geotextile shall be placed under all riprap, on a smooth graded surface. The geotextile shall be placed in such a manner that it will not excessively stretch or tear upon placement of the overlying materials. Care shall be taken to ensure that the geotextile is in intimate contact with the subgrade and that there are no void spaces between the subgrade and the geotextile.
- (b) Joints in the geotextile shall be minimized. Geotextile sheets shall be joined by overlapping a minimum of 600mm. Overlaps shall be constructed with the upstream sheet placed over the downstream sheet or the upslope sheet placed over the downslope sheet. All overlaps shall be pinned on 1000mm centres to hold the overlap in place during stone placement. Pins shall be 5mm diameter, 450mm long steel pins pointed at one end and fitted with a 38mm diameter washer at the other.

#### E22.3.2 Riprap

- (a) Installation of 300mm grouted riprap shall be as per Clause 9.3 of CW 3615. Total depth of concrete and riprap to be 450mm.
- (b) Riprap shall not be dropped onto the geotextile from a height greater than 300mm. Any geotextile damaged during placement of the riprap shall be replaced as directed by the Contract Administrator at the Contractors expense.

### E22.4 Method of Measurement

#### E22.4.1 Geotextile

- (a) No measurement shall be made for the supply and installation of geotextile. It shall be considered incidental to the price of grouted riprap.

#### E22.4.2 Grouted Riprap

- (a) As per Clauses 12.2 and 13.21, CW 3615.

### E22.5 Basis of Payment

#### E22.5.1 Grouted Riprap

- (a) Grouted riprap will be paid for at Contract Unit Price for “Grouted Riprap” measured as herein specified, which price will be payment in full for supplying all materials and performing all operations herein required and all other items required to suitably construct the grouted riprap splash pad.

## **E23. SITE FURNISHINGS**

### **E23.1 Description**

- (a) This Specification shall cover all aspects of the supply and installation of picnic benches and waste receptacle in the vicinity of the tennis courts.

### **E23.2 Materials**

#### **E23.2.1 Picnic Benches**

- (a) Urbain Design "Classique" Picnic Table #17441, UltraPlast recycled plastic: 1828mm long x 1562mm wide x 775mm high, with InfiniGuard Premium anti-corrosion system. Factory assembled, with in-ground mounting.
- (b) Colour: Jatoba

#### **E23.2.2 Trash Receptacle**

- (a) Urbain Design "Public Place" Trash Receptacle #18J417, UltraPlast recycled plastic: black molded polyethylene cover with vinyl-coated cable and 254mm opening, complete with InfiniGuard Premium anti-corrosion system. Factory assembled, with in-ground mounting.
- (b) Colour: Dark Green

#### **E23.2.3 Bicycle Rack**

- (a) GameTime, GT Site, "Loop Bike Rack", 7-bike #7702, parking on one side. Black colour. In-ground installation.

#### **E23.2.4 Urbain Design and GameTime site furnishings available from Crozier Agencies, Winnipeg, MB; Tel.: 774-6084.**

### **E23.3 Construction Methods**

- E23.3.1 Install picnic benches and trash receptacles with in-ground mountings as indicated on the Construction Drawings. Bicycle rack shall be anchored to the asphalt surface of the parking lot.

### **E23.4 Method of Measurement**

- (a) Picnic benches, trash receptacles and bicycle rack will be measured on a unit basis for each item supplied and installed and accepted by the Contract Administrator.

### **E23.5 Basis of Payment**

- (a) Picnic benches, trash receptacle and bicycle rack to be paid for at the Contract Unit Prices for "Picnic Benches", "Waste Receptacles" and "Bicycle Rack", measured as herein specified, which price will be payment in full for supplying and installing site furnishings.

## **E24. SODDING**

### **E24.1 Description**

- (a) This Specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3510 "Sodding", and shall cover all aspects of sod supply and installation, including preparation of finish grade, watering and rolling, and 30-day maintenance.
- (b) Related Specification: E 26 "Topsoil, Planting Soil and Finish Grading"



## E24.2 Material

### E24.2.1 Turf Grass Sod

- (a) Turf grass sod shall conform to CW 3510.
- (b) Sod shall be a mixture of 95% Kentucky bluegrass, using equal proportions of any three Class 2 cultivars, and 5% Creeping Red fescue.

### E24.2.2 Topsoil in accordance with CW 3540

## E24.3 Construction Methods

### E24.3.1 Preparation of Finish Grade, Placement of Sod, Watering and Rolling and 30-Day Maintenance

- (a) Sod 1.2 metre strip adjacent to paved surfaces around the periphery of the site.
- (b) Finish grading, sod placement, watering and rolling and 30-day maintenance shall conform to CW 3510.

## E24.4 Method of Measurement

- (a) Measure sod on an area basis per square metre of sod installed, complete with 75mm imported topsoil, in accordance with CW 3510.
- (b) Topsoil will be included in the sod price: there will be no separate measurement for topsoil used in sod installation.

## E24.5 Basis of Payment

- (a) Payment for supply and installation of sod, including 30-day maintenance, in accordance with CW 3510, will be at the Contract Unit Price for "Sod c/w Topsoil and Fine Grading".
- (b) Payment shall be in accordance with the following:
  - (i) 75% of quantity following supply and placement of sod, and
  - (ii) 25% of quantity following termination of the 30-day maintenance period.

## **E25. TOPSOIL, PLANTING SOIL AND FINISH GRADING**

### E25.1 Description

- (a) This Special Provision shall amend and supplement City of Winnipeg Standard Construction Specification CW 3540 "Topsoil and Finish Grading for Establishment of Turf Areas", and shall cover supply, preparation and placement of topsoil, planting soil and soil amendments, including preparation of existing grade, finish grading and fertilizer application.

## E25.2 Material

### E25.2.1 Imported Topsoil

- (a) Imported topsoil shall conform to CW 3540.

### E25.2.2 Peatmoss

- (a) Peat moss shall be decomposed plant material, fairly elastic and homogenous, free of colloidal residue, wood, sulphur and iron; containing a minimum of 60% organic material by weight, with moisture content not exceeding 15%. Shredded particles shall not exceed 6 mm in size. Minimum pH value of peat shall be 4.5; maximum, 6.0.

### E25.2.3 Sand

- (a) Sand shall be hard, granular, sharp sand, well-washed and free of impurities, chemicals and organic matter.

- E25.2.4 Bonemeal
- (a) Bonemeal shall be raw, finely ground with a minimum chemical analysis of 3% nitrogen and 20% phosphoric acid.
- E25.2.5 Wood Chip Mulch
- (a) Wood chip mulch shall be chipped ash, maple, poplar, birch and other deciduous trees. Mulch shall be chipped to sizes ranging from 50mm to 75mm. Mulch may NOT contain stringy twigs and seed, and shall be free of non-organic material, wood preservatives or diseased wood. The mulch shall contain no more than 5% of the following materials in total: soil, sawdust, peatmoss, coniferous wood and needles.
  - (b) The Contractor shall supply a wood chip mulch sample to the Contract Administrator for approval prior to installation.
- E25.2.6 Plastic Edging
- (a) Heavy duty black 125mm deep polyethylene plastic edging with a rolled top.
- E25.2.7 Fertilizer
- (a) Chemical fertilizers shall have N-P-K compositions as recommended by an agricultural soil-testing laboratory approved by the Contract Administrator provided for each of the following:
    - (i) Sod (City Specification) with imported topsoil
    - (ii) Horticultural trees and shrubs with planting soil mix
- E25.3 Construction Methods
- E25.3.1 Imported Topsoil and Finish Grading
- (a) Installation of imported topsoil in areas to receive sod or turf grass seed shall be in accordance with City of Winnipeg Standard Construction Specifications, including preparation of existing grade, placing topsoil, applying fertilizer and finish grading shall conform to CW 3540.
- E25.3.2 Planting Soil Mixture for Trees
- (a) Planting soil mixture shall be a mix of 75% topsoil and 20% peatmoss, loose by volume. Incorporate 5% sand, or as required, to improve soil texture. Incorporate bonemeal at 3 kg/cubic metre of planting soil mixture.
  - (b) Install 65 mm wood chip mulch around trees following planting operations.
  - (c) Install heavy-duty black plastic edging around planting beds.
- E25.4 Method and Measurement
- E25.4.1 Imported Topsoil and Fine Grading
- (a) There shall be no separate measurement for work associated with imported topsoil and finish grading as described in this Specification.
- E25.4.2 Planting Soil Mixture
- (a) Measure planting soil mixture in planting beds on an area basis for each square metre of planting soil mixture 300mm depth supplied and installed in accordance with this specification, as measured by the Contract Administrator.
  - (b) There will be no separate measurement for planting soil mixture used in planting individual trees and shrubs that are not planted in beds.

- E25.4.3 Wood Chip Mulch
- (a) Measure wood chip mulch in planting beds on an area basis for each square metre of mulch supplied and installed in accordance with this specification, as measured by the Contract Administrator.
  - (b) There will be no separate measurement for wood chip mulch used in individual trees saucers.
- E25.4.4 Heavy-duty Black Plastic Edging
- (a) Measure plastic edging on a linear metre basis for each metre of edging supplied and installed in accordance with this Specification and accepted by the Contract Administrator.
- E25.5 Basis of Payment
- E25.5.1 Planting Soil Mixture
- (a) Payment for planting soil mixture in planting beds will be at the Contract Unit Price for "Planting Soil Mixture (300mm)", measured as herein specified, which price will be payment in full for constructing planting beds.
- E25.5.2 Wood Chip Mulch
- (a) Payment for wood chip mulch in planting beds will be at the Contract Unit Price per square metre for "Wood Chip Mulch", measured as herein specified, including all items associated with the supply and installation of wood chip mulch in planting beds.
- E25.5.3 Heavy-duty Black Plastic Edging
- (a) Payment for heavy-duty black plastic edging will be at the Contract Unit Price for "Plastic Edging", measured as herein specified including all items associated with the supply and installation of edging for planting beds.

## **E26. TREES AND SHRUBS**

- E26.1 Description
- (a) This Special Provision shall cover the supply and installation of plant material.
- E26.2 General
- E26.2.1 Nomenclature
- (a) Nomenclature of specified nursery stock shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of Standardized Plant Names. The names of varieties not named therein are generally in conformity with the names accepted in the nursery trade.
- E26.2.2 Source Quality Control
- (a) All nursery stock supplied shall be nursery grown and of species and sizes as indicated on the Construction Drawings. Nursery stock shall be No. 1 Grade material in accordance with the current edition of Landscape Canada's (CNTA) "Guide Specifications for Nursery Stock".
- E26.2.3 Shipment and Pre-Planting Care
- (a) Coordinate transportation of plants and excavation of holes to ensure minimum time lapse between digging and planting.
  - (b) Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting

stock with rope or wire, which would damage bark, break branches or destroy natural shape of plant. Give full support to root balls, especially of large trees, during lifting.

- (c) Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat, saw dust or other acceptable material to prevent loss of moisture during transit and storage.
- (d) Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 50 mm diameter with wound dressing.
- (e) Keep roots moist and protect from sun and wind. Heel-in trees and shrubs that cannot be planted immediately in shaded areas; water well.

#### E26.2.4 Replacement

- (a) During the first year following completion of planting operations, remove from site any plants that have died or failed to grow satisfactorily, as determined by the Contract Administrator: for example, plant material installed in 2007 that has failed to grow satisfactorily and has not been replaced by October 15, 2008 would be required to be replaced in the Spring of 2009.

#### E26.3 Materials

##### E26.3.1 Water

- (a) Water shall be potable and free of minerals that may be detrimental to plant growth.

##### E26.3.2 Fertilizer

- (a) Fertilizer shall be slow release organic. Fertilizer shall contain N-P-K in ratio as recommended by soil test results from an approved agricultural soil-testing laboratory.

##### E26.3.3 Root Ball Burlap

- (a) Root ball burlap shall be 150 g Hessian burlap.

##### E26.3.4 Anti-desiccant

- (a) Anti-desiccant shall be wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.

##### E26.3.5 Plant Material

- (a) All plant material specified for this project shall be containerized and/or ball and burlap nursery stock. All plants shall be from the Winnipeg Region.
- (b) Comply with latest edition of the "Guide Specification for Nursery Stock", produced by Landscape Canada (CNTA), referring to quality, size and development of nursery-grown plant material and root balls.
- (c) Nursery stock shall be No. 1 grade trees and vines.
- (d) All plant material shall be measured when branches are in their natural position. Height dimensions specified in the Plant List on the Construction Drawings refer to the main body of the plant, and not from branch tip to root base or from branch tip to branch tip. Where trees are measured by calliper (cal.), reference is made to the diameter of the trunk measured at 300 mm above ground as the tree stands properly planted in the nursery.
- (e) All trees shall have one, only, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader. All evergreens shall be symmetrically grown and branched from ground level, up.
- (f) Use trees and groundcovers with structurally sound, strong fibrous root systems, and free of disease, insects, defects or injuries, including rodent damage, sunscald, frost

cracks, abrasions or scars to the bark. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.

- (g) All parts of the plants shall be moist and show live, green cambium tissue when cut.
- (h) At least one (1) plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.
- (i) Additional Plant Material Qualifications:
  - (i) Container-Grown Stock  
Acceptable if containers large enough for root development. Trees and shrubs must have grown in container for minimum of one growing season but not longer than two. Root system must be able to hold soil when removed from container. Plants that have become root bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
  - (ii) Balled and Burlapped Plant Material  
Deciduous trees in excess of 3 m height must have been dug with large firm ball. Root balls must include 75% of fibrous and feeder root system. Secure root balls with burlap, heavy twine and rope. For large trees: wrap ball in double layer of burlap and drum lace with minimum 10 mm diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.
  - (iii) Tree Spade Dug Material  
**Obtain approval of the Contract Administrator for digging plant material with mechanized digging equipment, hydraulic spade or clam-shell type.**  
Dig root balls to satisfy Landscape Canada (CNTA) standards. Lift root ball from hole, place in wire basket designed for purpose, line with burlap. Tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.
  - (iv) Substitutions  
Substitutions to plant material as indicated on the Plant List will not be permitted unless written approval has been obtained as to type, variety and size prior to award of Contract. Plant substitutions must be of similar species and of equal size to those originally specified.

#### E26.4 Construction Methods

##### E26.4.1 Workmanship

- (a) The Contractor shall stake out location of trees as per the Construction Drawings. Obtain Contract Administrator's approval prior to excavating.
- (b) The Contractor shall obtain clearances from all utilities, with respect to underground lines located in the areas to be excavated, prior to commencing planting operations.
- (c) The Contractor shall apply anti-desiccant in accordance with material manufacturer's instructions.
- (d) The Contractor shall coordinate planting operations; keep the site clean and planting holes drained, and immediately remove soil or debris spilled onto pavement.

##### E26.4.2 Planting Time

- (a) The Contractor shall plant deciduous plant material during dormant period before buds have broken. Plant material noted for spring planting only must be planted in dormant stage.

- (b) When permission has been obtained to plant deciduous plant material after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- (c) When permission has been obtained, trees, shrubs and ground covers growing in containers may be planted throughout growing season.
- (d) Plant only under conditions that are conducive to health and physical conditions of plants.
- (e) The Contractor shall provide the Contract Administrator with a planting schedule at least two weeks prior to planting operations. Extending planting operations over long period using limited crew will not be accepted.

#### E26.4.3 Excavations

- (a) Trees: excavate to depth of at least 200 mm deeper than height of root ball, with a surface width of two times the diameter of the root ball. Backfill around trees with planting soil mixture.
- (b) Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.
- (c) Protect the bottoms of excavations against freezing.
- (d) Remove water that enters excavations prior to planting. Ensure source of water is not ground water.

#### E26.4.4 Planting

- (a) Loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum of 150 mm of planting soil mixture.
- (b) Plant trees and groundcover vertically, with roots placed straight out in hole. Orient plant material to give best appearance in relation to structures, roads and walkways.
- (c) Place plant material to depth equal to depth they were originally growing in nursery or in locations collected.
- (d) Ball and burlap root balls: loosen burlap and cut away minimum top 1/3 without disturbing root ball. Do not pull burlap or rope from under root ball. With container stock, remove entire container without disturbing root ball. Non-biodegradable wrappings must be removed.
- (e) Tree spade excavated materials:
  - (i) Tree spade planting shall be permitted only by approval of the Contract Administrator.
  - (ii) Dig tree pit with same mechanical equipment as used to dig plant material. Ensure hole dug is upright as possible. Place in hole a mixture of 40 L of planting soil and fertilizer mixed with water to soupy consistency. This will be forced up sides of ball as root ball is placed in hole.
  - (iii) Loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum 150 mm topsoil mixture.
  - (iv) Tamp planting soil mixture 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 been completely penetrated into soil, complete backfilling.
- (f) Excavate 200 mm depth an additional 600 mm beyond planting pits around the perimeter of all tree planting pits, and fill with planting soil mixture.
- (g) Construct 100 mm deep saucers around the outer edge of planting pits to assist with maintenance watering.

- (h) When planting is completed apply slow release organic fertilizer at minimum rate of 12 kg/100 m for vines or 50 g/mm of calliper for trees, or as recommended by the soil analysis. Mix fertilizer thoroughly with top layer of planting soil and water in well.

#### E26.4.5 Pruning

- (a) Prune trees and groundcover after planting. Postpone pruning of those trees where heavy bleeding may occur, until in full leaf. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water. Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.

#### E26.5 Standards

- (a) All roots shall be cleanly cut; split roots are not acceptable.
- (b) Branches and trunks shall be protected; broken or abraded branches or trunks are not acceptable.
- (c) Planting shall be protected from drying conditions; desiccated material not acceptable.
- (d) All plants shall be free of insects and disease: galls, blight and other manifestations of insect infestation or disease not acceptable.

#### E26.6 Wood Chip Mulch

- (a) The saucers of all trees not planted in beds shall be covered with a 75 mm depth of wood chip mulch.

#### E26.7 Maintenance

##### E26.7.1 Watering

- (a) Plant material shall be watered once a week for first three weeks following installation, and once every second week, thereafter. Ensure adequate moisture in root zone at freeze-up.

##### E26.7.2 Weeding

- (a) Keep mulched tree saucers weed-free by manually removing weeds during the maintenance period.

##### E26.7.3 Insects and Diseases

- (a) Spray plants to combat pests and diseases. Use organic chemical insecticides approved by Agriculture Canada. Protect adjacent areas from spray.

##### E26.7.4 Adjustments

- (a) Make adjustments requested by the Contract Administrator, including straightening trees, tightening guy wires and removing tree stakes.

##### E26.7.5 Maintenance Period

- (a) Maintain plant material for a period of two yea continuous period following completion of planting operations, as determined by the Contract Administrator.
- (b) Any plant material replaced under warranty shall have an additional 2 year maintenance warranty.

## E26.8 Method of Measurement

### E26.8.1 Trees and Shrubs

- (a) Supply and installation of trees and shrubs will be measured on a unit price basis for each tree and shrub listed on the Plant List, installed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.

### E26.8.2 Fertilizer

- (a) Supply and installation of fertilizer for plant material will be incidental to the Work of this Contract.

## E26.9 Basis of Payment

### E26.9.1 Trees and Shrubs

- (a) Supply and installation of trees and shrubs will be paid for at the Contract Unit Price for each species and size of plant shown on the Plant List, measured as specified herein, which price shall be payment in full for supply of all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

## **E27. LONG-TERM SCHEDULED MAINTENANCE OF PLANT MATERIAL**

### E27.1 Description

- (a) This Specification shall cover the long-term (post acceptance) maintenance of plant material, following acceptance of the Work by the Contract Administrator.

### E27.2 Materials

- (a) The Contractor shall provide all necessary materials and equipment including: additional topsoil, soil ameliorates and mulches, fertilizers and pesticides, and pruning tools, water trucks, hoses, water metres and any other items necessary for the maintenance of the areas indicated in this Specification.

### E27.3 Personnel

#### E27.3.1 Provision of Maintenance Personnel

- (a) The Contractor shall provide all necessary personnel for the ongoing maintenance operations.

#### E27.3.2 Capability of Personnel

- (a) Maintenance personnel should have at least one year of experience in landscape maintenance and should be under the direction of a foreman, in all cases, with not less than five years of experience with similar maintenance operations.
- (b) Tree and shrub pruning shall be by a qualified Manitoba Arborist.

### E27.4 Timing

#### E27.4.1 Maintenance Period

- (a) Maintain tree and shrub plantings for a period of two (2) years from the date of acceptance by the Contract Administrator.

### E27.5 Maintenance Schedule

- (a) Provide the Contract Administrator a Schedule of Proposed Maintenance Activities for the two-year scheduled maintenance period, based on the requirements outlined herein. The



scheduled maintenance period shall not commence until the schedule has been reviewed by the Contract Administrator.

#### E27.5.1 Recording Maintenance Operations

- (a) The Contractor shall provide a maintenance log, including but not limited to the following: hours of labour undertaken, number of personnel employed and equipment used. The log will itemize watering, spraying, pruning and any other maintenance work. Contractor shall submit logs monthly at regularly scheduled meetings with the Contract Administrator. Maintenance log will be incidental to the maintenance work.

#### E27.6 Maintenance Methods

##### E27.6.1 Maintenance of Trees and Shrubs

- (a) Maintain trees and shrubs as indicated in E21, Section 7, above.
- (b) Watering Trees and Shrubs
  - (i) Newly planted trees and shrubs require water to become established; however, watering too often can kill a plant. During the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week.
  - (ii) Contractor shall determine the need for watering by taking soil tests weekly with a one-inch auger. Take a test sample from both the planting soil and from the tree root balls by drilling to a minimum depth of 600 mm. The soil shall contain enough moisture to hold together when compressed in the hand, but shall not be muddy.
- (c) Cultivation
  - (i) Cultivate only as required to reconstruct planting beds or tree saucers, or to remove significant weed growth.
  - (ii) Do not cultivate around plants with a shovel or spade. The tendency is to penetrate too deeply and cause root injury. Cultivate with a hoe or similar tool. When using a hoe never penetrate soil more than 50 mm. Maintain natural elevation of the surrounding area when cultivating. Create a gentle saucer to contain water around the tree root zone.
  - (iii) Avoid pyramiding soil around the base of any plant. This will cause water to drain away and will encourage undesirable top root growth.
  - (iv) The boundary between the adjacent sod and soil saucer should be crisp and well formed.
  - (v) Replace wood chip mulch when cultivation completed.
- (d) Spraying
  - (i) Spray trees to control insect pests and diseases. Use horticultural compounds approved by Agriculture Canada, which are specific for the problem to be contained. Restrict spray drift.
- (e) Straightening
  - (i) Straighten trees and shrubs as required or as directed by the Contract Administrator.
- (f) Mulching
  - (i) Add mulch to tree saucers as required to maintain a clean surface.
- (g) Weeding
  - (i) Hand weed and lightly rake a minimum of one per month, or as determined by the Contract Administrator, to remove competition for installed plant material/undesirable plant material. Dispose of undesirable material off-site.

- (ii) The Contractor shall be responsible for any fines or weed control notices issued for the planting areas. All such notices shall be dealt with by the Contractor in a timely fashion. Copies of any fines and notices shall be provided to the Contract Administrator within five (5) working days of receipt by the Contractor.

#### E27.7 Basis of Payment

##### E27.7.1 General Maintenance of Trees and Shrubs

- (a) General maintenance will be paid for at the Contract Unit Prices for "General Plant Material and Planting Bed Maintenance", which price will include supply of all labour, equipment and materials and performing all operations herein described, and all other items incidental to the Work included in this specification.

### **E28. PLANT MATERIAL WARRANTY**

#### E28.1 Description

- (a) This Specification shall cover the provision of warranty for all plant material itemized on the Plant List, for the two-year maintenance period.

#### E28.2 Timing

- (a) Warranty shall be for two years, commencing upon acceptance of installed plant material.

#### E28.3 Warranty

- (a) The Contractor hereby warrants that the plant material as itemized on the Plant Lists on each of the Construction Drawings will remain free of defects for the maintenance period indicated for each area of the Contract.

#### E28.4 End-of-Warranty Inspection

- (a) Contract Administrator reserves the right to extend the Contractor's warranty responsibilities for an additional year, at the end of the designated warranty period for the appropriate area, if at that time plant material leaf development and growth are not sufficient to ensure future survival.

#### E28.5 Replacement

- (a) During the warranty period, remove from site any plant material that has died or failed to grow satisfactorily, as determined by the Contract Administrator and replace with healthy plant material of the same species and size.
- (b) Replace plant material in the following spring or fall as directed.
- (c) Extend warranty on replacement plant material for an additional period until the end of the specified warranty period or for one full growing season, whichever is the longer period.
- (d) Continue such replacement and warranty until plant material is acceptable.

#### E28.6 Method of Measurement

- (a) Warranties on plant material will not be measured or paid for.
- (b) Warranties on plant material shall be considered part of the Work of this Contract.

### **E29. ELECTRICAL AND LIGHTING**

#### E29.1 Description

##### E29.1.1 This Work shall include but not limited to:

- (a) Trenching, supply and installation of conduit and cabling for the tennis court flood lighting system, and the modification of the existing flood light pole, to accommodate the new parking lot.
- (b) Provide and install necessary wiring to make a complete and operating system.
- (c) Cleaning, relamping and aiming of the existing floodlights.
- (d) Supply and install distribution/control enclosure and concrete pad, contactors, circuit breakers and existing panel board for the power supply and control of the tennis court floodlight system.
- (e) Provide and install parking lot light fixture on existing flood light pole as indicated on drawings.
- (f) Remove existing flood lights and poles as indicated on the construction drawings.
- (g) Submit Shop Drawings for the Distribution/Control Enclosure and equipment installed in the enclosure.

## E29.2 Materials

### E29.2.1 Trenching and Backfilling

- (a) Trenching shall be approximately 800 mm in depth, width to suit proper installation.
- (b) Backfill for trenches for all direct buried cables, ducts, conduits, etc., shall consist of fine sand (minimum 150 mm below and above cables, etc.) and firmly compacted.
- (c) Provide identification tape labelled as indicated showing location of direct buried cables.
- (d) All direct buried cables, ducts, etc., crossing over each other or over/under other types of underground service shall be encased in wood planks treated with pentachlorophenol.
- (e) Provide pentachlorophenol treated wood planks over all buried cables, etc., under areas to be paved.

### E29.2.2 Conduits

- (a) Electrical metallic tubing (EMT) for interior: with couplings. Minimum size shall be 19 mm.
- (b) PVC conduit for exterior installations. Size as per drawing.

### E29.2.3 Conduit Fastenings

- (a) One whole steel straps to secure surface conduits 50 mm and smaller. Two hole steel straps for conduits larger than 50 mm.
- (b) Beam clamps to secure conduits to exposed steel work.
- (c) U channel type supports for two or more conduits at 1500 mm oc. (Surface mounted or suspended).

### E29.2.4 Fish Cord

- (a) Polypropylene c/w 3 m spare length at each conduit end.

### E29.2.5 Low Voltage Wire 1000 Volt and Below

- (a) All wire shall have stranded, annealed copper, 300 volt rating, cross-linked polyethylene (XLPE) insulation, minus 40°C, 90°C maximum conductor temperature, limited flame spread.
- (b) The wiring shall be suitable for installation in wet environment and rated RW-90.
- (c) Minimum conductor size shall be #12 AWG unless otherwise specified.

- (d) Colour coding of insulated conductors shall conform to the following:

Single Phase Systems

Phase A	Red
Phase B	Black
Neutral	White
Ground	Green

- (e) Insulated ground conductors forming part of a multi-conductor cable assembly shall have green colour coding.

E29.2.6 Nameplates

- (a) Lamiacoid 3 mm thick plastic engraving sheet black face, white core, mechanically attached with pop rivets.

E29.2.7 Wiring Accessories

- (a) Wire markers, black letters on white background, shall be heat shrink type.
- (b) Where screw-type terminals are provided on equipment, field wiring shall be terminated with insulated fork tongue terminals, as manufactured by Thomas & Betts, Sta-Kon.
- (c) Splice connectors for wire sizes #14-10AWG inclusive, shall be of the compression spring type, as manufactured by Ideal Waterproof Type DP.
- (d) Splice connectors for wire sizes #8 AWG and larger shall be split-bolt type, sized to suit number and size conductors, as manufactured by Burndy Servit Type KS.
- (e) Cable pulling lubricant shall be compatible with cable covering and shall not cause damage and corrosion to conduits or ducts.

E29.2.8 Circuit Breakers – General

- (a) Bolt-on moulded case circuit breakers, quick-make, quick-break type, for manual and automatic operation with temperature compensation for 40°C ambient.
- (b) Common-trip breakers with single handle for multiple applications.
- (c) All new breakers shall be mounted in existing main distribution and panel boards as indicated. All circuit breakers in main distribution panel shall match existing.

E29.2.9 Distribution and control enclosure

- (a) Enclosure constructed with 12 gauge minimum steel, with weather and corrosion resistant finish, Munsell Notation 7.5GY3.5/1.5, size as indicated.
- (b) Removable enclosure panels with formed edges, galvanized steel external fasteners removable only from inside enclosure.
- (c) Door: hinged, 3 point latching, with padlocking means.
- (d) Ventilation panel constructed to allow air circulation yet preventing entry of foreign objects, wild life, vermin.
- (e) Enclosure capable of being shipped in knocked down condition.
- (f) Assemble enclosure in accordance with manufacturer's instructions and mount on concrete pad.
- (g) Mount equipment in enclosure.

E29.2.10 Meter and Meter Socket

- (a) Single phase kilowatt hour energy meter: to CAN3 C17.

- (b) Accuracy: 1% from full load to light load.
- (c) Base, bottom connected case outdoor weatherproof.
- (d) Ratings: as indicated.
- (e) Weatherproof meter socket to suit meter.
- (f) Installation
  - (i) Install meter in location free from vibration and shock.
  - (ii) Make connections in accordance with supplied diagrams.
  - (iii) Connect meter socket to ground.

E29.2.11 Selector Switches

- (a) Maintained 3 position labelled "ON OFF AUTO" standard oil tight, operators knob contact arrangement as indicated, rated 120 V, 5 A, AC.

E29.2.12 Timeclock

- (a) TORK mechanical 24 hour clock.

E29.2.13 Contactors

- (a) Electrically held controlled by pivot devices as indicated and rated for H.I.D. lighting load.
- (b) Open type mounted in distribution/control enclosure unless noted otherwise.
- (c) Provide equipment identification as required.
- (d) Recommended manufacturers: Allen-Bradley, Square-D, Siemens.

E29.2.14 Lighting Fixtures

- (a) 150 W high pressure sodium lamp.
- (b) 120 V energy efficient ballast
- (c) Acceptable manufacturer shall be as per luminaire schedule on construction drawings.

E29.3 Construction Methods

E29.3.1 Underground Cable Quality Control

- (a) Perform tests using qualified personnel. Provide necessary instruments and equipment.
- (b) Check phase rotation and identify each phase conductor of each feeder.
- (c) Check each feeder for continuity, short circuits and grounds. Each resistance to ground circuits is not less than 50 megohms.
- (d) Pre-acceptance test
  - (i) After installing cable but before terminating, perform insulation resistance test with 1000 V megger on each phase conductor.
  - (ii) Check insulation resistance after each splice an/on termination to ensure that cable system is ready for acceptance testing.
- (e) Provide Contract Administrator with list of test results showing location at which each test was made, circuit tested and result of each test.
- (f) Remove and replace entire lengths of cable if cable fails to meet any test of criteria.
- (g) Contractor responsible for making all necessary repairs to installation resulting from improper backfilling, compaction, etc.

### E29.3.2 Conduit

- (a) Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass. All conduits shall be surface mounted unless otherwise indicated.
- (b) Temporarily plug all conduits terminating in cabinets and boxes where moisture and foreign matter may enter.
- (c) Blow all conduits through with clean compressed air to clean all foreign matter and moisture prior to the installation of wires or cables.
- (d) Install fish cord in all conduits.
- (e) Group exposed conduits together whenever possible and run parallel to building lines, supported from structural members and protected by the flanges of the structural member where practical.
- (f) Support horizontal and vertical runs of individual exposed conduits by one-hole or two-hole conduit straps and suitable fasteners or beam clamps for mounting to building structures or bracket. Make no holes in building structural members for supporting conduits without the permission of the Contract Administrator.
- (g) Securely fasten exposed conduits in place at regular intervals with hangers, supports or straps. Provide additional supports to each elbow and terminations at a box or cabinet.
- (h) Perforated metal straps used to support conduits are unacceptable.
- (i) Install conduits at least 150 mm (6") clear of all steam pipes and flues, and 1 m (39") clear of heaters. Do not bend over sharp objects or improperly form.
- (j) For conduits passing through exterior walls, above or below grade, seal with waterproof sealing compound.

### E29.3.3 Wire and Cable Installation

- (a) Install all wire according to the construction drawings with a minimum size of #12 AWG unless indicated otherwise.
- (b) Utilize adequate lubricant when pulling wires through ducts and conduits to minimize wear on cable jackets.
- (c) Make connections to equipment "pig-tails" with mechanical, insulated, screw-on connectors for wire sizes #14-10 AWG. For wire sizes #8 AWG and larger utilize split-bolt connectors, taped with three layers minimum of insulating tape.
- (d) No splices shall be permitted in cable or wiring runs without the written permission of the Contract Administrator, and shall only be permitted in junction boxes.
- (e) Neutral conductors shall be identified. Paint or other means of colouring the insulation shall not be used.
- (f) Identify each conductor by specified markers at each termination indicating the circuit designation or wire number.

### E29.3.4 Circuit Breakers Installation

- (a) Install circuit breakers in existing panel boards as indicated.

### E29.3.5 Lighting Fixtures Installation

- (a) As per C.E.C Section 22.
- (b) Unit shall conform to building line being parallel or perpendicular.
- (c) Install of all lighting equipment shall comply with the relevant Section of this Specification and the Canadian Electrical Code.

- (d) At the completion of construction and acceptance of Work, all lighting fixtures shall be clean, complete with all necessary accessories and provided with the required operating lamp(s).

**E29.4 Method of Measurement**

- (a) Measure relamping of existing tennis court lighting; new parking lot lighting, and electrical cabling, conduit and control enclosure, including a meter, each on a lump sum basis for electrical work completed in accordance with the construction drawings and approved by the Contract Administrator.

**E29.5 Basis of Payment**

- (a) Payment for electrical work will be at the lump sum contract price for "Relamping of Tennis Court Lighting", "Parking Lot Lighting" and "Electrical Cabling, Conduit and Control Enclosure c/w Meter", measured as specified herein and including all trenching, excavation and other items required to complete the Work.