



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 230-2011

TRANSCONA CENTENNIAL SQUARE

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 TRANSCONA CENTENNIAL SQUARE

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, April 27, 2011.

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

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

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Bidder may view the Site without making an appointment.

B3.2 The Bidder is advised that the Contractor should make themselves aware of the adjacent building conditions, location of existing utilities, and extent of materials to be removed.

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

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

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

B6. SUBSTITUTES

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

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

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

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

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

B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his 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 may 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.

B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.6 deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B15.1(a).

B7. BID COMPONENTS

B7.1 The Bid shall consist of the following components:

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

B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.

B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.

B7.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.

B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.

B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B15.1(a).

B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B7.8 Bids shall be submitted to:

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

B8. BID

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

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

- (a) if the Bidder is a sole proprietor carrying on business in his 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 should be printed below such signatures.
- B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B9. PRICES

- B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.
- B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B10. QUALIFICATION

- B10.1 The Bidder shall:
- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
 - (b) be financially capable of carrying out the terms of the Contract; and
 - (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.
- B10.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/debar.stm>
- B10.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) have successfully carried out work similar in nature, scope and value to the Work; and

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

B10.4 Further to B10.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

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

B10.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B10.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B11. BID SECURITY

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

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

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

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

B11.1.3 The Bidder shall sign the Bid Bond.

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

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

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

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

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

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

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

B12.1.1 Bidders or their representatives may attend.

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

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

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

B13. IRREVOCABLE BID

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

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

B14. WITHDRAWAL OF BIDS

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

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

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

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

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

B14.2 A Bidder who withdraws his 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, or acceptable deviation there from (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B10 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B6.

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

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

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

B15.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

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

B16. AWARD OF CONTRACT

B16.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B16.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

B16.2.1 Without limiting the generality of B16.2, the City will have no obligation to award a Contract where:

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

B16.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B15.

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

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of construction of paved plaza including concrete paving, concrete retaining walls and foundations, unit paving, lighting, land drainage, and planting.

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

- (a) Reinforced concrete paving;
- (b) Reinforced concrete sidewalks;
- (c) Unit paving;
- (d) Reinforced concrete retaining walls and curbs;
- (e) Land drainage system;
- (f) Electrical works and lighting;
- (g) Planting beds;
- (h) Plant material.

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is McGowan Russell Group Inc., represented by:

Jackie Wilkie
Landscape Architect
200-120 Fort St., Winnipeg, MB R3C 1C7
Telephone No. (204) 956-0396
Facsimile No. (204) 956-1265

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

D4. CONTRACTOR'S SUPERVISOR

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

D5. NOTICES

D5.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

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 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following facsimile number:

The City of Winnipeg
Chief Financial Officer

Facsimile No.: (204) 949-1174

- 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
Legal Services Department
Attn: Director of Legal Services
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. AUTHORITY TO CARRY ON BUSINESS

- D7.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D8. SAFE WORK PLAN

- D8.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D8.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Safety/default.stm>

D9. INSURANCE

- D9.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
 - (b) automobile liability insurance for 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;

- (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

D9.2 Deductibles shall be borne by the Contractor.

D9.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract.

D9.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D10. PERFORMANCE SECURITY

D10.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

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

D10.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D10.2 The Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D11. SUBCONTRACTOR LIST

D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D12. EQUIPMENT LIST

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

D13. DETAILED WORK SCHEDULE

D13.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D13.2 The detailed work schedule shall consist of the following:

- (a) a critical path method (C.P.M.) schedule for the Work;
 - (b) a Gantt chart for the Work based on the C.P.M. schedule;
 - (c) a daily manpower schedule for the Work;
 - (d) delivery dates for all equipment and site furnishings;
- all acceptable to the Contract Administrator.

D13.3 Further to D13.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:

- (a) commencement date;
- (b) removals and grading;
- (c) site layout;
- (d) forming of walls, curbs and bases;
- (e) installation of lighting and electrical;
- (f) concrete pavement construction;
- (g) unit paver installation;
- (h) excavation and construction of planting beds;
- (i) layout of plant material;
- (j) planting;
- (k) clean up.

D13.4 Further to D13.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

D13.5 Further to D13.2(c), the daily manpower schedule shall list the daily number of individuals on the Site for each trade.

SCHEDULE OF WORK

D14. COMMENCEMENT

D14.1 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.

D14.2 The Contractor shall not commence any Work on the Site until:

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D7;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the Safe Work Plan specified in D8;
 - (iv) evidence of the insurance specified in D9;
 - (v) the performance security specified in D10;
 - (vi) the Subcontractor list specified in D11;
 - (vii) the equipment list specified in D12;
 - (viii) the detailed work schedule specified in D13; and
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D14.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D15. WORKING DAYS

- D15.1 Further to C1.1(gg), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.
- D15.2 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.
- D15.3 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.
- D15.4 The Contract Administrator will furnish the Contractor with a daily record for each major type of work showing various information concerning the equipment, the time it worked, could have worked and Working Days charged. This report is to be signed each day by an authorized representative of the Contractor.

D16. SUBSTANTIAL PERFORMANCE

- D16.1 The Contractor shall achieve Substantial Performance by July 15, 2011.
- D16.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.
- D16.3 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.

D17. TOTAL PERFORMANCE

- D17.1 The Contractor shall achieve Total Performance by July 22, 2011.
- D17.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.
- D17.3 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.

D18. LIQUIDATED DAMAGES

- D18.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City one thousand dollars (\$1000.00) per Calendar Day for each and every Calendar Day following the day fixed herein for Substantial Performance during which such failure continues.
- D18.2 The amount specified for liquidated damages in D18.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.

D18.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D19. SCHEDULED MAINTENANCE

D19.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) Plant material as specified in E34.

D19.2 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

D20. JOB MEETINGS

D20.1 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.

D20.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

D21. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D21.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

MEASUREMENT AND PAYMENT

D22. PAYMENT

D22.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

D23. PAYMENT SCHEDULE

D23.1 Further to C12, payment shall be in accordance with the following payment schedule:

(a) Monthly progress billings for all works.

WARRANTY

D24. WARRANTY

D24.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

- D24.2 Notwithstanding C13.2 or D24.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:
- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use; or
- D24.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

FORM H1: PERFORMANCE BOND
(See D10)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

BID OPPORTUNITY NO. 230-2011

TRANSCONA CENTENNIAL SQUARE

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)**
(See D10)

(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 230-2011

TRANSCONA CENTENNIAL SQUARE

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

(Name of Contractor)

(Address of Contractor)

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

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM K: EQUIPMENT
(See D12)

TRANSCONA CENTENNIAL SQUARE

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

FORM K: EQUIPMENT
(See D12)

TRANSCONA CENTENNIAL SQUARE

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

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
L0	Site Survey and Removals
L1	Layout Plan
L2	Grading Plan
L3	Planting Plan
L4.1	Details
L4.2	Details
L4.3	Details
L4.4	Details
L4.5	Details
C-201	Site Services Plan
E1	Electrical

E2. SOILS INVESTIGATION REPORT

- E2.1 Further to C3.1, a geotechnical investigation was completed for this project. The title of the report is " Geotechnical Investigation Proposed Transcona Centennial Square 135 REgent Avenue West Winnipeg, Manitoba" as submitted to Parks, Waterways and Community Initiatives Branch; Planning, Property & Development Department; City of Winnipeg.
- E2.2 The report is included in the bid documents.

GENERAL REQUIREMENTS

E3. SITE CONDITION

- E3.1 The Contractor shall examine the Site and make themselves familiar with the existing conditions (both above and below grade) and nature of Work to be done.
- E3.2 Surface and sub-surface conditions shown on the Drawings and included herein are provided for general information and variations there from shall not affect the terms of the Contract.
- E3.3 The Contractor shall set all necessary control lines, benchmarks, survey, elevation stakes and layout in accordance with the individual Site conditions and in consultation with the Contract Administrator.

E4. LAYOUT OF WORKS

- E4.1 The Contractor will Work from layout information provided in the construction drawings and will be responsible to provide a full time experienced survey crew to layout and continuously check the locations and elevations of all components and paving patterns of the Work included in this Contract.
- E4.2 The Contractor must provide all necessary survey equipment in good operating conditions.
- E4.3 The Contractor shall supply all materials (painting, stakes, ribbon, markers, etc) and labour necessary for the accurate location and setting out of the Work.
- E4.4 From time to time the Contract Administrator may have a survey crew on the Site, but they will check the Work done by the Contractor's survey personnel only. The checking of the Work by the City's surveyors will not relieve the Contractor of any responsibility of the correctness of the Work. Should any structure or paving or any part thereof be installed in any location other than that shown on the Drawings, then the error shall be rectified by the Contractor all at his own expense and at the satisfaction of, and in a manner specified by the Contract Administrator.
- E4.5 All costs associated with this item of Work shall be included in the unit prices bid for the supply and installation of the various items in the contract.

E5. PROTECTION OF THE SURVEY INFRASTRUCTURE

- E5.1 Notwithstanding clause 4 "Protection of Survey Bars" of the Standard Provisions; Current legislation, The Surveys Act, places the onus on those undertaking construction to protect the Survey Infrastructure from damage as a result of their activity.
- E5.2 Further to C:6.26 (g), at least 72 hours prior to the commencement of the On-Site Work the Contractor shall contact the City of Winnipeg, Geomatics Services Branch at 918-1360 (8:00 am to 4:00 pm Monday to Friday excluding holidays) to obtain underground clearance. Geomatics Services will locate and mark all known outline survey monuments and geodetic control monuments and confirm the physical condition of those monuments upon completion of construction, at no cost to the Contractor.
- E5.3 Where a survey post, bar or control monument lies in the line of the proposed Work and must be disturbed, the Contractor shall provide the Contract Administrator with 48 hours notice to permit referencing for future replacement, at no cost to the Contractor. Failure to provide the specified notice shall result in the Contractor paying for all costs associated with replacing or relocating the disturbed outline survey monuments and geodetic control monuments.
- E5.4 Survey monuments and geodetic control monuments at or adjacent to the Site, not in the line of the proposed construction that are damaged or disturbed by the Contractor shall be replaced or relocated by the City or its agent and all associated costs shall be paid for by the Contractor. An approximate estimate of the costs involved to restore a legal survey monument is \$1,000 per bar and \$3,000 per control monument. Contractors must ensure their landscaping and other subcontractors are aware of this clearance procedure and the potential restoration costs.
- E5.5 Where possible, amounts owed to the City in accordance with the above will be deducted from any payments to be made by the City to the Contractor.

E6. PEDESTRIAN SAFETY AND TRAFFIC MANAGEMENT

- E6.1 Further to CW 1130-R1, the Contractor shall take such measures as are necessary to ensure safe and convenient pedestrian ingress and egress is maintained to private properties while he is Working near them. Any damage caused by the negligence of the Contractor or his Sub-Contractors to the adjacent Works or properties, shall be promptly repaired by him at his own expense, to the satisfaction of the Contract Administrator.
- E6.2 Ambulance/ Emergency vehicle access must be maintained at all times.

E7. CONSTRUCTION FACILITIES AND STAGING

E7.1 The Contactor shall be responsible for providing his own storage area for storage and handling of all his construction operations. The use of public right-of-ways will not be allowed.

E8. ALL-WEATHER DUMP SITE

E8.1 The Contractor shall have access to an all-weather dump site throughout the duration of the project. Prior to the start of construction, the Contractor shall provide the Contract Administrator with details in regards to the location of the all-weather dump site.

E9. SURFACE RESTORATIONS

E9.1 The Contractor shall temporarily repair any Work commenced and not completed in the 2011 construction season 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.

E10. TEMPORARY RELOCATION OF AFFECTED STRUCTURES

E10.1 The Contractor shall temporarily relocate any portable structure such as benches, waste receptacles, picnic benches, etc., which will interfere with the construction of the Work and are not identified as items to be relocated. The Contractor Administrator will identify the temporary locations for the portable structures. Following the completion of the applicable Work the Contractor shall replace the structures to the locations designated by the Contract Administrator. These relocations shall be considered incidental to the associated Works and no separate measurement for payment will be made.

E11. TRUCK WEIGHT LIMITS

E11.1 The City shall not pay for any portion of Material which results in the vehicle exceeding the maximum gross vehicle weight allowed under *The City of Winnipeg Traffic By-Law*, unless such vehicle is operating under special permit.

E12. ACCESS

E12.1 All access is to be on the designated routes through the Site. These routes will be determined at the Pre-Construction Meeting.

E12.2 Access to the Site as required by the Contractor shall be provided and maintained by the Contractor at his own expense and approved by the Contract Administrator.

E12.3 The Contractor's operations shall be limited to the minimum area necessary for undertaking the Work and he shall be responsible for all damage resulting from his Work on private property. The Contractor shall take such measures as are necessary to ensure safe and convenient pedestrian ingress and egress in maintained to private properties while he is working near them. Any damage caused by the negligence of the Contractor or his Sub-Contractors to the adjacent Works or properties, shall be promptly repaired by him at his own expense, to the satisfaction of the Contract Administrator.

E12.4 All necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing trees, shrubs, sod, pavements, streets, roads, boulevards, poles, hydrants, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing facilities and equipment at the Site of the Work. For all damage incurred in the performance of the Work (either directly or indirectly), the Contractor shall either replace and repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to, the Contract Administrator and the cost of which shall be borne entirely by the Contractor.

E13. EXISTING UNDERGROUND SERVICES

- E13.1 The Contractor's attention is drawn to the existing underground lines or services that may be located in the area of the Work.
- E13.2 The Contractor shall take all necessary precautions when performing the Work to ensure that no damage is done to these existing services.
- E13.3 No responsibility will be assumed by the City for correctness or completeness of the Drawings, when provided, with respect to the existing utilities, pipes or other objects either underground or on the surface, shall not be liable for the incorrectness and inadequacy thereof. It shall be the responsibility of the Contractor to determine the location of all such utilities, pipes and other objects and to make good any damage done to them.
- E13.4 All costs in connection with this item including location of the existing service, repairs to any existing services damaged by the construction operation, etc. shall be included in the unit prices bid for supply and installation of the items included under this Contract.
- E13.5 The Contractor will be required to make his own arrangements in connection with the temporary use of lighting, power, gas, sewer, water or other utilities, and pay all costs in connection therewith.
- E13.6 All necessary permits, fees and other like expenses as well as the cost of temporary connections to existing facilities shall be arranged and paid for by the Contractor.

E14. EXPOSING EXISTING UNDERGROUND SERVICES AND UTILITIES

- E14.1 The exact location and depth of some of the existing underground services and utilities within the project limits are unknown.
- E14.2 Therefore, the Contractor shall supply all labour, equipment and materials required to expose all underground services and/or utilities sufficiently far enough in advance of the proposed Works to permit the Contract Administrator where necessary, to adjust the alignment and grade to avoid existing lines and ducts.
- E14.3 All costs in connection with this item of Work shall be included in the unit price bid for the various bid items.

E15. EXISTING CURB STOP BOXES

- E15.1 During the removal and installation of the concrete pavement, asphalt pathway and unit paving, the Contractor shall take all necessary precautions when Working in the vicinity of any existing curb stop boxes.
- E15.2 All existing curb stop boxes not in use as determined by the Contract Administrator shall be abandoned by removing existing curb stop boxes. All costs associated with the abandoning of curb stop boxes are incidental
- E15.3 Any existing curb boxes requiring final adjustments (horizontal and/or vertical) are incidental.
- E15.4 Any curb stop boxes damaged as a result of the Contractor's operation shall be replaced at his own cost.

E16. MATCHING EXISTING GRADES

- E16.1 Wherever the proposed paving, or sod meets existing pathway/pavement, curb edge, or property line, the Contractor shall construct the proposed element to an acceptable grade, as directed by the Contract Administrator, to ensure that proper drainage and accessibility are maintained.

E17. DAMAGE TO EXISTING STRUCTURES, TREES AND PROPERTY

- E17.1 All necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing buildings, trees, shrubs, sod, pavements, streets, roads, boulevards, poles, hydrants, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing facilities and equipment at the Site of the Work. For all damage incurred in the performance of the Work (either directly or indirectly), the Contractor shall either replace and repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to City of Winnipeg Contract Administrator, and the cost of which shall be borne entirely by the Contractor. The Contractor shall also indemnify and save harmless the City from all claims made directly or indirectly against it in respect to any such damage.
- E17.2 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing street trees within the limits of the construction area:
- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment within 2 metres of trees.
 - (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25x100x2400 wood planks, or suitable protected as approved by the Contract Administrator.
 - (c) 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.
 - (d) Operation of equipment within the drip line of the trees shall be kept to a 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.
- E17.3 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his/her designate.
- E17.4 No separate measurement or payment will be made for the protection of trees.

E18. PERMITS, NOTICES, LICENCES, CERTIFICATIONS, LAWS, AND RULES

- E18.1 The Contractor shall give all necessary notices, obtain all necessary permits and pay all fees in order that the Work may be carried out. The Contractor shall submit all plans required by any inspection authority and obtain approval of same before proceeding with the Work, and pay any cost attached to the inspection of such plans.
- E18.2 The Site Development Permits (including lot grading and damage deposits) will be obtained and paid for by the City of Winnipeg Planning, Property and Development Department prior to commencement of construction. A copy of this permit will be provided to the Contractor upon award of Contract.
- E18.3 The Contractor shall comply with all laws, ordinances, rules, and regulations that would relate to the Works.

E19. SITE ENCLOSURES

- E19.1 Temporary Site enclosures, as determined necessary at the pre-construction meeting, shall be erected and maintained as required for the duration of the construction period.
- E19.2 Site enclosures shall be considered incidental to the Contract Work.

E20. SITE RESTORATION

E20.1 Total Performance of the Work shall not be attained until the Contractor has cleaned up the Site and has removed all tools, equipment, waste, debris and surplus foundation earth to the satisfaction of the Contract Administrator. Unless otherwise specified, the Contractor shall restore all areas of the Site beyond the established limit of Work, which have been disturbed by the Contractor's operations to as good as or better than the original condition to the satisfaction of the Contract Administrator. The Contractor shall pay all costs associated with this Work.

E21. REMOVALS

E21.1 Further to City of Winnipeg Specification CW 3110 and due to the extent and nature of underground services in the street right-of-way, the Contractor shall be permitted to use only backhoe type equipment when excavating sub-grade material.

E21.2 Further to City of Winnipeg Specifications CW 3230 and CW 3235, the Contractor shall sawcut and remove existing concrete sidewalk, parking lot pavement, etc. as shown on the Drawings and as directed by the Contract Administrator. The removal shall include all existing concrete and base courses where applicable. All work to be incidental to the unit prices bid for this Contract.

DESCRIPTION

E21.3 This Specification shall cover the removal of and disposal of all existing site elements, to build all work as shown on the drawings, including, but not limited to:

- (a) Planting beds and plant material;
- (b) Parking lot and sidewalk paving;
- (c) Unit paving on site;
- (d) Remove and stockpile unit paving in sidewalk for reinstallation;
- (e) Parking lot fence and arch trellis including electrical disconnect.

E21.4 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

EQUIPMENT

E21.5 All equipment shall be of a type approved by the Contract Administrator and shall be kept in good Working order.

CONSTRUCTION METHODS

E21.6 The Contractor shall restrict his activities strictly to within the limits of the Works, unless receiving prior written approval from the Contract Administrator.

E21.7 Remove and dispose of wood fence and arch trellis as shown on the drawings. Fill holes from posts with clean material suitable for finished surface, compact to 98% SPD.

E21.8 Remove and dispose of parking lot and sidewalk paving including all base courses where applicable.

E21.9 Remove and dispose of trees, shrubs and planting beds including all root mass. Fill holes and low areas with clean material suitable for finished surface, compact to 98% SPD.

E21.10 Remove and stockpile on site all unit paver in sidewalk affected by construction. Wrap and protect pavers during construction for reinstallation.

- E21.11 The Contractor shall load and haul all removed material from the Site and dispose of these materials legally at a dump located by the Contractor and approved by the Contract Administrator. Any materials dropped or spilled on any streets during the hauling operations shall be promptly cleaned up at the expense of the Contractor, to the satisfaction of the Contract Administrator.
- E21.12 The Contractor shall ensure that upon completion of the removal operations, the Site shall be left free of any hazardous depressions and in a neat condition.
- E21.13 If required and at locations directed by the Contract Administrator, the Contractor shall excavate, remove and dispose of unsuitable subgrade material and replace it with compacted granular material in accordance with Specification CW3110.
- E21.14 The Contractor shall dispose of all unsuitable and excess materials in accordance with City of Winnipeg Specifications. Disposal is incidental to the unit prices bid.

METHOD OF MEASUREMENT

- E21.15 Removal of existing paving and curb will be measured and paid on a lump sum basis which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.
- E21.16 Removal of existing fencing, archway and electrical will be measured and paid on a lump sum basis which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.
- E21.17 Removal of existing unit paving will be measured and paid on a lump sum basis which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.
- E21.18 Removal of stockpile of existing unit pavers will be measured and paid for at the contract unit price for "Remove and stockpile unit pavers", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification. The surface area to be paid for shall be the total number of square metres supplied in accordance with the specifications and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.
- E21.19 Removal of existing trees, shrubs and planting bed will be measured and paid on a lump sum basis which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E22. EARTHWORK AND ROUGH GRADING

GENERAL

- E22.1 This specification is supplemental to CW 3110 and CW 3170. The Work of this section comprises the furnishing of all labour, equipment and materials required to complete the excavation and related Work including, but not necessarily confined to, the following:
- (a) Excavation, removals, disposal, subgrade compaction and rough grading of the existing Site for the construction of concrete sidewalk, limestone paving, planting beds, etc. to the design requirements noted on the Drawings, approved on Site by the Contract Administrator, less the appropriate surface finish allowance.
 - (b) Stockpile suitable, approved material on Site for reuse (clean topsoil, clean earth fill and gravel fill). Remove and dispose of unsuitable material.
 - (c) Earthwork and Grading of the existing Site to the design elevations shown on the Drawings, less the appropriate surface finish allowance.

- (d) Earthwork and Grading of the existing Site (cut and fill including compaction of subgrade and fill material) to ensure positive drainage in all paved areas, swales and adjacent sodded/seeded areas and planting beds.
- (e) Supply and Install imported fill in areas as required to fill holes from excavation and ensure positive drainage.

MATERIALS

E22.2 All fill materials shall conform to CW 3170 and the Geotechnical Investigation.

CONSTRUCTION METHODS

- E22.3 The Contractor shall construct all sub-grades in accordance with Specification CW 3110 and the Geotechnical Investigation, including removal of unsuitable excavated material and surplus materials.
- E22.4 The Contractor shall restrict his activities strictly to within the limits of the Work, unless receiving prior written approval from the Contract Administrator. The Contractor shall take all precautions to prevent damage to traffic structures, pole lines, existing trees, Site services and adjacent property and he shall be liable for any damages occurring in the performance of this Work.
- E22.5 The Contractor shall examine the Site and make themselves familiar with the existing conditions and the nature of the Work to be done.
- E22.6 Prevent damage to surface or underground utility lines which are to remain. Make good any damage.
- E22.7 The Contractor shall excavate to the design grades shown less the appropriate allowance for surface treatment and base materials and shall excavate, remove and dispose of all unsuitable materials of whatever nature encountered.
- E22.8 Excavated or graded materials to be approved before use as fill for grading Work. Protect such approved material from contamination. Stockpile in approved locations on Site. Protection and stockpiling are incidental to unit prices bid for excavation, removals and rough grading.
- E22.9 The Contractor shall ensure that upon completion of the earthwork and grading operations the Site is left in a neat condition free from debris, etc. for approval by the Contract Administrator prior to placing base courses and clean fill.
- E22.10 The design gradient as shown on the Drawings shall be considered to be straight grade between the design elevations shown.
- E22.11 Construction to the new design grades shall be accomplished by the placement of clean fill in areas as indicated on the Drawings.
- E22.12 Areas of Fill
- (a) Fill low areas in subgrade of paved areas with compacted gravel sub-base material compacted to 98% SPD. Cost incidental to unit price bid for paved areas.
 - (b) Fill low areas in sodded/planting bed areas with clean earth fill suitable for plant growth (from Site excavations or imported as required) free from roots, muskeg, organic or cohesive matter, building debris, waste materials, rubble, rubbish, frozen portions, soluble materials and rocks larger than 25mm (1") in diameter and capable of sustaining plant and seed growth. Compact to 95% S. P. D. in 150mm (6") lifts.
 - (c) Construct sodded berms, sloped areas using clean earth fill suitable for plant growth (from Site excavations or imported as required) free from roots, muskeg, organic or cohesive matter, building debris, waste materials, rubble, rubbish, frozen portions, soluble materials and rocks larger than 25mm (1") in diameter and capable of sustaining plant and seed growth. Compact to 95% S. P. D. in 150mm (6") lifts.

- (d) Prior to placing fill over existing ground, scarify surface to depth of 150mm. Maintain fill and existing surface at approximately the same moisture content to facilitate bonding.
- (e) No direct payment will be made for placing and grading of existing fill as all costs for this Work shall be included in the lump sum bid for excavation, removals and rough grading within the limit of the Work.

E22.13 Compaction shall include the use of sheep's foot or other suitable compaction equipment as approved by the Contract Administrator to achieve a minimum compaction of 98% Standard Proctor Density below all paved areas and rock areas, and 95% Standard Proctor Density in all other areas disturbed under this Contract.

E22.14 The Contractor shall construct the sub-grade surface to the following depths below the grades shown on the Drawings for each area:

- | | |
|---|--------|
| (a) Planting bed -shrubs only | 675mm |
| (b) Planting bed -trees and shrubs | 1125mm |
| (c) Concrete paving | 450mm |
| (d) Compacted limestone paving | 200mm |
| (e) Concrete sidewalk | 275mm |
| (f) Concrete sidewalk with unit paver insert / thickened edge | 350mm |

E22.15 The Contractor is advised that all excavations, removals, disposal, rough grading, compaction and related Work for construction of reinforced concrete sidewalk, concrete paving, compacted limestone paving, and planting areas shall be measured as a square meter cost regardless of depth of excavation.

E22.16 Following earth moving, rough grading and compaction the Work areas shall be fine graded to provide a maximum deviation of 50mm in 10 metres from the design grade with no low areas to hold water. The finished surface of all disturbed areas shall be dragged and smoothed in such a manner that there are no loose soil particles greater than 50mm in maximum dimensions. Fine grading is incidental to the unit prices bid for each item listed in the schedule of prices.

E22.17 If required and at locations directed by the Contract Administrator, the Contractor shall excavate and remove unsuitable subgrade material and replace it with compacted granular material in accordance with Specification CW3110.

MEASUREMENT AND PAYMENT

E22.18 Rough grading will be measured and paid for at the contract unit price for "Rough grading", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification. The surface area to be paid for shall be the total number of square metres supplied in accordance with the specifications and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator

E23. CONSTRUCTION OF LAND DRAINAGE SEWERS

DESCRIPTION

E23.1 The Work of this section comprises the furnishing of all labour equipment and materials incidental and required to complete the construction of the Land drainage Sewers as shown on the drawings and hereinafter specified.

CONSTRUCTION OF LAND DRAINAGE SEWERS

E23.2 Further to Specification CW 2030, CW 2130, CW 2131, CW 2160, and CW2410 the Contractor shall supply and install land drainage sewers, catch basins and the connection to the existing LDS sewer as shown on the drawings and in accordance with the Specifications.

- E23.3 All land drainage sewers shall be installed by coring below granular areas and within 1.5m of existing or proposed pavement or structures and as shown on the drawings. All costs for coring are incidental to the Contract Unit Price per linear meter for "Supply and install LDS system - 250 LDS pipe."
- E23.4 Catch basins shall be in accordance with SD-225 with modification as required for flow through catch basins.
- E23.5 All access shaft backfill in granular areas and within 1.5m of existing or proposed pavement shall be Class 2 Backfill compacted to 100% standard proctor density in maximum 150mm thick lifts. The Top section shall be constructed as shown on the Drawings and/or as directed by the Contract Administrator.
- E23.6 Drain to be Zurn 300x300 drain with stainless steel square top and 150 drain body. Install as per manufacturer's specifications.
- E23.7 Perforated pipe to be 100 diameter pipe complete with sock. Install as per drawings.
- E23.8 Drain pipe collector to be solid pvc pipe connecting perforated pipe to LDS system.

MEASUREMENT AND PAYMENT

- E23.9 Supply and installation of 150 LDS pipe will be measured and paid for at the contract unit price for "150mm dia. LDS pipe", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E23.10 Supply and installation of 250 LDS pipe will be measured and paid for at the contract unit price for "250mm dia. LDS pipe", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E23.11 Connection to City of Winnipeg sewer system will be measured and paid for at the contract unit price for " Connection to City of Winnipeg sewer system ", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E23.12 Supply and installation of manhole will be measured and paid for at the contract unit price for "Supply and install manhole", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E23.13 Supply and installation of perforated pipe will be measured and paid for at the contract unit price for "Planter perforated drain pipe", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E23.14 Supply and installation of drain pipe will be measured and paid for at the contract unit price for "drain pipe collector", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator
- E23.15 Supply and installation of 300x300mm drain will be measured and paid for at the contract unit price for "300x300mm drain", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.

E24. ELECTRICAL WORKS

GENERAL PROVISIONS

- E24.1 Refer also to Drawings.
- E24.2 Furnish all labour, materials, equipment and services for the complete installation of the electrical Work as shown on the plans and specified. Complete system to operate to total satisfaction of the Contract Administrator
- E24.3 Supply and install conduit to stage area and clock tower for future electrical connection. Ensure sufficient conduit is left coiled on site for access to remote areas of each element.
- E24.4 Supply and install conduit to power connection to water feature control panel location.
- E24.5 Supply and install all works for electrical receptacles and lighting.
- E24.6 Lights to be Resonance TLRC15-100M MED-GCF-SR3-120-DF-DBL with lamp (two per pole) and TARC38 crossarms. Lights, lamps and crossarms are incidental to the unit prices bid for site lights.
- E24.7 Poles to be custom dodecagonal galvanized steel with 100mm top radius, 76mm diam. mounting post, custom fins around post, base plates and anchor bolts with washers and nuts. Poles are incidental to the unit prices bid for site lights.
- E24.8 Pole manufacturer to supply anchor bolts and template to Contractor for installation in concrete bases as per E25.
- E24.9 Conform with all Codes and pay all permits and Fees. Upon completion, present a "Certificate of Approval" for electrical Work from the Inspection Department.
- E24.10 Examine the Site and local conditions affecting the Work under this contract.
- E24.11 Refer to associated drawings and specifications for electrical Work in connection therewith.
- E24.12 Install all Work promptly and in advance of concrete pouring and/or construction.
- E24.13 The Contractor shall be responsible to make good all "Cutting and Patching" required by his section of the Contract. Include all trenching, backfilling and surface repair. Contractor to push wires where possible at all locations.
- E24.14 All Work shall be executed in a first class and workmanlike manner. All supports, hangers, and securing devices shall be solid and substantial. All Work shall be laid out neatly in its mechanical appearance. It shall be logically arranged for simplicity of installation and accessibility.
- E24.15 Provide corrected "as-built" drawings on completion of the project. All underground services shall be indicated on as-builts and dimensioned.
- E24.16 Identify circuits/equipment with lamacoid nameplates.
- E24.17 All electrical apparatus shall be properly grounded according to the latest edition of the "Canadian Electrical Code"
- E24.18 All equipment, wiring, conduit, grounding, seals, etc., shall be in compliance with the latest edition of the "Canadian Electrical" and local "Codes". Wiring in finished grade shall be in rigid PVC conduits, complete with ground conductor.
- E24.19 Supply and install electrical panel as directed on Site.
- E24.20 Supply and install conduit in locations as per the drawings and as directed on Site by Contract Administrator.

- E24.21 Co-ordinate installation with Manitoba Hydro. Installation to conform with all utility requirements.
- E24.22 Provide ground rod and grounding connections to suit Manitoba Hydro and City of Winnipeg Inspection Department.
- E24.23 The Contractor shall carefully examine all drawings relating to the Work, to be certain that the Work under this Contract can be carried out and, prior to the submission of his/her Bid in accordance with B4, report at once to the Contract Administrator any defect, discrepancy, omission or interference affecting the work of this section or the guarantee of same.
- E24.24 The Contractor shall be responsible for any damage caused the City or their Contractors by improperly carrying out this contract.
- E24.25 The Contractor shall guarantee the satisfactory operation of all work and apparatus included and installed under this section for a period of twelve (12) calendar months after the final acceptance of the project.

MEASUREMENT AND PAYMENT

- E24.26 Conduit for connection to water feature will be measured and paid on a lump sum basis which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.
- E24.27 Electrical Work for connection to receptacles and lights will be measured and paid on a lump sum basis which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.
- E24.28 Supply and installation of site lights will be measured and paid for at the contract unit price for "Site lights", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E24.29 Conduit for clock tower will be measured and paid on a lump sum basis which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.
- E24.30 Conduit for stage will be measured and paid on a lump sum basis which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E25. CAST-IN-PLACE CONCRETE

DESCRIPTION

- E25.1 The Work of this section comprises the furnishing of all labour, equipment and materials required to complete the supply and installation of cast-in-place concrete wall, curbs, and bases as shown on the drawings and as hereinafter specified, including, but not necessarily confined to the following:
- (a) Excavation and compaction;
 - (b) Granular fill Work as required;
 - (c) Supply, erection and removal of all formwork as required;
 - (d) Design of concrete mixes;
 - (e) Supply and placing of reinforcing;
 - (f) Installation anchor bolts to be cast in place;
 - (g) Supply, placing, curing and finishing of concrete for concrete walls, curbs tree vault and bases with exposed concrete;
 - (h) Supply, placing and curing of bases for lights and Christmas tree stands;

- (i) Supply and installation of all joint material in concrete Work;
- (j) Supply and Installation of compacted granular base courses not supplied by other sections;
- (k) Graffiti coating;
- (l) Clean-up.

E25.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E25.3 The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.

E25.4 Handling and Storage of Materials

E25.4.1 All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator. Storage of materials shall be in accordance with CSA Standard A23.1-04.

E25.5 Testing and Approval

E25.5.1 All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to the City for any materials taken by the Contract Administrator for testing purposes.

E25.5.2 All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials in whole or in part, do not conform to the Specifications detailed herein or are found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such materials shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

E25.6 Patching Mortar

E25.6.1 The patching mortar shall be made of the same cementitious material and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2 parts sand by damp loose volume. White Portland Cement shall be substituted for a part of the grey Portland Cement on exposed concrete in order to produce a colour matching the colour of the surrounding concrete, as determined by a trial patch. The quantity of mixing water shall be no more than necessary for handling and placing.

E25.7 Cement

E25.7.1 Cement shall be Type HS or HSb, high-sulphate-resistant hydraulic cement, conforming to the requirements of CSA Standard A23.1-04

E25.8 Concrete

E25.8.1 General

(a) Concrete repair material shall be compatible with the concrete substrate.

E25.8.2 The Contractor shall be responsible for the design and performance of all concrete mixes supplied under this specification. Either ready mix concrete or proprietary repair mortars, where applicable, may be used having the following minimum properties in accordance with CSA A23.1-04:

(a) Class of Exposure: S-1

- (b) Compressive Strength @ 56 days = 35 MPa
- (c) Water / Cementing Materials Ratio = 0.4
- (d) Air Content: Category 2 per Table 4 of CSA A23.1-04 (4-7%)
- (e) Cement – shall be as specified in E25.7

E25.8.3 Mix design for ready mix concrete shall be submitted to Contract Administrator at least two weeks prior to concrete placing operations.

E25.8.4 The workability of each concrete mix shall be consistent with the Contractor's placement operations. Self compacting concrete may be used for the foundations.

E25.8.5 Any proposed proprietary repair mortar shall be subject to the approval of the Contract Administrator and must meet or exceed the properties of the ready mix concrete.

E25.8.6 The temperature of all types of concrete shall be between 15°C and 25°C at discharge. Temperature requirements for concrete containing silica fume shall be between 10°C and 18°C at discharge unless otherwise approved by the Contract Administrator.

E25.8.7 Concrete materials susceptible to frost damage shall be protected from freezing

E25.9 Aggregate

E25.9.1 The Contractor shall be responsible for testing the fine and coarse aggregates to establish conformance to these specifications, and the results of these tests shall be provided to the Contract Administrator if requested. All aggregates shall comply with CSA A23.1.

E25.9.2 Coarse Aggregate

- (a) The maximum nominal size of coarse aggregate shall be sized to suit the Contractor's mix design. Gradation shall be in accordance with CSA A23.1, Table 11, Group 1. The coarse aggregate shall satisfy the Standard Requirements specified in CSA A23.1, Table 12, "Concrete Exposed to Freezing and Thawing".
- (b) Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongation, dust, shale, earth, vegetable matter or other injurious substances. Coarse aggregate shall be clean and free from alkali, organic or other deleterious matter; and shall have an absorption not exceeding 2.25%.
- (c) The aggregate retained on the 5 mm sieve shall consist of clean, hard, tough, durable, angular particles with a rough surface texture, and shall be free from organic material, adherent coatings of clay, clay balls, and excess of thin particles or any other extraneous material.
- (d) Coarse aggregate when tested for abrasion in accordance with ASTM C131 shall not have a loss greater than 30%.
 - (i) Tests of the coarse aggregate shall not exceed the limits for standard for requirements prescribed in CSA A23.1, Table 12, for concrete exposed to freezing and thawing.

E25.9.3 Fine Aggregate

- (a) Fine aggregate shall meet the grading requirements of CSA A23.1, Table 10, Gradation FA1.
- (b) Fine aggregate shall consist of sand, stone, screenings, other inert materials with similar characteristics or a combination thereof, having clean, hard, strong, durable, uncoated grains free from injurious amounts of dust, lumps, shale, alkali, organic matter, loam, or other deleterious substances.
- (c) Tests of the fine aggregate shall not exceed the limits for standard requirements prescribed in CSA A23.1, Table 12

E25.10 Cementing Materials

- (a) Cementing materials shall conform to the requirements of CSA A3001.

- (b) Silica Fume
 - (i) Should the Contractor choose to include silica fume in the concrete mix design, it shall not exceed 8% by mass of cement.
- (c) Fly Ash
 - (i) Fly ash shall be Type C1 or Type F and shall not exceed 25% by mass of cement.
- (d) Cementitious materials shall be stored in a suitable weather-tight building that shall protect these materials from dampness and other destructive agents. Cementitious materials that have been stored for a length of time resulting in the hardening or formation of lumps shall not be used in the Work.

E25.11 Admixtures

- E25.11.1 Air entraining admixtures shall conform to the requirements of ASTM C260.
- E25.11.2 Chemical admixtures shall conform to the requirements of ASTM C494 or C1017 for flowing concrete.
- E25.11.3 All admixtures shall be compatible with all other constituents. The addition of calcium chloride, accelerators, and air-reducing agents will not be permitted, unless otherwise approved by the Contract Administrator.
- E25.11.4 Appropriate low range water reducing and/or superplasticizing admixtures shall be used in concrete containing silica fume. Approved retarders or set controlling admixtures may be used for concrete containing silica fume.
- E25.11.5 An aminocarboxylate based migrating corrosion inhibitor admixture shall be used in concrete that will be used as a repair material that will either be in contact with or adjacent to reinforcing steel in existing concrete. Proposed admixtures shall be subject to the approval of the Contract Administrator.

E25.12 Water

- E25.12.1 Water used for mixing concrete shall be clean and free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances. It shall be equal to potable water in physical and chemical properties.

E25.13 Concrete Supply

- E25.13.1 Concrete shall be proportioned, mixed, and delivered in accordance with the requirements of CSA A23.1, except that the transporting of ready mixed concrete in non-agitating equipment will not be permitted unless prior written approval is received from the Contract Administrator.
- E25.13.2 Unless otherwise directed by the Contract Administrator, the discharge of ready mixed concrete shall be completed within 120 minutes after the introduction of the mixing water to the cementing materials and aggregates.
- E25.13.3 The Contractor shall maintain all equipment used for handling and transporting the concrete in a clean condition and proper working order.

E25.14 Reinforcing Steel

- E25.14.1 Reinforcing steel shall be deemed to include all reinforcing bars, tie-bars, and dowels.
- E25.14.2 All reinforcing steel shall conform to the requirements of CSA Standard G30.18, Grade 400 W, Billet-Steel Bars for Concrete Reinforcement. All reinforcing steel shall be new deformed billet steel bars. All bars, including ties, shall be hot-dip galvanized in accordance with CSA Standard G164 for a minimum net retention of 600 g/m². Reinforcing steel supply and installation will be incidental to construction of concrete foundation and no separate payment will be made.

E25.15 Anchor Bolts, Nuts, and Washers

E25.15.1 Anchor bolts, nuts and washers shall be supplied by the site furniture manufacturers.

E25.16 Anchor Bolt Templates

E25.16.1 Anchor bolt templates shall be supplied by site furniture manufacturers.

E25.16.2 Anchor bolt templates will be incidental to construction of new concrete foundation and no separate payment will be made.

E25.17 Fibre Joint Filler

E25.17.1 Fibre joint filler shall be rot-proof and of the preformed, non-extruding, resilient-type, made with a bituminous fibre such as "Flexcell," and shall conform to the requirements of ASTM Standard D1751, or approved equal in accordance with B6.

E25.18 Anti-Graffiti Coating

E25.18.1 Anti-graffiti coating shall be "Professional Water Sealant & Anti-Graffiti System" or approved equivalent by Contract Administrator.

E25.19 Waterproofing Membrane

E25.19.1 Waterproofing membrane shall be "Sonoshield HLM 5000 R" or approved equivalent by the Contract Administrator.

E25.20 Miscellaneous Materials

E25.20.1 Miscellaneous materials shall be of the type specified on the Drawings or approved by the Contract Administrator.

CONSTRUCTION METHODS

E25.21 Location and Alignment of Foundations

E25.21.1 Foundation construction shall not commence until the Contractor has obtained clearance from the appropriate Utility Authorities.

E25.21.2 Foundations shall be placed in the positions shown on the Drawings and as directed by the Contract Administrator in the field.

E25.21.3 The deviation of the axis of any finished foundation shall not differ by more than 1 percent from the vertical.

E25.22 Buried Utilities

E25.22.1 The Contractor shall exercise extreme caution when constructing the foundations in the vicinity of existing buried utilities and buildings. The Drawings show the approximate locations of existing buried utilities. The Contractor shall be responsible for obtaining the exact location of the buried utilities from the appropriate Utility Authorities prior to installing the foundations.

E25.22.2 The proposed locations of the foundations may be changed by the Contract Administrator if they interfere with the buried utilities.

E25.22.3 The Contractor shall be responsible for all costs that may be incurred for repair/rectification of any damage caused to the existing buried utilities as a result of the Contractor's operations in constructing cast-in-place concrete foundations, as determined by the Contract Administrator.

E25.23 Excavation

E25.23.1 The Contractor is responsible for determining the excavation method at each foundation location.

- E25.23.2 Excavations for foundations shall be made with equipment designed to remove a core of the diameter shown on the Drawings, or hydro-jet excavation to a depth to bypass and/or expose adjacent utilities.
- E25.23.3 Upon reaching the required elevation, the bottom of the excavation shall be cleaned as directed by the Contract Administrator in the field.
- E25.23.4 All excavated material from the foundations shall be promptly hauled away from the Site to an approved disposal area as located by the Contractor.
- E25.23.5 Upon completion of the cleaning out of the bottom to the satisfaction of the Contract Administrator, the reinforcement and anchor bolts shall be set in place and the concrete poured immediately. Under no circumstances shall a hole be left to stand open after boring has been complete.
- E25.24 Sleeving
- E25.24.1 Timber or steel sleeving shall be used to temporarily line the bore to prevent bulging or caving of the walls and to protect men at work in the bore.
- E25.24.2 The sleeving shall be designed by the Contractor and constructed to resist all forces that may tend to distort it.
- E25.24.3 The sleeving shall be withdrawn as the concrete is placed in the bore. The sleeving shall extend at least 1 m below the top of the freshly deposited concrete at all times.
- E25.24.4 The clearance between the face of the bore hole and the sleeving shall not exceed 75 mm.
- E25.25 Inspection of Bores
- E25.25.1 Concrete shall not be placed in a bore until the bore has been inspected and approved by the Contract Administrator.
- E25.25.2 The Contractor shall have available suitable light for the inspection of each bore throughout its entire length.
- E25.25.3 All improperly set sleeving, bore, or bottom shall be corrected to the satisfaction of the Contract Administrator.
- E25.26 Placing Reinforcing Steel
- E25.26.1 Reinforcement shall be:
- (a) placed in accordance with the details shown on the Drawings
 - (b) rigidly fastened together, and
 - (c) lowered into the bore intact before concrete is placed.
- E25.26.2 Spacers shall be utilized to properly locate the reinforcing steel cage in the bore.
- E25.27 Placing Anchor Bolts
- E25.27.1 The anchor bolts shall be aligned with a steel template, matching the bolt holes in the base plate. **Extreme care shall be used in this operation to ensure bolts are aligned properly.** Placement of anchor bolts without the steel template will not be permitted.
- E25.27.2 The threaded portion of the anchor bolts projecting above the top surface of foundation shall be coated with oil, before the concrete is poured, to minimize the fouling of threads splattered by concrete residue
- E25.28 Forms
- E25.28.1 Forms for exposed surfaces that require an "rubbed finish" shall be made of good quality plywood, or an approved equivalent, or uniform thickness, with or without a form liner.
- E25.28.2 Architectural concrete form liner shall be as specified on the Plans or equivalent as approved by the Engineer.

- E25.28.3 Permeable formwork liner shall be Drainoform, Zemdrail II, or equivalent as approved by the Engineer.
- E25.28.4 Formwork materials shall conform to CSA Standard CAN/CSA-A23.1, and American Concrete Publication SP:4, "Formwork for Concrete".
- E25.28.5 No "stay-in-place" formwork or falsework is permitted.
- E25.28.6 Form sheeting plywood to be covered with form liner or to be directly in contact with soil shall be exterior Douglas Fir, concrete form grade, conforming to CSA Standard O121-M1978, a minimum of 20 mm thick.
- E25.28.7 Where form liner is not being used, form sheeting shall be Douglas Fir, overlay form liner type conforming to CSA Standard O121-M1978. Approved manufacturers are "Evans" and "C-Z".
- E25.28.8 Boards used for formwork shall be fully seasoned and free from defects such as knots, warps, cracks, etc., which may mark the concrete surface.
- E25.28.9 No formwork accessories will be allowed to be left in place within 50 mm of the surface following form removal. Items to be left in place, must be made from a non-rusting material or galvanized steel; and they shall not stain, blemish, or spall the concrete surface for the life of the concrete.
- E25.28.10 Forms for exposed concrete surfaces that do not require a form liner may be either new plywood or steel as authorized by the Contract Administrator.
- E25.28.11 Studding shall be spruce or pine and shall have such dimensions and spacing that they shall withstand distortion from all the forces to which the forms will be subjected. Minimum dimensions shall be 50 mm x 150 mm.
- E25.28.12 Walers shall be spruce or pine, with minimum dimensions of 100 mm x 150 mm.
- E25.28.13 All forms are incidental to these Works and must be removed by the Contractor once adequate strength and curing of the concrete has been achieved.
- E25.28.14 The forms shall be sufficiently rigid to prevent lateral or vertical distortions from the loading environment to which they shall be subjected. Forms shall be set to the design grades, lines, and dimensions, as shown on the Drawings.
- E25.29 Placing Concrete
- E25.29.1 Care shall be taken to ensure that anchor bolts are vertically aligned and that anchor bolts and conduits are properly positioned prior to placement of concrete.
- E25.29.2 Concrete shall not have a free fall of more than 2.0 m and shall be placed so that the aggregates will not separate or segregate. The slump of the concrete shall not exceed 110 mm. The concrete shall be vibrated throughout the entire length of the foundation.
- E25.29.3 Concrete shall be placed to the elevations as shown on the Drawings. The top surface of the foundation shall be finished smooth and even with a hand float.
- E25.29.4 The shaft shall be free of water prior to placing of concrete. Concrete shall not be placed in or through water unless authorized by the Contract Administrator.
- E25.30 Protection of Newly Placed Concrete
- E25.30.1 Newly laid concrete threatened with damage by rain, snow, fog, or mist shall be protected with a tarpaulin or other approved means..
- E25.31 Construction Joints
- E25.31.1 Construction joints shall be located only where shown on the Drawings or as otherwise approved in writing by the Contract Administrator. Construction joints shall be at right angles to the direction of the main reinforcing steel. All reinforcing steel shall be

continuous across the joints. Bevelled shear keys, as shown on the Drawings or approved by the Contract Administrator, shall be provided at all joints.

E25.31.2 In lieu of shear keys, the Contractor may roughen the surface as follows. The surface shall be rough, with a minimum amplitude of 6 mm. Acceptable procedures to obtain this rough surface are as follows:

- (a) By removing the mortar from between the larger aggregate particles with a water jet and soft brush when the concrete is in a semi-hardened state (green-cut).
- (b) By first applying a chemical retarder to the surface and then removing the mortar from the larger aggregate particles with a water jet and brush.

E25.31.3 The face of joints shall be cleaned of all laitance and dirt, after which the cementitious grout or an approved bonding agent shall be applied. Forms shall be retightened, and all reinforcing steel shall be thoroughly cleaned at the joint prior to concreting.

E25.32 Curing Concrete

E25.32.1 The top of the freshly finished concrete foundations shall be covered and kept moist by means of wet polyester blankets immediately following finishing operations and shall be maintained at above 10°C for at least seven (7) consecutive days thereafter.

E25.32.2 After the finishing is completed, the surface shall be promptly covered with a minimum of a single layer of clean, damp polyester blanket.

E25.32.3 Concrete shall be protected from the harmful effects of sunshine, drying winds, surface dripping or running water, vibration, and mechanical shock. Concrete shall be protected from freezing until at least twenty-four hours after the end of the curing period.

E25.32.4 Changes in temperature of the concrete shall be uniform and gradual and shall not exceed 3° in one hour or 20° in twenty-four hours.

E25.33 Form Removal

E25.33.1 Forms shall not be removed for a period of at least 24 hours after the concrete has been placed. Removal of forms shall be done in a manner to avoid damage to, or spalling of, the concrete.

E25.33.2 The minimum strength of concrete in place for safe removal of forms shall be 20 MPa.

E25.33.3 Field-cured test specimens, representative of the in-place concrete being stripped, will be tested to verify the concrete strength.

E25.33.4 Upon removal of forms and inspection of concrete all exposed concrete shall receive a sack rubbed finish.

E25.34 Patching of Formed Surfaces

E25.34.1 Immediately after forms around top of foundation have been removed, but before any repairing or surface finishing is started, the concrete surface shall be inspected by the Contract Administrator. Any repair of surface finishing started before this inspection may be rejected and required to be removed.

E25.34.2 All formed concrete surfaces shall have bolts, ties, struts, and all other timber or metal parts not specifically required for construction purposes cut back fifty (50) mm from the surface before patching.

E25.34.3 Minor surface defects caused by honeycomb, air pockets greater than 5 mm in diameter, and voids left by strutting, and tie holes shall be repaired by removing the defective concrete to sound concrete, dampening the area to be patched and then applying patching mortar. A slurry grout consisting of water and cement, shall be well-brushed onto the area to be patched. When the slurry grout begins to lose the water sheen, the patching mortar shall be applied. It shall be struck-off slightly higher than the surface and left for one hour before final finishing to permit initial shrinkage of the patching mortar and it shall be

touched up until it is satisfactory to the Contract Administrator. The patch shall be cured as specified in this Specification, and the final colour shall match the surrounding concrete.

E25.35 Cold Weather Concreting

E25.35.1 Protection of concrete shall be considered incidental to its placement. The temperature of the concrete shall be maintained at or above 10°C for a minimum of three (3) days or till the concrete has reached a minimum compressive strength of 20 MPa, by whatever means are necessary. Concrete damaged as a result of inadequate protection against weather conditions shall be removed and replaced by the Contractor at his own expense. Also, concrete allowed to freeze prior to the three (3) days will not be accepted for payment.

E25.35.2 Anti-Graffiti Coating

E25.35.3 Anti-graffiti coating shall be applied to all raised planter walls shown on the drawings or identified by the Contract Administrator.

E25.35.4 The anti-graffiti coating shall be applied according to manufactures specifications.

E25.35.5 Maintain anti-graffiti coating on all vertical concrete surfaces for a period of two (2) years.

E25.36 Waterproofing

E25.36.1 Waterproofing membrane shall be applied to all new concrete walls and curbs which will come into contact with planting soil, as identified on the drawings or by the Contract Administrator. The waterproofing membrane shall be roller applied according to manufactures specifications.

QUALITY CONTROL

E25.37 All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator, including all operations from the selection and production of materials, through to final acceptance of the Work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any materials or Works that are not in accordance with the requirements of this Specification.

E25.38 The Contractor shall be responsible for making a thorough inspection of materials to be supplied under this Contract. All material shall be free of surface imperfections and other defects.

CLEAN UP AND DAMAGE

E25.39 Immediately on completion of all piles and foundations Contractor shall remove from Site all equipment, timbers, shores, excavated material, unused concrete, rubbish, etc., caused by his operations, and leave the Site clean, level and ready for placing of grade beams.

E25.40 This Contractor shall be responsible for making good all areas damaged by his operations in connection with this Contract regardless of the limits of the Contract as shown on the Drawings.

MEASUREMENT AND PAYMENT

E25.41 Supply and installation of curved concrete walls will be measured and paid for at the contract unit price for "800mm ht. Concrete walls", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.

E25.42 Supply and installation of landscape curb will be measured and paid for at the contract unit price for "Landscape curb", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.

- E25.43 Supply and installation of 450mm ht. concrete wall will be measured and paid for at the contract unit price for "450mm ht. concrete wall", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E25.44 Supply and installation of tree vault curb will be measured and paid for at the contract unit price for "Tree vault curb", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E25.45 Supply and installation of Christmas tree stand base will be measured and paid for at the contract unit price for "Christmas tree stand base", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E25.46 Supply and installation of trellis screen base will be measured and paid for at the contract unit price for "Trellis screen base", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E25.47 Supply and installation of light pole bases will be measured and paid for at the contract unit price for "Light pole base", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E25.48 Supply and installation of light pole bases will be measured and paid for at the contract unit price for "Light pole base", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E25.49 Supply and installation of clock tower bases will be measured and paid for at the contract unit price for "Clock tower base", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.

E26. REINFORCED CONCRETE PAVING

- E26.1 Reinforced concrete paving to be constructed as per the geotechnical investigation.
- E26.2 All work including excavation, grading and compaction are incidental to the unit prices bid.

MEASUREMENT AND PAYMENT

- E26.3 Supply and installation of reinforced concrete paving will be measured and paid for at the contract unit price for "Reinforced concrete paving", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification. The surface area to be paid for shall be the total number of square metres supplied in accordance with the specifications and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

E27. CONCRETE SIDEWALK

GENERAL

- E27.1 Further to City of Winnipeg Specification CW 3325 for Supply and Installation of Concrete Sidewalk, the work of this section comprises the furnishing of all labour, equipment and materials required to complete the supply and installation of reinforced concrete sidewalk.

MATERIALS

- E27.2 All concrete as per CW 3325.
- E27.3 Reinforcing as per the drawings. All reinforcing to be galvanized.
- E27.4 Blockouts for all paving bands in sidewalk to be constructed as per the Drawings. All forming is incidental to the unit price bid for concrete sidewalk.
- E27.5 Thickened edge of sidewalk will be incidental to the unit prices bid for concrete sidewalk.
- E27.6 Integral concrete curb will be measured and paid for under concrete curb as specified in E24.
- E27.7 Doweling into existing concrete pavement will be incidental to the unit prices bid for concrete sidewalk.

MEASUREMENT AND PAYMENT

- E27.8 Supply and installation of concrete sidewalk will be measured and paid for at the contract unit price for "Concrete sidewalk", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured by the Contract Administrator.

E28. INTERLOCKING PAVING STONES

DESCRIPTION

- E28.1 Further to CW 3335 this Specification shall cover the:
- (a) reinstallation of stockpiled interlocking paving stones (unit pavers),
 - (b) supply and installation of interlocking paving stones (unit pavers),
 - (c) supply and installation of sand setting bed,
 - (d) supply and installation of grout.
- E28.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary or and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

MATERIALS

- E28.3 Concrete interlocking paving stones (unit pavers) shall be Holland Stone Pavers, supplied by Barkman Concrete, contact Wayne Wiebe, phone 667-3310, as shown on the Drawings and as follows:
- (a) Charcoal Holland Stone 105x210x60mm
 - (b) Natural Holland Square 210x210x60mm
 - (c) Stockpiled unit pavers stored on site as per Removals.
- E28.4 Sand:
- (a) Clean brick sand as joint filler.
 - (b) Clean brick sand as minimum 13mm depth setting bed
- E28.5 Grout:
- (a) Grout as specified hereinafter shall be used for grouting paving stone and brick in areas indicated on the drawings. The grout shall have a compressive strength of 25 MPA at 28 days, determined on 50 mm cubes stored and tested in accordance with ASTM C109, and shall consist of normal Portland cement, sand and water.

- (b) The water-cement ratio shall be kept in the range of 0.45 to 0.55.
- (c) The grout shall have between 3% and 5% entrained air.
- (d) Acryl-Stik or approved equal to be used in grout at approximately 4 litres Acryl-Stik to 3 litres water.
- (e) Admixtures to be used in the grout shall be supplied in accordance with the requirements of the City of Winnipeg Standard CW 3310.
- (f) The grout shall be of a consistency suitable for the application intended as approved by the Contract Administrator.
- (g) The Contractor shall provide the Contract Administrator with a mix design statement certifying the constituent materials and mix proportions that will be used in the grout for approval prior to construction.

CONSTRUCTION METHODS

- E28.6 Interlocking paving stones shall be installed in block out in concrete sidewalk or on granular base as per the Drawings.

INSTALLATION

- E28.7 Contractor to install stockpiled pavers prior to supply and installation of new pavers.
- E28.8 Install sand setting bed for pavers as shown on the Drawings.
- E28.9 Contractor to verify the exact dimensions of pavers and panels prior to construction of block outs in concrete sidewalk.
- (a) Install concrete sidewalk as specified on Drawings.
 - (b) Install sand bed to minimum 13mm depth as specified on Drawings. Adjust depth of pavers under areas to be relevelled to ensure surface of pavers is flush with adjacent paving.
 - (c) Do not compact setting bed prior to installation of pavers.
 - (d) Spread only sufficient area which can be covered with pavers same day.
 - (e) Lay pavers on sand bed hand tight.
 - (f) In areas where pavers are to be grouted in place clean existing concrete, install grout bed and then place pavers on grout.
 - (g) Grout between pavers as required to ensure stability.
 - (h) Remove adjacent pavers in bands as required to ensure that bricks do not require cutting on straight bands.
 - (i) Where paving pattern is interrupted by vertical structural elements pavers must be sawcut and fit true and hand tight.
 - (j) Commence installation of pavers against edge to obtain straightest possible course for installation.
 - (k) Pavers shall be cut with a saw only, to obtain true even undamaged edges. Chipped pavers are unacceptable.
 - (l) Crews shall Work on installed pavers, not on sand layer.
 - (m) Spread and fine grade brick sand over paving surface and sweep into joints, in several directions. Sand is incidental to the price for supply and installation of pavers.
 - (n) Compact pavers with vibratory plate compactor having mass of at least 113kg. Compaction is incidental to the price for supply and installation of paving stone.
 - (o) Sweep remaining sand over all paving areas and remove from Site.
 - (p) Replace at no extra cost all whole or cut stones marked as unacceptable.

- (q) Remove cracked, chipped, broken or otherwise damaged paving materials from Site immediately.
- (r) Upon completion, clean in accordance with manufacturer's recommendations.

MEASUREMENT AND PAYMENT

- E28.10 Reinstallation of stockpiled interlocking paving stones will be measured and paid for at the contract square metre price for "Reinstall unit pavers", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured by the Contract Administrator.
- E28.11 Supply and installation of interlocking paving stones will be measured and paid for at the contract square metre price for "Supply and install unit pavers", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured by the Contract Administrator.

E29. COMPACTED LIMESTONE PAVING

DESCRIPTION

- E29.1 This specifications covers the supply and installation of compacted limestone paving.

MATERIALS

All work to CW 3130

- E29.2 Geotextile to be non-woven Propex 4553 or approved equal.
- E29.3 Subbase material as per CW 3110.
- E29.4 Bas course material as per CW 3110.

CONSTRUCTION METHOD

- E29.5 Geotextile to be installed as per CW 3130.
- E29.6 Subbase material to be installed as per CW3110
- E29.7 Base course to be installed as per CW3110.

MEASUREMENT AND PAYMENT

- E29.8 Supply and installation of compacted limestone paving will be measured and paid for at the contract unit price for "Compacted limestone paving", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured by the Contract Administrator.

E30. SITE FURNITURE

DESCRIPTION

- E30.1 This specification covers the supply and installation of waste receptacles, removable bollards, wood bollards, tree guards, bicycle racks, Christmas tree stands, post sleeves and trellis screen.
- E30.2 Store units in a protected location, immediately upon arrival on the Site.
- E30.3 Remove from Site any units which have been damaged during transportation and replace.

PRODUCTS

- E30.4 Waste receptacle to be ProTone Series PSO-24 with standard tapered formed lid in black as supplied by:

Victor Stanley,
P.O. Drawer 330
Dunkirk Maryland, 20754 USA
Ph: 1-800-368-2573

- E30.5 Bicycle loops to be inverted U aluminium bicycle rack as supplied by:

Urban Park,
49 Life Sciences Parkway
Steinbach, Manitoba, R5G 2G7
Ph: 1-800-775-0018
Attn. Myron Krentz

- E30.6 Removable bollards to be R-7530 cast aluminum with black semi-gloss textured finish and removable bollard mounting kit as supplied by:

Reliance Foundry,
207-6450 148th St.
Surrey, BC V3S 7G7
Ph: 1-888-735-5680

- E30.7 Wood bollard to be 300mm diameter pressure treated bollard as per the Drawings.

- E30.8 Tree guard to be Transcona BIZ style tree guard painted black as supplied by:

Urban Park,
49 Life Sciences Parkway
Steinbach, Manitoba, R5G 2G7
Ph: 1-800-775-0018
Attn. Myron Krentz

- E30.9 Christmas tree stand to be galvanized steel post and base plate as per the drawings. Contractor to provide shop drawings for review and approval to manufacture.

- E30.10 Post sleeves to be brass tube with internal threading to accept cap. Cap with finger grip to be included. Contractor to provide shop drawings for review and approval to manufacture.

- E30.11 Trellis screen to be constructed of aluminium.

- E30.11.1 Panels to be formed with perforated aluminum with two piece aluminum frame.

- E30.11.2 Tubular and plate aluminium shall be 6061-T6.

- E30.11.3 All stainless steel components and fastenings shall be 304 or better. Provide plastic spacers and inserts as required to ensure galvanic corrosion does not occur with aluminium components.

- E30.11.4 All paint to be powder paint. Colour as per drawings.

- E30.11.5 All fasteners and all mounting hardware use to fasten the shelter to the concrete base at ground level must be stainless steel or approved equal.

DETAILED DESIGN AND SHOP DRAWINGS

- E30.1 The Contractor shall submit dimensioned, detailed design drawings within five (5) working days when contacted by the Contract Administrator for Christmas tree holder and trellis screen. The drawings shall show all details of construction, fastenings, materials and colours.

E30.2 The Contractor shall submit stamped Engineer's drawings of trellis screen connection to concrete base for review and approval within five (5) Working Days of Contract Award and prior to commencement of work. Engineer's drawings shall show all details of construction and fastenings for erections and shall be as specified or approved. Engineer shall be a Structural Engineer licensed to practice in Manitoba with extensive experience in the design and manufacturing of aluminium and stainless site furniture. Drawings to include anchor requirements.

E30.3 Autocad files of the drawings are available to be emailed upon written request to the Contract Administrator.

INSTALLATION

E30.4 Install surface mount waste receptacle on concrete paving as shown on the Drawings and as per manufacturer's specifications.

E30.5 Where waste receptacles are to be located in unit paver the Contractor is to supply and install extensions on the legs to meet the depth of the pavers and provide a solid base for mounting. Cost of extensions is incidental to the unit price for benches.

E30.6 Bicycle loops to be mounted to sidewalk with chemical anchors or stainless steel expansion Hilti bolts.

E30.7 Removable bollard to be installed as per manufacturer's specifications in area of reinforced concrete paving.

E30.8 Wood bollard to be installed as per the Drawings.

E30.9 Tree guard to be installed on tree cover as per manufacturer's specifications.

E30.10 Christmas tree stand to be installed on concrete base as per Drawings.

E30.11 Post sleeves to be installed in concrete sidewalk paving as per the Drawings. Ensure top of sleeve is flush to sidewalk.

E30.12 Trellis screen to be installed on concrete beam as per manufacturer's specifications.

MEASUREMENT AND PAYMENT

E30.13 Waste receptacles shall be measured and paid on a per unit basis for "Waste receptacles". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E30.14 Bicycle loops shall be measured and paid on a per unit basis for "Bicycle loops". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E30.15 Removable bollards shall be measured and paid on a per unit basis for "Removable bollards". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E30.16 Wood bollards shall be measured and paid on a per unit basis for "Wood bollards". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E30.17 Tree guards shall be measured and paid on a per unit basis for "Tree guards". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E30.18 Christmas tree stand shall be measured and paid on a per unit basis for "Christmas tree stand". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E30.19 Post sleeves shall be measured and paid on a per unit basis for " Post sleeves". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E30.20 Trellis screen shall be measured and paid on a per unit basis for " Trellis screen". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E31. PLANTING BED PREPARATION

DESCRIPTION

E31.1 The following list generally describes the scope of this Section:

- (a) Cultivate subsoil;
- (b) Supply and install drainage course and drainage pipe;
- (c) Supply and install insulation and geotextile;
- (d) Supply and install planting soil mixture in planters;
- (e) Supply and install black granite mulch and geotextile.

E31.2 Submit to the Contract Administrator samples of the following materials:

- (a) Planting soil mixture: 1 kg
- (b) Black granite mulch: 500 g
- (c) Geotextile

MATERIALS

E31.3 Planting Soil: For mix imported topsoil with 20% peatmoss loose by volume, and 5% sand loose by volume. Incorporate bonemeal into planting soil at rate of 5 lbs /cu.yd. of soil mixture. Planting soil items to be comprised as follows:

- (a) Peatmoss: horticultural grade Class "A" decomposed plant material, fairly elastic and homogeneous. Free of decomposed colloidal residue, weed, sulphur and iron. To have pH value of 5.9 to 7.0, 60% organic matter by weight, moisture content not exceeding 15% and water absorption capacity of not less than 300% by weight on oven dry basis.
- (b) Bonemeal: shall be raw bonemeal, finely ground with a minimum analysis of 3% nitrogen and 20% phosphoric acid.
- (c) Imported topsoil: natural, fertile, agricultural soil typical of locality, capable of sustaining vigorous plant growth, from well drained Site that is free of flooding, not in frozen or muddy condition, not less than 6% organic matter to a maximum 25% organic matter by volume, and pH value of 5.9 to 7.0. Free from subsoil, slag or clay, stones, lumps, live plants and their roots, sticks, crabgrass, couchgrass, noxious weeds and foreign matter.
- (d) Sand: hard, granular natural beach sand, washed free of impurities, chemical or organic matter.

E31.4 Fertilizer: commercial type with 50% of the elements derived from organic sources. Deliver and store fertilizer in waterproof bags showing weight, analysis and name of manufacturer.

E31.5 Separation Geotextile Fabric as per CW 3130 for each application.

E31.6 Drainage material as per CW 3120.

E31.7 Drainage pipe as per CW 3120.

E31.8 Insulation to be 50mm thick rigid closed cell high density foam insulation.

E31.9 Crushed black granite mulch to be 12mm diameter.

CONSTRUCTION METHODS

- E31.10 Remove debris, broken roots, branches, stones in excess of 50mm diameter and other deleterious materials. Remove subsoil that has been contaminated with oil, gasoline or calcium chloride. Dispose of removed materials as directed.
- E31.11 Excavate planting beds to depths as per the Drawings. Confirm excavation on site with Contract Administrator prior to placement of geotextile or drainage material.
- E31.12 Place subdrain pipe, drainage fabric and drainage material as per the Drawings. Connect subdrain to catch basins as shown on the drawings. All Work related to subdrain for planters is incidental to the unit prices Bid for planter preparation.
- E31.13 Install insulation continuous against walls and curbs over 300mm height as shown on the Drawings and cover with geotextile.
- E31.14 Do not spread planting soil mixture until Contract Administrator has inspected subdrain and insulation.
- E31.15 Mix fertilizer at manufacturer's recommended rate of application. Mix fertilizer thoroughly into upper 150mm of planting soil to be placed.
- E31.16 Spread planting soil mixture with adequate moisture in uniform layers during dry weather over approved, dry, unfrozen sub-grade, where planting is indicated.
- E31.17 Bring insulation and planting soil mixture up to 100 mm below finished grade in planters.
- E31.18 Remove stones, roots, grass, weeds, construction materials, debris and foreign non-organic objects from soil mixture.
- E31.19 Fine grade entire planting soil area. Eliminate rough spots.
 - (a) Compact planting soil to leave surface smooth, uniform, firm against deep foot printing, with a fine, loose texture. Tolerance: plus or minus 15mm of design grade.
 - (b) Supply and install 100mm black granite mulch in planting beds.

MEASUREMENT AND PAYMENT

- E31.20 Planting bed preparation will be measured and paid on an area basis at the Contract unit price per square metre for "Planting bed preparation" which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The area to be paid for shall be the total number of square metres in place in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator.

E32. TREE VAULTS

DESCRIPTION

- E32.1 This Specification covers the installation of cast-in-place concrete tree vaults with precast concrete tree covers, sidewalk panels and related excavation, tree vault sub drainage, geotextile, and planting medium.
- E32.2 The construction of tree wells is not included and is specified under E25.

MATERIALS

- E32.3 Granular drainage material in accordance with Specification CW 3120 - Installation of Sub Drains.
- E32.4 To Specification CW 3120 - Installation of Sub Drains.

- E32.5 Geotextile in accordance with CW 3120.
- E32.6 Tree cover to be two-piece precast concrete tree cover with 500mm diameter opening in centre.
- E32.7 Sidewalk panel to be min. 150mm thick reinforced precast concrete panel to accommodate AASHTO HS-20 loading. Manufacturer to supply shop drawings stamped by a structural Engineer.
- E32.8 Precast concrete tree covers and sidewalk panels supplied by Barkman Concrete Ltd., 909 Gateway Road, Winnipeg, MB , Phone: 667-3310, or approved equal in accordance with B6.
- E32.9 Planting Medium to be in accordance with E31.
- E32.10 Submittals
- (a) Prior to installation, submit to the Contract Administrator samples of the following materials:
 - (i) Geotextile: 1 sq.m
 - (b) Prior to installation, arrange for inspection and approval of the following materials:
 - (i) Tree cover: 1 panel
 - (ii) Sidewalk panel: 1 panel

CONSTRUCTION METHODS

- E32.11 The Contractor must ensure that all buried utilities and services are located and if necessary, protected and exposed prior to any excavation in accordance with Specification CW 1120.
- E32.12 Excavate the tree vault to the dimensions and depth shown on the Drawings. Hydro-excavation/day lighting process to be used in area of existing underground utilities. Ensure base of tree pit slopes to drain toward roadway drainage system (min 2% slope).
- E32.13 Remove compacted base and sub base where required to achieve tree pit width indicated on the Drawings. Do not remove any base or sub-base material within 150mm of concrete wall or vault support.
- E32.14 Clear excavation of all construction debris, trash, rubble and any foreign material. Excavate and remove oil spills and other soil contamination sufficiently to remove the harmful material. Fill over excavations with approved fill and compact to the required subgrade compaction.
- (a) All excavated material shall be disposed of off site.
 - (b) Supply and place 150 mm depth granite drainage course with perforated pipe in accordance with Specification CW 3120 – Installation of Sub Drains and as shown on the Drawings. Ensure pipe has minimum 25mm cover of drainage course above and below.
 - (c) Construct cast-in-place concrete tree well in accordance with E26 and the Drawings.
 - (d) Cover drainage course and sides of tree pit with geotextile in accordance with Specification CW 3120 – Installation of Sub Drains and as shown on the Drawings.
 - (e) Remove and dispose of all construction related debris from tree vault prior to placing planting medium.
 - (f) Backfill with street tree planting medium compacting sufficiently to provide good soil consistency for tree planting and to minimize settlement.
 - (g) Plant trees in locations as per the Drawings. Ensure tree trunk is centred on opening of tree covers.
 - (h) After tree planting, ensure that the finished soil level is 100 mm below bottom edge of tree cover and 25mm below bottom edge of sidewalk panel.
 - (i) Install sidewalk panels and tree covers ensuring edges are supported by tree well.
 - (j) Where indicated on the Drawings, install tree guard in accordance with Site Furniture.
 - (k) Supply and install tree guard on tree cover as per manufacturer's specifications.

MEASUREMENT AND PAYMENT

- E32.15 Tree vault construction will be measured and paid on an area basis at the Contract unit price per square metre for "Tree Vault" which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The area to be paid for shall be the total number of square metres constructed in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator.
- E32.16 No separate measurement or payment will be made for drainage course, drain lines, geotextile and soil. All work is incidental to tree vault construction.
- E32.17 Tree covers will be measured and paid on a per unit basis at the Contract unit price per item for "Supply and install tree cover" which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The number to be paid for shall be the total number installed in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator.
- E32.18 Sidewalk panels will be measured and paid on a per unit basis at the Contract unit price per item for "Supply and install sidewalk panels" which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The number to be paid for shall be the total number installed in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator. Contract Administrator.

E33. PLANT MATERIAL

DESCRIPTION

- E33.1 The following list generally describes the scope of this section:
- (a) Supply and planting of trees and shrubs;
 - (b) Maintenance to date of substantial performance;
 - (c) Warranty for two full years.

GENERAL

- E33.2 Obtain approval of plant material at source.
- E33.3 Notify Contract Administrator of source of material at least 7 days in advance of shipment. No Work under this Section is to proceed without approval.
- E33.4 Acceptance of plant material at source does not prevent rejection at Site prior to or after planting operations.
- E33.5 Source of all plant material to be from an area within the same hardiness zone and soil conditions as Winnipeg.

SHIPMENT AND PRE-PLANTING CARE

- E33.6 Co-ordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting. 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 ball of large trees during lifting.
- E33.7 Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peatmoss, sawdust or other acceptable material to prevent loss of moisture during transit and storage.

- E33.8 Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 50 mm diameter with wound dressing.
- E33.9 Keep roots moist and protected from sun and wind. Heel-in shrubs, which cannot be planted immediately, in shaded areas, and water well.

MATERIALS

Water

- E33.10 Water should be potable and free of minerals, which may be detrimental to plant growth.

Anti-Desiccant

- E33.11 Anti-desiccant should be wax-like emulsion to provide film over plant surface reducing evaporation but permeable enough to permit transpiration.

Wound Dressing

- E33.12 Wound dressing should be horticulturally accepted non-toxic, non-hardening emulsion.

Plant Material

- E33.13 Quality and Source: Comply with City of Winnipeg tree planting guidelines, referring to size and development of plant material and root ball. All plant material to be approved by City and Contract Administrator at source.
- E33.14 Measure plants when branches are in their natural position. Height and spread dimensions refer to main body of plant and not from branch tip to branch tip. Use trees of No. 1 grade.
- E33.15 Additional plant material qualifications:
- (a) Use perennials and plant plugs with strong fibrous root system free of disease, insects, defects or injuries and structurally sound. Plant must have been root pruned regularly, but not later than one growing season prior to arrival on Site.

COLD STORAGE

- E33.16 Approval required for plant material, which has been held in cold storage.

CONTAINER – GROWN STOCK

- E33.17 Acceptable if containers large enough for root development. Shrubs and vines 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.

SUBSTITUTIONS

- E33.18 Substitutions to plant material as indicated on plantings plan are not permitted unless written approval has been obtained as to type, variety and size prior to award of Contract. Plant substitutions must be similar species and of equal size to those originally specified.

ROOT BALLS

- E33.19 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. This excludes use of native trees grown in light sandy or rocky soil. Lift root ball from hole, place in wire basket designed for purpose and line with burlap. Secure root balls with burlap, heavy twine and wire basket. Protect root balls against sudden changes in temperature and exposure to heavy rainfall. Take care not to injure trunk of tree with wire basket ties or rope.
- E33.20 Tree spade material shall not be accepted. Unless dug in field and secured as above.

CONSTRUCTION METHODS

WORKMANSHIP

- E33.21 Stake out location of trees and shrubs as per the Construction Drawings. Obtain approval by City and Contract Administrator prior to excavating.
- E33.22 Apply anti-desiccant in accordance with material manufacturer's instructions only as required.
- E33.23 Co-ordinate operations. Keep Site clean and planting holes drained. Immediately remove soil or debris spilled onto pavement.

PLANTING TIME

- E33.24 Plant deciduous plant material during dormant period, before buds have broken. Plant material noted for spring planting only, must be planted in dormant period.
- E33.25 When permission has been obtained to plant materials after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- E33.26 When permission has been obtained, shrubs and perennials growing in containers may be planted throughout growing season.
- E33.27 Plant only under conditions that are conducive to health and physical conditions of plants.
- E33.28 Provide planting schedule. Executing planting operations over long period using limited crew will not be accepted.

EXCAVATIONS

- E33.29 Prepare planting areas as shown on the Drawings.
- E33.30 Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.
- E33.31 Protect bottom of excavations against freezing.
- E33.32 Remove water, which enters excavations prior to planting. Ensure source of water is not ground water.

PLANTING

- E33.33 Scarify sides of planting hole to depth of 150 mm where tree is planted in isolated tree pit.
- E33.34 Plant trees, shrubs and perennials vertically with roots placed straight out in hole. Orient plant material to give best appearance in relation to structure, roads and walks.
- E33.35 Place plant material to depth equal to depth they were originally growing in nursery. Allow for soil settlement in planting.
- E33.36 With balled and burlapped roots balls, loosen burlap and cut away minimum top 1/2 without disturbing root ball. Cut vertical slits in remaining burlap around root ball at 250mm intervals. Remove all rope, string, or other ties from around trunk. Do not pull burlap or rope from under root ball. With container stock, remove entire container without disturbing root ball. Non bio-degradable wrappings must be removed including wire baskets.
- E33.37 Tamp planting soil around root system in layers of 150mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.
- E33.38 Build 100 mm deep saucer around outer edge of hole to assist with maintenance watering. Install 100mm depth wood chip mulch in saucer as shown on drawings.

- E33.39 When planting is completed, give surface of planting saucer dressing of organic 10-6-4 fertilizer at rate of 12 kg/100 m for shrub beds or 40 to 50 g/mm of calliper for trees. Mix fertilizer thoroughly with top layer of planting soil and water in well.

PRUNING

- E33.40 Prune trees and shrubs after planting only as required to remove broken diseased or dead branches. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water.

MAINTENANCE

- E33.41 After completion of planting operation to the satisfaction of the Contract Administrator and City of Winnipeg, the Contractor shall be responsible for the maintenance of the plant material until date of Substantial Performance and commencement of two year warranty.
- E33.42 Replace any dead or damaged plant material during the maintenance period, including replacement of vandalized material.
- E33.43 Water sufficiently to maintain optimum growing conditions. Ensure adequate moisture in root zone at freeze-up.
- E33.44 The Contractor shall provide all necessary equipment, including: tractors, mowers, hand mowers, trimmers, fertilizer spreaders, pruning tools, hoses, water meters, and any other items necessary for the maintenance of the plant material indicated in this Specification.
- E33.45 Remove all weeds and debris from mulch beds, planting beds and tree wells on a weekly basis.
- E33.46 Turn and top up mulch in beds and tree wells each spring and prior to start of extended maintenance.

PERSONNEL

- E33.47 The Contractor shall provide all necessary personnel for the ongoing maintenance operations.
- E33.48 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.

MAINTENANCE METHODS

WATERING

- E33.49 Trees shall be watered twice weekly, or during the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week.
- E33.50 To determine the need for watering, make a soil test weekly with a one-inch auger. Take a test sample from both the planting soil and from the root ball by drilling to a minimum depth of 600 mm. The soil shall contain enough moisture to hold together when compressed in the hand, but not be muddy.

FERTILIZING

- E33.51 Because of the specialized nature of such operations, fertilizing is to be done by a qualified local arborist.
- E33.52 Fertilize in the fall over the surface of the ground surrounding the plants, then soak the area thoroughly, use 10-6-4 analysis fertilizer spreading a maximum of 0.13 kg per square metre.

SPRAYING

- E33.53 Spray trees to control insect pests and diseases. Use horticulturally recommended compounds specific for the problem to be contained.

INSECTS AND DISEASES

- E33.54 Spray plants to combat pests and diseases. Do not use DDT or sprays prohibited by Agriculture Canada.

MEASUREMENT AND PAYMENT

- E33.55 Supply and Installation of Plant Material will be measured and paid on a unit basis. The number of units to be paid shall be the total number of each type and size of units supplied and installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

- E33.56 Plant material shall be measured and paid on a per unit basis for " Plant material". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator for the items as follows:

- i) Brandon Ascending Elm
- ii) Colorado Spruce 1.8m ht
- iii) Colorado Spruce 2.4m ht
- iv) Dwarf European Cranberry
- v) Hughes Juniper

E34. EXTENDED MAINTENANCE

DESCRIPTION

- E34.1 This Specification shall deal with the maintenance of the trees, mulch beds, and shrubs for Two (2) calendar years after the date of the Substantial Performance

MATERIALS AND PERSONNEL

- E34.2 The Contractor shall provide all necessary equipment, including: tractors, trimmers, fertilizer spreaders, pruning tools, water trucks, hoses, water meters, and any other items necessary for the maintenance of the area indicated in this Specification.

- E34.3 The Contractor shall provide all necessary personnel for the ongoing maintenance operations

WORK INCLUDED

- E34.4 The following areas shall be part of the maintenance jurisdiction:

- (a) The trees, shrubs perennials and vines as indicated on the Drawings
- (b) Mulch beds as indicated on the Drawings.
- (c) All sodded areas as indicated on the Drawings.

MAINTENANCE OF TREES, SHRUBS AND PERENNIALS

- E34.5 Watering

- (a) All plant material shall be watered bi-weekly, or during the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week. Where irrigation is not available this should be executed by leaving a hose, with a gentle rate of flow, running into the saucer of the root ball for about one hour
- (b) To determine the need for watering, make a soil test weekly with a one-inch auger. Take a test sample from both the planting soil and from the root ball 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.

E34.6 Fertilizing and pest control

- (a) Fertilizing, Pruning and Spraying Deciduous Trees and Shrubs. Because of the specialized nature of such operations, this should be done by a qualified local arborist
- (b) Fertilize in the fall over the surface of the ground surrounding the plants, then soak the area thoroughly. Use 10-6-4 analysis fertilizer spreading a maximum of 0.13 kg per square meter.
- (c) Spray to control insect pests and diseases. Use horticulturally recommended compounds specific for the problem to be contained.

E34.7 Weeding

- (a) Remove all weeds in tree wells planting beds and mulch beds by hand on a weekly basis. Do not use chemical weed killer.
- (b) Remove all debris from beds, including weeds, and dispose of off Site in a legal manor.

E34.8 Other Maintenance

- (a) Tighten, or remove, turnbuckles or guy wires for trees as required or directed by the Contract Administrator.
- (b) Straighten trees as required and directed by the Contract Administrator.

E34.9 The Contractor shall agree and guarantee to replace and replant any nursery stock found dead or in poor condition during and at the completion of the maintenance period. All plant material to be replaced and maintained for a minimum of 30 days prior to end of maintenance period. "Poor Condition" shall be interpreted as meaning nursery stock in which branches are dead or dying, or have not shown satisfactory growth of leaves. All replacements shall be of same size and species, as specified.

E34.10 Upon the end of the required maintenance period, a Site inspection shall be held. If at this time, all material and Works is satisfactory the Contract for maintenance and warranty shall be terminated. If materials and Works are found unacceptable the warranty shall be extended by 30 days for a follow up inspection. Extension of warranty will continue in 30 day increments for inspection until all work and material are satisfactory.

MEASUREMENT AND PAYMENT

Extended Maintenance will be measured and paid for each year at the Contract per Year Lump Sum Price for "Extended Two Year Maintenance"; which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the work included in this Specification.