



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 432-2015

**PAN AM INDOOR POOL PARKING LOT REDEVELOPMENT – PHASE ONE
25 POSEIDON BAY**

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APPENDIX A – PAVEMENT REPORT & TEST HOLE LOGS

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 PAN AM INDOOR POOL PARKING LOT REDEVELOPMENT – PHASE ONE – 25 POSEIDON BAY

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, June 25, 2015.

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, a Site meeting will be held at 9:00 a.m. on June 17, 2015 to provide Bidders access to the Site. Bidders shall meet at South Entrance Lobby at Pan Am Pool.

B3.2 The Bidder is advised that attendance at the Site meeting is not mandatory, however the bidder may take this opportunity to familiarize themselves with the site, and make any enquiries specific to their bid.

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

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. CONFIDENTIALITY

B5.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

- (a) was known to the Bidder before receipt hereof; or
- (b) becomes publicly known other than through the Bidder; or

(c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

B5.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Bid Opportunity to the media or any member of the public without the prior written authorization of the Contract Administrator.

B6. ADDENDA

B6.1 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.

B6.2 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.

B6.2.1 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/>

B6.2.2 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B6.2.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B7. SUBSTITUTES

B7.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.

B7.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B7.3 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.

B7.4 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.

- B7.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B16.
- B7.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B7.10 Notwithstanding B7.2 to B7.9, and in accordance with B8.7, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B16.1(a).

B8. BID COMPONENTS

- B8.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices;
- B8.2 Further to B8.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B7.
- B8.3 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.
- B8.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B8.5 If the Bid Submission is submitted by mail, courier or personal delivery, it shall be enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address, and shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg, MB R3B 1J1
- B8.5.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B8.6 Bidders are advised not to include any information/literature except as requested in accordance with B8.1.

- B8.7 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 B16.1(a).
- B8.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204 949-1178.
- B8.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B8.8.2 Bids submitted by internet electronic mail (e-mail) will not be accepted.

B9. BID

- B9.1 The Bidder shall complete Form A: Bid, making all required entries.
- B9.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.
- B9.3 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.
- B9.4 Paragraph 10 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers;
 - (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B9.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B9.4.2 All signatures shall be original.
- B9.5 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.

B10. PRICES

- B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B10.1.1 Notwithstanding C12.2.3(c), prices on Form B: Prices shall not include the Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable.
- B10.2 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.

B10.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B10.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B11. Disclosure

B11.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B11.2 The Persons are:

- (a) WSP Canada Inc.

B12. QUALIFICATION

B12.1 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.

B12.2 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/matmgmt/debar.stm>

B12.3 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).

B12.4 Further to B12.3(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/Subcontractors has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (b) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or

- (c) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>).

B12.5 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.

B12.6 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.

B13. OPENING OF BIDS AND RELEASE OF INFORMATION

B13.1 Bids will not be opened publicly.

B13.2 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/bidopp.asp>

B13.3 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/>

B13.4 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.

B14. IRREVOCABLE BID

B14.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.

B14.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work for the time period specified in Paragraph 9 of Form A: Bid.

B15. WITHDRAWAL OF BIDS

B15.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B15.1.1 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.

B15.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B15.1.3 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 10 of Form A: Bid; and

- (c) if the notice has been given by any one of the persons specified in B15.1.3(b), declare the Bid withdrawn.

B15.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B14.2 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.

B16. EVALUATION OF BIDS

B16.1 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 B12 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B7.

B16.2 Further to B16.1(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.

B16.3 Further to B16.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.

B16.4 Further to B16.1(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 adjusted, if necessary, as follows:

- (a) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder is within the budgetary provision for the Work, no adjustment will be made to the Total Bid Price; or
- (b) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder exceeds the budgetary provision for the Work, the Total Bid Prices of all responsive Bids submitted by responsible and qualified Bidders will be adjusted by deducting item(s) B.1 to B.27 in Part B Area 2, such that the Total Bid Price that is achieved is within the budgetary provisions for the project.

B16.4.1 Further to B16.1(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.

B17. AWARD OF CONTRACT

B17.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B17.2 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.

B17.2.1 Without limiting the generality of B17.2, 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.

B17.3 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 B16.

B17.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

B17.4 Notwithstanding C4, the City may issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.

B17.5 The Contract, as defined in C1.1, in its entirety shall be deemed to be incorporated in and to form a part of the Purchase Order notwithstanding that it is not necessarily attached to or accompany said Purchase Order.

PART C - GENERAL CONDITIONS

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 the redevelopment and construction of new parking lot.

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

- (a) Demolition and Removals
- (b) Land Drainage Sewer
- (c) Earth and Base Works
- (d) Asphalt and Concrete Paving with Concrete Curbs
- (e) Landscaping, Fencing, Signage and Miscellaneous
- (f) Electrical Work

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is the WSP Canada Inc., represented by:

Bruce D. Emberley, C.E.T.
Director, Buildings Department
Telephone No. 204-477-6650 #265
Email No. bruce.emberley@wspgroup.com

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

D3.3 Bids Submissions must be submitted to the address in B8.5.

D4. CONTRACTOR'S SUPERVISOR

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

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

D5.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractors own use, or for the use of any third party.

D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D5.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;

- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
- (b) the Contract, all deliverables produced or developed; and

(c) any statement of fact or opinion regarding any aspect of the Contract.

D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

D6. NOTICES

D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D3.1.

D6.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following facsimile number:

The City of Winnipeg
Chief Financial Officer

Facsimile No.: 204 949-1174

D6.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services

Facsimile No.: 204 947-9155

D6.5 **Bids Submissions** must be submitted to the address in B8.5.

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) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
- (c) 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 Contract Administrator 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 seven (7) Calendar Days from notification of the award of Contract by Purchase Order.

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 If the Contract Price exceeds twenty-five thousand dollars (\$25,000.00), the Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

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

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 Purchase Order and prior to the commencement of any Work on the Site.

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 seven (7) Calendar Days from notification of the award of Contract.

D12. DETAILED WORK SCHEDULE

- D12.1 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.
- D12.2 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; acceptable to the Contract Administrator.
- D12.3 Further to D12.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the major activities/tasks making up the Work as well as showing those activities/tasks on the critical path:
- D12.4 Further to D12.2(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.

SCHEDULE OF WORK

D13. COMMENCEMENT

- D13.1 The Contractor shall not commence any Work until he/she is in receipt of a Purchase Order from the Award Authority authorizing the commencement of the Work.
- D13.2 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; and
 - (vii) the detailed work schedule specified in D12.
 - (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.
- D13.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the Purchase Order.

D14. SUBSTANTIAL PERFORMANCE

- D14.1 The Contractor shall achieve Substantial Performance by October 23, 2015.
- D14.2 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.
- D14.3 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.

D15. TOTAL PERFORMANCE

- D15.1 The Contractor shall achieve Total Performance by November 13, 2015.
- D15.2 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.
- D15.3 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.

D16. LIQUIDATED DAMAGES

- D16.1 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 two-hundred-fifty dollars (\$250) per Working Day for each and every Working Day following the day fixed herein for Substantial Performance during which such failure continues.
- D16.2 The amount specified for liquidated damages in D16.1 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.
- D16.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages

D17. SCHEDULED MAINTENANCE

- D17.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Two (2) years best practice maintenance on all plant material; replace dead or sparse plant material with equivalent size material at end of two (2) year period.
- D17.2 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

D18. JOB MEETINGS

- D18.1 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.
- D18.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D19. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D19.1 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).

D20. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

D20.1 Further to B12.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B12.4.

MEASUREMENT AND PAYMENT

D21. INVOICES

D21.1 Further to C12, the Contractor shall submit an invoice for each portion of Work performed. to:

The City of Winnipeg
Corporate Finance - Accounts Payable
4th Floor, Administration Building, 510 Main Street
Winnipeg MB R3B 1B9

Facsimile No.: 204-949-0864

Email: CityWpgAP@winnipeg.ca

D21.2 Invoices must clearly indicate, as a minimum:

- (a) the City's purchase order number;
- (b) date of delivery;
- (c) delivery address;
- (d) type and quantity of work performed;
- (e) the amount payable with GST and MRST shown as separate amounts; and
- (f) the Contractor's GST registration number.

D21.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.

D21.4 Bids Submissions must be submitted to the address in B8.5.

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.

WARRANTY

D23. WARRANTY

D23.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D23.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.

- D23.2 Notwithstanding C13.2, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.
- D23.2.1 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. 432-2015

PAN AM INDOOR POOL PARKING LOT REDEVELOPMENT – PHASE ONE – 25 POSEIDON BAY

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. 432-2015

PAN AM INDOOR POOL PARKING LOT REDEVELOPMENT – PHASE ONE – 25 POSEIDON
BAY

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 (2007 Revision), International Chamber of Commerce Publication Number 600.

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

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> |
|--------------------|-------------------------------|
| - | Cover Sheet |
| C01 | Existing/Demolition Site Plan |
| C02 | Site Layout Plan |
| C03 | Site Grading Plan |
| C04 | Site Servicing Plan |
| C05 | Paving Details |
| C06 | Fencing and Signage Plan |
| L01 | Site Planting Plan |
| E01 | Electrical Site Plan |
| E02 | Typical Electrical Details |

E2. SOILS INVESTIGATION REPORT

- E2.1 Further to C3.1, the pavement report is provided to aid the Contractor's evaluation of the pavement structure and/or existing soil conditions. The pavement report and descriptions of the test hole logs is contained in Appendix 'A'.

E3. HAZARDOUS MATERIALS

- E3.1 If asbestos or other hazardous materials are encountered during the Work of the Contract, the Contractor shall stop all work and notify the Contract Administrator immediately. Removal of hazardous materials shall be dealt with by the City and the Contractor shall await further instruction by the Contract Administrator.

E4. PROTECTION OF EXISTING TREES

- E4.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing trees within the limits of the construction area:
- The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
 - Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably 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 dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
- (e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E4.2 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 designate.

E4.3 No separate measurement or payment will be made for the protection of trees.

E4.4 Except as required in clause E4.1(c) and E4.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E5. CONSTRUCTION STAGING

E5.1 In addition to a construction schedule, the Contractor shall provide a proposed construction staging plan to the Contract Administrator for approval, a minimum seven (7) Business Days in advance of commencing Work. The Contractor shall schedule construction activities to meet the following access requirements:

- (a) Ambulance, fire lane and emergency vehicle access must be maintained at all times to the main entrance of the building.
- (b) A minimum of 50 parking spaces, including 3 handicap spaces, must be available to facility users and staff at all times during construction. Any temporary parking areas shall have temporary line painting and regulatory signs installed.
- (c) Safe pedestrian access to the main entrance of the building must be maintained at all times from the parking and sidewalk areas. Should the Contractor be unable to maintain access to the main entrance, the Contractor shall provide a minimum of 48 hours notification to the Contract Administrator and shall install pedestrian detours to an alternate entrance approved by the Seven Oaks Pool Supervisor of Building Operation Services.
- (d) Refuse and recycling collection vehicle access must be maintained at all times.

E5.2 The Contractor shall bear all costs associated with providing and maintaining access and parking for all vehicles and pedestrians during construction, as part of his construction staging plan.

E6. TRAFFIC CONTROL

E6.1 Further to Clauses 3.6 and 3.7 of CW 1130, latest edition:

- (a) The Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions to the satisfaction of the Contract Administrator. No separate measurement or payment will be made for this work.
- (b) In accordance with the Manual of Temporary Traffic Control, the Contractor ("Agency" in this manual), shall make arrangements with the Traffic Services Section of the City

of Winnipeg to place temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Section of the City of Winnipeg in connection with the Works undertaken by the Contractor.

E7. PEDESTRIAN SAFETY

E7.1 During the project, the Contractor shall install temporary snow fence and barricades around open excavations and constructions areas. The Contractor shall be responsible for maintaining the snow fence and barricades in a proper working condition. No separate measurement or payment will be made for supply and installation of the snow fence or barricades.

E8. WATER USED BY CONTRACTOR

E8.1 Further to clause 3.7 of CW1120, latest edition, the contractor shall pay for all costs associated with obtaining water in accordance with the Waterworks By-Law. Sewer charges will not be assessed for water obtained from a hydrant.

E9. PERMITS

DESCRIPTION

E9.1 General

E9.1.1 Further to GC:6.12, 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.

E9.1.2 The Contractor shall comply with all laws, ordinances, rules and regulations that would relate the Work.

E9.1.3 All notices, consents, approvals, statements, authorizations, documents or communications to the City shall be submitted to the Contract Administrator.

E9.1.4 All Work shall be performed in compliance with the Manitoba Workplace Health and Safety Act.

E10. TEMPORARY UTILITIES

DESCRIPTION

E10.1 General

E10.1.1 Further to GC:6.12 the Contractor shall 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.

E10.1.2 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.

E10.1.3 Contractor shall provide a portable toilet (port-a-potty) for the use of construction workers.

E11. LAYOUT OF WORK

DESCRIPTION

E11.1 General

E11.1.1 The Contractor shall mark to the extent determined necessary, the location, alignment and elevation of the work by means of stakes, buoys or marks. The Contractor will set control lines and benchmarks by means of stakes, buoys or marks and the Contractor shall make

the completed works conform to the lines and marks thus indicated. The Contractor shall furnish all other lines and levels required. The Contractor shall be responsible for the careful preservation of all stakes and marks so set whether relating to his own or to other work. Care must be taken that the Contractor be notified immediately of the disturbance of any such stakes or marks; the cost of correcting any errors arising out of neglect of the Contractor or his agent or his employees, to so notify the Contract Administrator shall be borne entirely by the Contractor.

- E11.1.2 All layouts shall be reviewed and approved by the Contract Administrator prior to construction.
- E11.1.3 Before commencing Work the Contractor shall satisfy himself as to the meaning and correctness of all stakes and marks and no claims shall be entertained by the City of Winnipeg on account of any alleged inaccuracies. If any error or suspected in the plans, specifications or the directions of the Contract Administrator, Work shall be discontinued until the errors are rectified, but no claims shall be made on account of any delay occasioned thereby.
- E11.1.4 The Contractor is responsible to determine the location of all underground utilities and obtain clearances prior to construction. Underground structures as shown on the drawings are based on the best information available but no guarantee is given that all existing utilities are shown or that given locations are exact.

E12. SITE RESTORATION

DESCRIPTION

- E12.1 General
 - E12.1.1 Total Performance of the Work shall not be attained until the Contractor has cleaned up the Site and has removed all plant, 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.
 - E12.1.2 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.

E13. DEMOLITION / REMOVALS

DESCRIPTION

- E13.1 General
 - E13.1.1 This Specification covers any demolition, removal and temporary relocation work required for new construction and shall amend and supplement Specification CW 3110, latest edition.

CONSTRUCTION METHODS

- E13.2 General
 - E13.2.1 Demolition/removals shall be as per the Drawings and as directed by the Contract Administrator.
 - E13.2.2 All removal and temporary relocation work shall be done in a careful, workmanlike manner. The use of equipment which might damage portions of the existing items or materials to be relocated will not be permitted. Relocated items shall be placed in areas designated by the Contract Administrator.
 - E13.2.3 All debris from removals shall be disposed of by the Contractor.

E13.3 Existing Pavement Removal

E13.3.1 Remove existing concrete and asphalt pavement, including parking lot, curbs, approaches, sidewalks, and pads at locations shown on the Drawings and as directed by the Contract Administrator.

E13.4 Tree and Shrub Removal

E13.4.1 Remove existing trees and shrubs at locations shown on the Drawings and as directed by the Contract Administrator.

E13.5 Remove and Salvage Existing Signage

E13.5.1 Remove and salvage existing signage, posts and hardware secured to any fencing, light posts or pavement areas to be removed, as directed by the Contract Administrator. Salvaged signs and hardware shall be sorted to the satisfaction of the Contract Administrator and delivered to the Pan Am Pool Maintenance Supervisor.

MEASUREMENT AND PAYMENT

E13.6 Existing Pavement Removal

E13.6.1 Existing pavement removal will be measured on an area basis and paid for at the Contract Unit Price for "Pavement Removal". The amount to be paid for will be the total number of square metres of existing pavement removed in accordance with this specification, accepted and measured by the Contract Administrator.

E13.7 Existing Concrete Curb Removal

E13.7.1 Existing concrete curb removal will be measured on a length basis and paid for at the Contract Unit Price for "Concrete Curb Removal". The amount to be paid for will be the total number of lineal metres of existing concrete curbs removed in accordance with this specification, accepted and measured by the Contract Administrator

E13.8 Remove and Salvage Existing Signage

E13.8.1 Removal and salvage of existing signage will not be measured. All work associated with the removal and salvage of existing signage will be incidental to the Contract.

E13.9 Trees and Shrubs Removal

E13.9.1 Existing trees and shrubs Removal will be measured on a per item basis and paid for at the Contract Unit Price for "Trees and Shrubs Removal". The amount to be paid for will be the total number of trees and shrubs removed in accordance with this specification, accepted and measured by the Contract Administrator.

E14. LAND DRAINAGE SEWER

DESCRIPTION

E14.1 General

E14.1.1 This Specification covers supply and installation of land drainage sewer and shall amend and supplement Specifications CW 2030 and CW 2130, latest editions.

MATERIALS

E14.2 Bedding and Backfill

E14.2.1 Bedding and Backfill will be in accordance with Specification CW 2030, latest edition, with Class 2 Bedding and Backfill used in all pavement areas.

E14.3 Catch Basins

E14.3.1 All catch basins shall have a standard frame with standard grated cover.

E14.4 Inlet Flow Restrictor

E14.4.1 Inlet Flow Restrictor to City of Winnipeg SD-122.

E14.4.2 All work and materials required to install the Inlet Flow Restrictor are incidental.

CONSTRUCTION METHODS.

E14.5 General

E14.5.1 Land drainage sewers will be installed by trenchless methods in accordance with Clause 3.4 of CW 2130, latest edition, approved by the Contract Administrator.

E14.5.2 Where approved by the Contract Administrator, land drainage sewers may be installed in a trench in accordance with Clause 3.3 of CW 2130, latest edition.

E14.5.3 Inlet control devices shall be installed in locations shown on the construction drawings, in accordance with Specification CW 2130, latest edition and as per CW SD-122.

MEASUREMENT AND PAYMENT

E14.6 Removal of Existing Catch Basins and Manholes

E14.6.1 Removal of existing catch basins and manholes will not be measured. All work associated with the removal of existing catch basins and manholes will be incidental to the Contract.

E14.7 . Inlet Control Device

E14.7.1 Supply and installation of inlet control devices will be measured on a per item basis, each being paid for at the appropriate line item for "Inlet Control Device" as described in the Form B-Schedule of Items and Prices.

E15. EARTH AND BASE WORKS

DESCRIPTION

E15.1 General

E15.1.1 This Specification shall amend and supplement Specification CW 3110, latest edition.

MATERIALS

E15.2 Sub-Base

E15.2.1 Sub-Base will be crushed limestone and have a maximum aggregate size of 50 millimetres and be supplied in accordance with Clause 2.1 of CW 3110, latest edition. Recycled Concrete is also allowed.

E15.3 Base Course

E15.3.1 Base Course will be crushed limestone in accordance with Clause 2.2 of CW 3110, latest edition. Recycled Concrete is also allowed.

CONSTRUCTION METHODS

E15.4 General

E15.4.1 Excavation will be in accordance with Section 3 of CW 3110, latest edition and will be understood to include excavation from existing ground elevation after any pavement removal, to proposed sub-grade elevation. Additional excavation and placement of sub-base material beyond the identified pavement structure will be completed in accordance with CW 3110 as directed by the Contract Administrator.

- E15.4.2 Sub-grade will be prepared in accordance with Clause 3.3 of CW 3110, latest edition. Sub-grade shall be free from any fibrous organics, softened and disturbed soil. The prepared sub-grade shall be proof rolled with a heavy sheep's foot roller (min. 25 passes) and reviewed by the Contract Administrator prior to placement of overlying granular fills.
- E15.4.3 Sub-Base and Base Course will be placed to the compacted thickness as shown on the Drawings. Sub-Base and Base Course will be in accordance with Clauses 3.3 and 3.4 of CW 3110, latest edition.

MEASUREMENT AND PAYMENT

E15.5 Excavation

- E15.5.1 Further to Clause 4.6 of CW 3110-R6, the Contractor will be responsible for providing cross-section surveys and field notes, for review and measurement of quantities by the Contract Administrator. Field notes will include surveyors name, date, and description of Work being measured. All notes will be in neat and legible form and will include both raw data and reduced calculation. All surveys will indicate level circuit closures of 10 mm or less.

E15.6 Sub-Base

- E15.6.1 Further to Clause 4.6 of CW 3110-R6, the Contractor will be responsible for providing cross-section surveys and field notes, for review and measurement of quantities by the Contract Administrator. Field notes will include surveyors name, date, and description of Work being measured. All notes will be in neat and legible form and will include both raw data and reduced calculation. All surveys will indicate level circuit closures of 10 mm or less.

E15.7 Base Course

- E15.7.1 Further to Clause 4.6 of CW 3110-R6, the Contractor will be responsible for providing cross-section surveys and field notes, for review and measurement of quantities by the Contract Administrator. Field notes will include surveyors name, date, and description of Work being measured. All notes will be in neat and legible form and will include both raw data and reduced calculation. All surveys will indicate level circuit closures of 10 mm or less.

E16. PAVEMENT CONSTRUCTION

DESCRIPTION

E16.1 General

- E16.1.1 This Specification covers pavement construction including construction of asphalt pavement, concrete pads, curbs, curb and gutters, approaches, ramp and sidewalks, and shall amend and supplement Specifications CW 3310, CW 3325, and CW 3410, latest editions.

- E16.1.2 Construction of Asphaltic Pavement to include main-line, tie-ins, approaches and overlays.

MATERIALS

E16.2 Asphalt

- E16.2.1 Asphalt material will be Type 1A and will be supplied in accordance with Sections 5 and 6 of CW 3410, latest edition.

E16.3 Concrete

- E16.3.1 Concrete approaches, pads, curbs and curb and gutter sections shall be Type 1 in accordance with Section 6 of CW 3310, latest edition.

- E16.3.2 Concrete median slabs and sidewalks shall be Type 2 in accordance with Section 6 of CW 3310, latest edition.

CONSTRUCTION METHODS

E16.4 General

- E16.4.1 Asphalt pavement will be placed to the compacted thickness as shown on the Drawings and in accordance with Specification CW 3410, latest edition.
- E16.4.2 Concrete pads shall be constructed according to the details shown on the Drawings and in accordance with Specification CW 3310, latest edition.
- E16.4.3 Concrete barrier curb and gutter shall be constructed in accordance to SD-200 with a specified curb height of 150 mm.
- E16.4.4 Concrete curb ramp shall be constructed in accordance to SD-200 with a specified curb in accordance to the curb ramp layout and details in SD-229B and SD-229E.
- E16.4.5 "Type A" Barrier Curb shall be constructed according to the details shown on the Drawings and in accordance with Specification CW 3310, latest edition.
- E16.4.6 Concrete RampS shall be constructed according to the details shown on the Drawings and in accordance with applicable sections in Specification CW 3310, latest edition.

MEASUREMENT AND PAYMENT

E16.5 Asphalt Pavement

- E16.5.1 Supply and installation of Asphalt Pavement will be measured on an area basis per item and paid for at the Contract Unit Prices for "Asphalt Pavement" for each of the separate thicknesses as described in the Form B-Schedule of Items and Prices. The amount to be paid for will be the total number of square metres of Asphalt Pavement installed in accordance with this specification, accepted and measured by the Contract Administrator.

E16.6 Concrete Pads

- E16.6.1 Concrete pads will be measured on an area basis and paid for at the Contract Unit Price for "Construction of 200 mm Concrete Pad (Reinforced)". The amount to be paid for will be the total number of square metres of concrete pad installed in accordance with this specification, accepted and measured by the Contract Administrator.

E16.7 "Type A" Barrier Curb

- E16.7.1 "Type A" Barrier Curb will be measured on a length basis and paid for at the Contract Unit Price for "Construction of "Type A" Barrier Curb". The amount to be paid for will be the total number of metres of "Type A" Barrier Curb installed in accordance with this specification, accepted and measured by the Contract Administrator.

E16.8 Concrete Ramp

- E16.8.1 Concrete Ramp will be measured on an area basis and paid for at the Contract Unit Price for "Construction of 200 mm Concrete Ramp (Reinforced)". The amount to be paid for will be the total number of square metres of concrete ramp installed in accordance with this specification, accepted and measured by the Contract Administrator.

E17. LANDSCAPING, FENCING, SIGNAGE AND MISCELLANEOUS

DESCRIPTION

E17.1 General

- E17.1.1 This Specification covers landscaping, fencing, signage and miscellaneous works. This Specification shall amend and supplement Specifications CW 3110, CW 3130, CW 3310, CW 3510 and CW 3540, latest editions.

MATERIALS

E17.2 Topsoil and Sodding

- E17.2.1 Topsoil will conform to the materials as outlined in Section 5.2 of CW 3540, latest edition.
E17.2.2 Sod will conform to the materials as outlined in CW 3510, latest edition.

E17.3 Fencing

- E17.3.1 All fencing lumber shall be pressure treated SPF. Pressure treatment shall be CCA Type B in accordance with CAN/CSA 080-M to a minimum retention of preservative of 6.4 kg/cm of wood. All wood to be dimple treated during the treatment process.
E17.3.2 All hardware and fasteners shall be hot dipped galvanized, size indicated on the Drawings. All field cuts and holes to be treated with two coats of CCA Type B matching colour field cut preservative.
E17.3.3 Fences are to be guaranteed against defects in material and workmanship for a period of 12 months from the date of Substantial Performance.

E17.4 Signage

- E17.4.1 All signs shall be in accordance with applicable City of Winnipeg Specifications and By-Laws and the Manual of Uniform Traffic Control Devices for Canada.
- (i) No Parking - Fire Lane – RB-52 L, Airmaster or equivalent approved by Contract Administrator.
 - (ii) Stop Sign – RA-1 (600mm x 600mm), Airmaster or equivalent approved by Contract Administrator.
 - (iii) Handicap Parking Only – RB-71, Airmaster or equivalent approved by Contract Administrator.
 - (iv) Do Not Enter – RB-23, Airmaster or equivalent approved by Contract Administrator.
 - (v) Pedestrian Crossing – RA-4, Airmaster or equivalent approved by Contract Administrator.
 - (vi) All other signs as approved by the Contract Administrator.
- E17.4.2 Sign posts shall be in accordance to applicable City of Winnipeg Specifications and By-Laws and the Manual of Uniform Traffic Control Devices for Canada. All posts and hardware shall be steel with hot-dip galvanized zinc coating, supplied by an approved signage manufacturer. U-channel posts shall be used for sign posts secured to fencing, and square or round posts shall be used for standalone signs posts.
- (i) Square posts – 2" square, 14 gauge tubing with 7/16" diameter holes on 1" centers, full length on all sides.
 - (ii) U-Channel Posts – 2.5" wide with 3/8" diameter holes on 2" centers, full length.
 - (iii) Round Posts – 2-3/8" O.D.
- E17.4.3 All signs, sign posts and hardware provided shall be new and no salvaged components from the existing signage removals shall be used.

E17.5 Line Painting

- E17.5.1 Line painting shall conform to City of Winnipeg specifications for line painting on asphalt surfaces.
- (i) CGSBB1-GP-74 M, alkyd traffic paint
 - (ii) CGSB 1-GP-12C, Yellow 505-308 for parking lot painting

CONSTRUCTION METHODS

E17.6 Topsoil and Sodding

- E17.6.1 Topsoil and Sodding shall be as installed to the limits shown on the Drawings and as directed by the Contract Administrator, in accordance with Specifications CW 3540 and CW 3510, and as amended per Section E21 Topsoil Placement and Grading.

E17.7 Landscape Rock and Geotextile

- E17.7.1 Landscape rock shall be constructed according to the details shown on the Drawings and as specified in Section E20 Crushed Stone Surfacing.
- E17.7.2 Geotextile shall be installed in accordance with Specification CW 3130, latest edition, and as amended in Section E20 Crushed Stone Surfacing.

E17.8 Fencing

- E17.8.1 Fencing shall be constructed according to the details shown on the Drawings.
- E17.8.2 Fences are to be guaranteed against defects in material and workmanship for a period of 12 months from the date of Substantial Performance.
- E17.8.3 Fence post alignment tolerance shall be +/- 6 mm from straight line alignment.
- E17.8.4 Asphalt pavement to be cored where fence posts are proposed and shall be patched after installation.

E17.9 Signage

- E17.9.1 Sign posts in pavement areas shall be installed using an anchored base system supplied by the sign post manufacturer and installed in accordance to manufacturer recommendations or applicable standards.
- E17.9.2 Sign posts in landscaped areas shall be installed by either direct embedment into the ground or using an anchored base system supplied by the sign post manufacturer and installed in accordance to manufacturer recommendations or applicable standards. Sign posts directly embedded into the ground shall be installed a minimum of 600 mm below grade.
- E17.9.3 Sign posts may be secured to fencing located within 600 mm of the proposed sign location, only upon approval from the Contract Administrator.
- E17.9.4 Sign post alignment tolerance shall be +/- 6 mm from straight line alignment.

MEASUREMENT AND PAYMENT

E17.10 Topsoil and Sodding

- E17.10.1 Topsoil and Sodding will be measured on an area basis and paid for at the Contract Unit Price for "Topsoil and Sodding". The amount to be paid for will be the total number of square metres of topsoil and sod supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E17.11 Fencing

- E17.11.1 Fencing will be measured on a length basis and paid for at the Contract Unit Price per metre for the "Items of Work" listed here below. The length to be paid for will be the total

number of metres of fence supplied and installed in accordance with this specification and accepted and measured by the Contract Administrator.

Items of Works:

- i) Light Proof Screen Fence
- ii) Wood Post Parking Fence

E17.12 Signage

E17.12.1 Signage will be measured on a unit basis and paid for at the Contract Unit Price for "Signage (New Sign, Post and Base)". The amount to be paid for will be the total number of signs supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E17.13 Line Painting

E17.13.1 Line painting will not be measured but will be paid for at the Contract Unit Price per single (1) lump sum item for "Line Painting" in accordance with this Specification and accepted by the Contract Administrator.

E18. ELECTRICAL

DESCRIPTION

E18.1 General

- E18.1.1 Submit to Electrical Inspection Department and supply Authority necessary number of plans and specifications for examination and approval prior to commencement of Work.
- E18.1.2 Notify Contract Administrator of changes required by Electrical Inspection Department prior to making changes.
- E18.1.3 Pay fees such as for permits, licences, temporary utility service, or any other requirements to perform the Work herein.
- E18.1.4 The Contractor shall examine all plans and specifications. Ensure all required Work to be carried out by other trades to suit electrical (e.g. placement of housekeeping pads), is shown on the appropriate drawings. Ensure all Work of an electrical nature indicated in other than electrical documents is included. Ensure that all electrical Work noted throughout plans and specifications is included in the bid price. Any discrepancy between drawings shall be identified to the Contract Administrator prior to close of bidding, in as timely a fashion as possible.
- E18.1.5 Plans do not indicate all construction details. Any installation involving accurate measurements of the building shall be co-ordinated with construction plans and/or actual on site measurements.
- E18.1.6 Plans and specifications are intended to supplement each other, and any information indicated on one and omitted on the other shall be assumed as included on both.
- E18.1.7 In order to provide sufficient detail and clarity, the symbols used for various electrical devices, occupy more space on the plans, than the device actually occupies when installed. The Contractor shall use common sense when placing devices, ensuring that devices are grouped wherever possible. Do not space devices along walls to coincide with the scale location of the electrical device symbol.
- E18.1.8 Any discrepancies in the plans and/or specifications shall be brought to the attention of the Contract Administrator no later than (7) days prior to the closing date of the tender.
- E18.1.9 The terms "Approved Manufacturer" and "Approved Product" and their respective type or catalogue number as the basis of design is to establish the construction features, sizes,

- quality, and accessories of an item of equipment in addition to the characteristics specified. Requests for Equivalents may be granted on the basis described herein.
- E18.1.10 Where a product catalogue number and specified features, sizes, quality or accessories are not in agreement, the Contractor shall contact the Contract Administrator for clarification of the requirements.
- E18.1.11 Acceptance of equivalent products will be granted on the basis of the manufacturer and general design only. It shall be conclusively assumed that the individual, or firm, requesting the acceptance of the substitute product, certifies that the substitute will adequately perform the functions called for by the general design plans and associated specifications, be similar and of equal 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 Schedule of Work and Completion Date(s). Furthermore, in the event that the substitute product is accepted, any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the requested substitute, as well as any cost or time impacts that may be associated with the substitute, shall be the responsibility of the individual or firm requesting approval of the substitute product.
- E18.1.12 Where equipment manufacturer has been identified in the bid, substitutions will be subsequently permitted only where it can be shown that unusual or unforeseen circumstances will cause unacceptable delays in completion of the work. The onus will be on the Contractor to ensure that no delays are caused through the use of substitutes. No substitutions shall be made without review and acceptance by the Contract Administrator.
- E18.1.13 Materials and equipment to be purchased from a Canadian supplier (sales representative) whose sales region includes the project's location.
- E18.1.14 Equipment and materials shall be CSA certified and conform to EEMAC standards. Where there is no alternative to supplying equipment, which is not CSA certified, obtain special approval from Electrical Inspection Department.
- E18.1.15 Submit shop drawings, product data and samples. Indicate details of construction, dimensions, capacities, weights and electrical performance characteristics of equipment or material. Where applicable, include wiring, single line and schematic diagrams. Include diagrams or plans, showing interconnection with other sections. Provide supplier contact information, including firm and individual name and telephone number, relevant to any equipment to be supplied.
- E18.1.16 During construction, the Contractor shall make any equipment or wiring accessible for review purposes, as requested by the Contract Administrator.
- E18.1.17 Operate all manual devices, whether mounted on a control panel or separately mounted. With device in "off" position (or stop button depressed), check that no other device can cause that equipment to run. Check all automatic sequences including alternators, safety lock out circuits and interlocks between equipment. Operate all pressure switches, level switches, thermal switches, limit switches and similar devices to prove sequence of complete circuit.
- E18.1.18 When the Contractor is satisfied that the Work is completed, and after making his own inspection of Work to verify completion, the Contractor shall submit a written request to the Contract Administrator requesting a review of Work. Any deficiencies noted by the Contract Administrator during the review of Work, will be listed by the Contract Administrator, and issued to the Contractor. Such deficiencies shall be corrected within three (3) weeks of the issuance of the deficiency list, or by a mutually agreed upon date. Once complete, the Contractor shall submit a written request to the Contract Administrator requesting a final deficiency review. If subsequent site visits are required by the Contract Administrator because the deficiencies listed were not complete, all time and expense costs incurred by the Contract Administrator will be the responsibility of the Contractor.

- E18.1.19 Submit record plans detailing all Work as built. Obtain one set of solid white prints to be used for record Work as actually installed. Record on this set, all changes associated with the Work.
- E18.1.20 Furnish Certificates of Acceptance from authorities having jurisdiction, to Contract Administrator on completion of Work.
- E18.1.21 Furnish manufacturer's certificate or letter confirming that entire installation as it pertains to each system has been installed to manufacturer's instructions.
- E18.1.22 Instruct Contract Administrator and City operating and maintenance personnel in the operation, care, and maintenance of equipment.
- E18.1.23 Submit a written guarantee stating that all materials and workmanship will be free from defects for a period of two (2) years from date of acceptance by the City.

MATERIALS

E18.2 General

- E18.2.1 Provide wiring as indicated. Wiring shall be copper, minimum size #12AWG or as noted for power circuits.
- E18.2.2 Provide conduit as indicated. Minimum size shall be 21mm. Provide expansion fittings for PVC conduits to accommodate earth and structure movements. Provide short lengths of liquid tight flexible metal conduit rated 75C in EMT and RGS conduit runs to accommodate movements or vibration. AC90 cable may be used where indicated or in short lengths for final equipment connections where the cable will be entirely accessible. Use as short a length of AC90 as reasonably practicable.
- E18.2.3 In trenches, sand bed shall be nominal 6mm screened sand. Backfill shall be suitable for the area. Meet contract specifications for constructed areas, backfill with original material in suitable locations. Restore disturbed surfaces as required.
- E18.2.4 Identification labels shall be Lamacoid 3mm engraving sheet with black face, white core.

Nameplate Sizes

| | | |
|--------|-----------------------|--------------------|
| Size 1 | 10 x 50 mm - 1 line | 3 mm high letters |
| Size 2 | 12 x 62 mm - 1 line | 6 mm high letters |
| Size 3 | 12 x 62 mm - 2 lines | 3 mm high letters |
| Size 4 | 20 x 75 mm - 1 line | 8 mm high letters |
| Size 5 | 20 x 75 mm - 2 lines | 6 mm high letters |
| Size 6 | 25 x 100 mm - 1 line | 12 mm high letters |
| Size 7 | 25 x 100 mm - 2 lines | 8 mm high letters |

- E18.2.5 In Category 1&2 areas all rod, bolts, nuts, washers, screws and miscellaneous hardware for electrical item support shall be 304/316 stainless steel unless otherwise specified. The standard of acceptance shall be Unistrut or equivalent. In Category 1&2 areas all Unistrut channels, angles, brackets, etc. shall be 304/316 stainless steel. The Contractor may utilize hot-dipped galvanized after fabrication, for supports in dry areas.
- E18.2.6 Metal enclosure surfaces shall be factory finished by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
- E18.2.7 Lugs, terminals, screws used for termination of wiring shall be suitable for either copper or aluminum conductors.

CONSTRUCTION METHODS

E18.3 General

- E18.3.1 The minimum standard of installation shall be to the latest editions of the Winnipeg Electrical Bylaw, Canadian Electrical Code, National Building Code, Manitoba Building Code, National and Provincial Codes and Bulletins, and specifications herein.
- E18.3.2 Underground systems shall be in accordance with CSA C22.3 No.7-M94 except where noted otherwise.
- E18.3.3 Area classifications shall be as defined by the WEB and the WEB/MEC "Variations to the Diagrams Section of the Code". Areas shall have the greater of the above requirements, or those indicated in the Contract Documents.
- E18.3.4 Maintain wiring phase sequence and colour coding throughout. Colour code to WEB.
- E18.3.5 Manufacturer nameplates and CSA labels shall be visible and legible after installation of equipment.
- E18.3.6 Equipment that is normally mounted at a reachable location in common practice shall be so mounted unless otherwise noted or approved by Contract Administrator.
- E18.3.7 Installation is to be supervised by a journeyman electrician for entire duration of the project.
- E18.3.8 Conceal equipment in finished areas as practicable. Equipment may remain exposed in finished areas where indicated or where approved by Contract Administrator and City. Equipment that shall remain visible in finished areas shall be finished to match or as required for desired appearance. Paint conduit, couplings, fasteners, boxes, etc. prior to installation.
- E18.3.9 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.
- E18.3.10 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
- E18.3.11 Identify electrical equipment with nameplates mechanically attached with self-tapping screws. Wording on nameplates to be approved by Contract Administrator prior to manufacture. Allow for average of twenty-five (25) letters per nameplate. Identification to be English. Nameplates for terminal cabinets and junction boxes to indicate system, i.e. "power", "controls", "instrumentation", "lighting", etc. For lighting circuits and small power 120 Volt circuits, list panel and circuit numbers on the name plate. On disconnects, starters and contactors, indicate equipment being controlled and voltage source. On control cabinets indicate system and voltage. On transformers indicate capacity, primary and secondary voltages, and source by panel/circuit number. On receptacles indicate panel and circuit number (eg. AB-24, for circuit 24 in panel AB). Where voltage is other than 120 Volts, include voltage and phases on label (eg. 600V/3 ϕ). On toggle switches for lighting and small loads indicate panel and circuit number as for receptacles. Indicate the load being switched where it is not immediately obvious (eg. roof mounted fan). On junction / pull boxes indicate the load, circuit number (if applicable) or tag number, as required. For all components not required to be labelled by division 14, or 15, provide lamacoid labels as above. Identify tag name complete with loop number. Nameplate shall be sized for adequate legibility or according to size table where size is indicated.
- E18.3.12 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring and in junction/pull boxes. Label all wires securely with circuit number or tag numbers in the control panel, junction boxes, and pull boxes.
- E18.3.13 Install conduit and sleeves prior to pouring of concrete. Where plastic sleeves are used in fire rated walls or floors, remove before conduit installation and firestop wall or floor with approved firestopping. Installation of PVC conduit in the hot air flow from heating units shall be avoided.
- E18.3.14 Buried conduit shall be centered horizontally and vertically in sand bed. Marking tape buried to a depth equal to half the trench depth shall be used to indicate the location of the buried conduit. Provide painted lath stakes or other suitable temporary markers to

delineate trench during construction to prevent inadvertent damage to conduit. Coordinate trenching and backfill. Provide dimensioned trench layouts on as-built drawings that reference locations of at least two permanent stable visible structures.

- E18.3.15 Firestopping shall be installed where a conduit, wire, cable, cable tray, recessing opening or other penetration is made in a smoke separation, fire separation, firewall, ceiling or floor. The firestop must be ULC approved, installed as part of a ULC approved system, and meet CAN4-5115-M. The use of concrete, mortar, grout, gyprock etc. is not approved. Firestopping shall not shrink or crack or be made of such materials which cannot be easily disposed of. In addition, it shall not burn, melt or release toxic fumes when exposed to heat. The firestop shall be suitable for the ambient temperature and humidity that it will be normally exposed to. The firestop shall be ULC approved for site conditions (e.g. identical wall construction and conduit/cable/cable tray type). All firestopping shall be water resistant when located in damp or wet areas, in Category 1 or 2 areas, below mechanical pipes, in sprinklered areas, where condensation may occur, or where other sources of dripping, splashing or spraying water may be present. Firestop for single conductor cable penetrations shall have low conductivity after curing to minimize sheath currents. Fire stop shall be installed to manufacturer's recommendations. Firestopping must be of one manufacturer throughout project. Approved manufacturers: Specseal, 3M.
- E18.3.16 Assist other divisions of this Contract by operating control devices and checking performance of the related electrical systems, as required for commissioning of that division's equipment.
- E18.3.17 Ensure circuit protective devices such as over current trips, relays and fuses are installed to required values and settings.
- E18.3.18 Megger test circuits, feeders and equipment up to 350 V utilizing a 500 V instrument. Megger test 350-600 V circuits, feeders and equipment with a 1000 V instrument. Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project. Submit test results for Contract Administrator's review.
- E18.3.19 At time of final cleaning (after all construction is complete and floors have been swept), clean lighting reflectors, lenses, and other surfaces that have been exposed to construction and dirt. Clean inside and out, panelboards, splitters, and switchboards, exposed to construction.

MEASUREMENT AND PAYMENT

- E18.4 Electrical Work
- E18.4.1 Electrical work will not be measured but will be paid for at the Contract Unit Price per single (1) lump sum item for "Supply and Install all Electrical Components including all Related Work (Including demolition of existing electrical infrastructure)" in accordance with this Specification and accepted by the Contract Administrator.

E19. TREE AND SHRUB PRESERVATION

E19.1 REFERENCES

- (a) Canadian Nursery Landscape Association
 - (i) Canadian Standards for Nursery Stock, 8th Edition. (2006)
- (b) Department of Justice Canada (Jus)
 - (i) Canadian Environmental Protection Act (CEPA), c. 33
 - (ii) Fertilizers Act (R.S., c. F 10)
 - (iii) Fertilizers Regulations (C.R.C., c. 666)
 - (iv) Transportation of Dangerous Goods Act (TDGA), c. 34
- (c) Health Canada Pest Management Regulatory Agency (PMRA)
 - (i) National Standard for Pesticide Education, Training and Certification in Canada.

E19.2 DEFINITION

- (a) Mycorrhiza: association between fungus and roots of plants. This symbiosis enhances plant establishment in newly landscaped and imported soils.
- (b) Barrier: fence placed around a single tree or group of trees to protect them from removal and injury.
- (c) Dripline means the location on the ground surface directly beneath the theoretical vertical line from the tips of the outermost branches of the trees.

E19.3 ACTION AND INFORMATIONAL SUBMITTALS

- (a) Submit written certification that trees indicated to remain have been protected during the course of construction according to recognized standards of the industry. Certify that where damage did occur:
 - (i) Trees were promptly and properly treated.
 - (ii) Indicate which damaged trees (if any) are incapable of retaining full growth potential and are recommended to be replaced.

E19.4 QUALITY ASSURANCE

- (a) No trees are to be removed from site until an on-site inspection has been undertaken by the Contract Administrator and trees to be preserved are determined.
- (b) Ensure tree protection using barrier around existing trees to preserve as shown on Planting Plan.
- (c) Do not dispose of unused fertilizer material into sewer system, into streams, lakes, onto ground or in any other location where they will pose health or environmental hazard.

E19.5 SCHEDULE OF WORK

- (a) Tree Protection:
 - (i) Trees to be preserved shall be determined by Contract Administrator.
 - (ii) Install tree protection barrier to approval of Contract Administrator before site preparation, construction and before removal of trees.
 - (iii) Area outside tree protection barrier may be cleared to allow access to building site.

PRODUCTS

E19.6 MATERIALS

- (a) Snow Fencing / Tree Protection Fence:
 - (i) High density polyethylene.
 - (ii) 1200 mm high x 30 m in length (roll size).
 - (iii) Aperture size 107 by 28 mm.
 - (iv) Minimum tensile strength 1850 (LBS/FTW).
 - (v) 50% porosity.
 - (vi) U.V. resistant.
- (b) Lumber and Strapping:
 - (i) New or used Softwood Lumber.
 - (i) Length: minimum 1.8 m.
 - (ii) Lumber: clean and of whole thickness, free of screws or nails, splinters or other inclusions that may cause damage to bark.
 - (ii) Metal Strapping or Wire Ties: Galvanized steel and not previously used for any purpose.
 - (iii) Plywood Sheathing:

- (i) Full sheets only, clean and fully intact, free of screws or nails, splinters or other inclusions
- (ii) Minimum thickness: 16mm.

EXECUTION

E19.7 IDENTIFICATION AND PROTECTION

- (a) Identify trees and limits of root systems to be preserved as approved by Contract Administrator.
- (b) Identify endangered tree species within limit of work and mark with non-permanent means such as flagging tape.
- (c) Protect plant and root systems from damage, compaction and contamination resulting from construction as approved by Contract Administrator.
- (d) Do not grade inside drip line.
- (e) Protect root curtain from damage during construction operations. Do not store construction material, soils, aggregates, etc. or equipment within dripline of trees to remain.
- (f) Do not damage trees not designated for removal. Protect from flooding and sediment deposits from construction operations.
- (g) Do not operate equipment and vehicles within dripline of trees not designated for removal unless specified in the Contract Documents. In such cases, keep operation of equipment to minimum necessary to perform the work required.
- (h) Do not park, repair or refuel equipment or vehicles within dripline of trees not designated for removal.
- (i) When access is required in dripline of trees to be preserved, lay plywood sheathing over root zone to limit compaction. Overlap edges of plywood sheets by 75 mm minimum. Add 75 to 150 mm clean fill over plywood. Keep traffic over this area to a minimum only to the extent necessary to successfully complete construction.

E19.8 BARRIER

- (a) Dripline Barriers (See Diagram 1)
 - (i) Use in cases where no access or grading within dripline of tree is required.
 - (ii) Support snow fence material using steel posts. Number of steel posts: as required to keep barrier from sagging, and fence erect.
 - (iii) Erect barrier at dripline of trees or woodlot edges within the site before start of construction operations at locations specified in the Contract Documents. Where a clearance zone of 1.5 m cannot be established between barrier at dripline and the limit of grading, the barrier may be placed within the dripline, subject to approval of Contract Administrator. When the barrier is placed within the dripline:
 - (i) Maintain minimum distance of 0.75 m between trunk of tree and barrier, and
 - (ii) Maintain distance of 1.5 m between barrier and limit of grading.
- (b) Trunk Protection Barriers (See Diagram 2)
 - (i) Use in cases where no grading is required within the dripline of a tree, but access is necessary for successful completion of construction.
 - (ii) Enclose entire circumference of tree with lumber. Lumber must reach a height of 1.8m from the ground or 0.6m above the bumper of the largest construction equipment on site. In cases where there is steep grade around the tree, protective lumber should be higher so as to account for bumper height of vehicles uphill from the tree.
 - (iii) Secure lumber with galvanized strapping or wire ties so they are held firmly in place. Take care to not damage bark during this process. Do not use nails, spikes or screws to secure lumber.

- (iv) Lay plywood sheathing over root zone to limit soil compaction.
- (v) Add fill above plywood.
- (c) When trunks of trees are less than 4.5 m apart, trees shall be considered a woodlot and the barrier shall be placed so it forms a continuous barricade around the woodlot as specified in the Contract Documents.
- (d) Barrier is not required where existing fencing serves the same purpose. At such locations, terminate barrier at existing fence so that continuous barricade is provided between trees and area of work.
- (e) Maintain barriers erect and in good repair throughout duration of construction operations without breaks and unsupported sections. Remove barriers upon completion of the work.

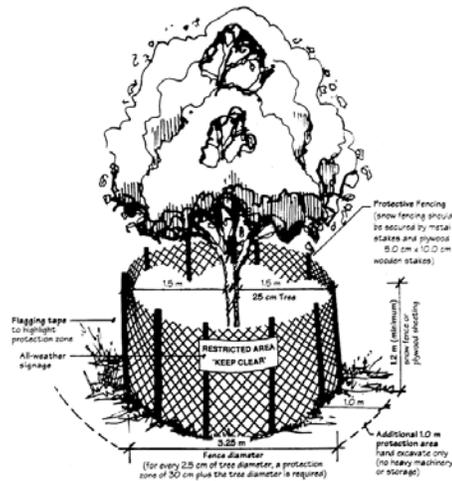


Diagram 1

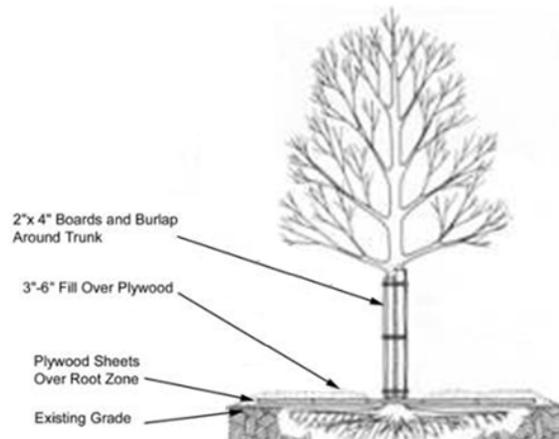


Diagram 2

E19.9 TREE REPAIR

- (a) Trees not designated for removal that are damaged by construction operations shall be repaired as follows, within five Days of the damage:
 - (i) Branches 25 mm or greater in diameter that are broken shall be cut back cleanly on the tree side of the break or to within 10 mm of their base, if a substantial portion of the branch is damaged.
 - (ii) Roots 25 mm or larger in diameter that are exposed shall be cut back cleanly to the soil surface.
 - (iii) Bark that is damaged shall be neatly trimmed back to uninjured bark without causing further injury to the tree.

E19.10 CLEAN UP AND COMPLETION

- (a) Upon completion of construction, all fencing, and tree protection materials must be fully removed from site. All plywood and fill must be removed.
- (b) The ground surfaces must be restored to their pre-construction condition, this includes lawn and other vegetative ground covers.
- (c) A complete assessment of ground conditions, tree health and tree repairs is to be conducted by Contract Administrator prior to full acceptance and approval.

E20. CRUSHED STONE SURFACING

E20.1 MATERIALS

- (a) Decorative Stone Mulch

- (i) Limestone Cobble: Hard, dense, durable, free from seams, cracks or other structural defects, to meet following size distribution for use intended:
 - (i) Colour: Light Beige to Taupe.
 - (ii) Size: between 100 mm and 200 mm dia.
 - (iii) Provide photographs of cobble for approval before moving them to the proposed location.
- (b) Boulders
 - (i) Limestone Boulders Hard, dense, durable, free from seams, cracks or other structural defects, to meet following size distribution for use intended:
 - (i) Colour: Light Beige to Taupe.
 - (ii) Size: between 850 mm and 1050 mm dia.
 - (iii) Provide photographs of cobble for approval before moving them to the proposed location.
 - (c) Geotextile: non woven synthetic fibre fabric.
 - (i) Composed of: minimum 85% by mass of polypropylene or polyester.
 - (ii) Acceptable products: Synflex 4200 geotextile, Dupost Typar Style 3401, Mirafi geotextile P40.

E20.2 SOURCE QUALITY CONTROL

- (a) Quality control will be the responsibility of the Contractor.
- (b) Ensure products delivered to Project site meet the requirements of this specification with regard to the quality and sizing of aggregates in general.
- (c) Material will be reviewed by Contract Administrator.

EXECUTION

E20.3 PLACING OF GEO-TEXTILE

- (a) Fine grade area to uniform even surface. Fill depressions with suitable material and compact to provide firm bed.
- (b) Place geo-textile over levelled ground. Avoid puncturing geotextile. Vehicular traffic over geotextile not permitted.
- (c) Overlap edges 150 mm minimum.
- (d) Tuck outer ends under 150 mm minimum.

E20.4 PLACING BOULDERS

- (a) Boulders shall be moved using heavy equipment. Boulder shall be placed by craning them into position and not dropping. All measures must be taken to ensure safety of workers, the public, planted trees and existing property during the process.
- (b) Locate boulders as indicated on drawing L01.

E20.5 PLACING COBBLE

- (a) Place cobble to depth and details as indicated. Place cobble in manner approved by Contract Administrator create a stable mass.

E20.6 CLEANING

- (a) Leave unused aggregates in neat compact stockpiles as directed by Contract Administrator.

E21. TOP SOIL PLACEMENT AND GRADING

E21.1 DEFINITIONS

- (a) Compost:
 - (i) Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
 - (ii) Compost is processed organic matter containing 40% or more organic matter as determined by Walkley Black or Loss On Ignition (LOI) test.
 - (iii) Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below (25) (50)), and contain no toxic or growth inhibiting contaminants.
 - (iv) Composed bio solids to: CCME Guidelines for Compost Quality, Category (A) (B).

E21.2 SUBMITTALS

- (a) Quality control submittals:
 - (i) Soil Test results
 - (ii) Samples of the products which are proposed to use for soil amendments.

PRODUCTS

E21.3 TOPSOIL

- (a) Topsoil for seeded / sodded areas and planting beds: consisting of screened clay-textured or loam-textured dark topsoil, fertile, friable material neither of heavy clay nor of very light sandy nature containing by volume, a minimum of four (4%) percent for clay loams and two (2%) percent for sandy loams to a maximum twenty-five (25%) percent organic matter (peat, rotted manure or composted material) and capable of sustaining vigorous plant growth.
- (b) Topsoil: free of subsoil contamination, roots, stones over 25mm in diameter, baler twine or subsoil clay lumps over 25mm in diameter and other extraneous matter. Topsoil shall not contain quackgrass rhizomes, Canada thistle roots or other noxious weeds. Upon delivery or thirty (30) days following delivery, salinity rating shall be less than 4.0mm hos/cm on a saturated paste basis. The pH range shall be between 6.0 - 8.0.
- (c) Topsoil may be either on-site topsoil or imported topsoil.
- (d) On-site topsoil which has been stockpiled, can be reused providing that it is shredded or screened prior to being re-spread and that it meets the requirements specified above for topsoil.
- (e) Topsoil shall not be blow-in dirt taken from wind erosion sites and topsoil shall not be taken from fields abandoned to corn production where such soil may contain soil incorporated herbicides, such as eradicane and atrazine with lasting residual effects.
- (f) Inform Contract Administrator of proposed source of topsoil to be supplied. Contract Administrator reserves the right to reject topsoil not conforming to the requirements of this Specification. Consistence: friable when moist.

E21.4 ORGANIC MATTER

- (a) Only imported organic soil approved by Contract Administrator.
- (b) Organic soils for landscape grounds and green roofs mixture: imported organic soil to be mixed with topsoil shall be derived from partially decomposed species of Sphagnum mosses, elastic and homogeneous, brown in colour and has been accepted by the Contract Administrator.
- (c) Organic soils: delivered directly from source at time of blending topsoil.
- (d) Organic soils to be used shall not be stockpiled prior to blending with topsoil longer than one month in advance.
- (e) Organic soils shall not contain quack grass rhizomes, Canada thistle roots or other noxious weeds.

- (f) Organic soils shall not be taken from fields, which were subject to frequent applications of herbicide types with residual properties that can potentially negatively affect the growth of specified plant materials.

E21.5 SAND

- (a) Imported sand approved by Contract Administrator.
- (b) Deliver sand directly from source at time of blending topsoil.
- (c) Sand to be used shall not be stockpiled prior to blending longer than one month
- (d) Sand shall not contain quack grass rhizomes, Canada thistle roots or other noxious weeds.
- (e) Sand shall not be taken from areas, which were subject to frequent applications of herbicide types that can potentially negatively affect growth of specified plants.

E21.6 SOIL AMENDMENTS

- (a) Fertilizer:
 - (i) Fertilizers containing phosphorous can be used only during plant installation and establishment periods can contain nitrogen and maximum 1% phosphorous..
 - (ii) Fertilizer shall be standard commercial brands meeting the requirements of the Canada Fertilizer Act and the Canadian Fertilizer Quality Assurance Program.
 - (iii) All fertilizers shall be slow release granular, pelletized or pill form, and shall be dry and free flowing.
- (b) Sand:
 - (i) Washed coarse silica sand, medium to course textured.
- (c) Limestone:
 - (i) Ground agricultural limestone.
 - (ii) Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.

E21.7 SOURCE QUALITY CONTROL

- (a) Advise Contract Administrator of sources of topsoil and manufactured topsoil to be utilized with sufficient lead time for testing.
- (b) Contractor is responsible for amendments to supply topsoil as specified.
- (c) Soil testing by recognized testing facility for PH, P and K, and organic matter. Testing of topsoil will be carried out by testing laboratory designated by Contract Administrator.
 - (i) Soil sampling, testing and analysis to be in accordance with Provincial standards.

EXECUTION

E21.8 STRIPPING OF TOPSOIL

- (a) Commence topsoil stripping of areas as directed by Contract Administrator after area has been cleared of brush and grasses and removed from site.
- (b) Strip topsoil to depths as directed by Contract Administrator. Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.
- (c) Stockpile in locations as directed by Contract Administrator. Stockpile height not to exceed 2m.
- (d) Disposal of unused topsoil is to be in an environmentally responsible manner but not used as landfill as directed by Contract Administrator.
- (e) Protect stockpiles from contamination and compaction.
- (f) Stockpiles must be covered with 6mm poly or tarpaulin at end of each day.

E21.9 PREPARATION OF EXISTING GRADE

- (a) Verify that grades are correct. If discrepancies Contract Administrator occur, notify Contract Administrator and do not commence work until instructed by Contract Administrator.
- (b) Grade soil, eliminating uneven areas and low spots, to ensure positive drainage.
- (c) Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris which protrudes above surface. Dispose of material off site.
- (d) Cultivate entire area which is to receive topsoil to minimum depth of 100 mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

E21.10 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

- (a) Place topsoil after Contract Administrator has accepted subgrade.
- (b) Spread topsoil in uniform layers not exceeding 150 mm.
- (c) Spread topsoil as per submitted report and test results approved by the Contract Administrator. Manually spread topsoil/planting soil around trees, shrubs and obstacles.

E21.11 FINISH GRADING

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

E21.12 ACCEPTANCE

- (a) Approval of topsoil may be subject to testing and analysis, and paid for by contractor.
- (b) Testing may be carried out by authorized testing laboratory and paid by Contractor.
- (c) Soil sampling, testing and analysis in accordance with Provincial regulations/standards.
- (d) Seeded / sodded areas will be accepted by Contract Administrator provided that areas are uniformly established is free of rutted, eroded, bare or dead spots and free of weeds.

E21.13 SURPLUS MATERIAL

- (a) Dispose of materials except topsoil not required off site.

E21.14 CLEANING

- (a) Upon completion, remove surplus materials, rubbish, tools and equipment barriers.
- (b) Restore stockpile sites acceptable to Contract Administrator.

E22. TREES, SHRUBS AND GROUNDCOVER PLANTING

E22.1 REFERENCES

- (a) Agriculture and Agri Food Canada (AAFC)
 - (i) Plant Hardiness Zones in Canada 3
- (b) Canadian Nursery Landscape Association (CNLA)
 - (i) Canadian Standards for Nursery Stock 2001
- (c) Department of Justice Canada (Jus)
 - (i) Canadian Environmental Protection Act (CEPA), 1999, c. 33

- (ii) Transportation of Dangerous Goods Act (TDGA), 1992, c.34
- (d) Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - (i) Material Safety Data Sheets (MSDS)

E22.2 DEFINITIONS

- (a) Mycorrhiza: association between fungus and roots of plants. This symbiosis, enhances plant establishment in newly landscaped and imported soils.

E22.3 ACTION AND INFORMATIONAL SUBMITTALS

- (a) Submit samples for:
 - (i) All Mulches: Dyed Wood Chip and Stone.
 - (ii) Landscape Edging.
- (b) Submit a Product Declaration Form for all products extracted and manufactured regionally.

E22.4 DELIVERY, STORAGE AND HANDLING

- (a) Coordinate shipping of trees and excavation of tree pits to ensure no more than a maximum 24 hour time lapse has occurred between plant material arriving on Site and installation of that plant material.
 - (i) Transport trees with care taken to prevent damage.
 - (ii) Protect trees against abrasion, exposure and extreme temperature change during transit.
 - (iii) Avoid binding of trees with rope or wire that would damage bark, break branches or destroy natural shape of tree.
 - (iv) Pad point of contact with equipment.
 - (v) Give full support to root ball of trees during lifting.
 - (i) Handle each balled specimen by the root ball with sufficient care.
 - (ii) Broken root balls or root ball consisting of loose soil will not be accepted and shall be replaced.
 - (iii) Prune back broken roots of deciduous stock prior to planting.
 - (vi) Trees with broken or damaged trunks or branches are not acceptable. Trees with damaged trunks, however caused, will be rejected. No exceptions shall be made in this respect.
 - (vii) Keep roots moist and protected from sun and wind.
 - (viii) Protect trees that cannot be planted immediately shall be against damage and drying out; if necessary, heel-in trees in a shaded area and water well.
 - (ix) Trees that are not given the correct pre-planting care specified will be rejected.
- (b) Immediately store and protect plant material which will not be installed within one hour after arrival at site in storage location approved by Contract Administrator.
- (c) Protect plant material from damage during transportation:
 - (i) When delivery distance is less than 30 km and vehicle travels at speeds under 80 km/h, tie tarpaulins around plants or over vehicle box.
 - (ii) When delivery distance exceeds 30 km or vehicle travels at speeds over 80 km/h, use enclosed vehicle where practical.
 - (iii) Protect foliage and root balls using anti desiccants and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material.
- (d) Protect stored plant material from frost, wind and sun and as follows:
 - (i) For pots and containers, maintain moisture level in containers.
 - (ii) For balled and burlapped and wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones.

- (e) Waste Management and Disposal:
 - (i) Remove from site and dispose of packaging materials at appropriate containers.
 - (ii) Place materials defined as hazardous or toxic in designated containers.
 - (iii) Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
 - (iv) Fold up metal and plastic banding, flatten and place in designated area.
 - (v) Dispose of unused fertilizer at official hazardous material collection site.
 - (vi) Dispose of unused anti desiccant at official hazardous material collections site.

E22.5 SCHEDULING

- (a) Notify Contract Administrator that trees are tagged and ready to be reviewed at source.
- (b) Notify Contract Administrator or designate that tree locations have been staked and are ready to fore review prior to planting. Schedule this review minimum 7 days in advance of desired date.
- (c) Schedule to include:
 - (i) Quantity and type of plant material
 - (ii) Shipping dates
 - (iii) Arrival dates on site
 - (iv) Staking Dates
 - (v) Planting dates

E22.6 WARRANTY

- (a) Contractor hereby warrants that plant material as itemized on plant list will remain free of defects for two full years from the recognized completion date.
- (b) End of warranty inspection will be conducted by Contract Administrator.
- (c) Contract Administrator reserves the right to reject or extend Contractor's warranty responsibilities for an additional one year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival. Warranty extension will be used only in cases where plant material is highly likely to survive despite development issue.
- (d) During warranty period, remove from site any plant material that has died or failed to grow satisfactorily as determined by Contract Administrator.
- (e) Replace rejected plant material within thirty (30) days. Or if the beginning of the next planting season.
- (f) Extend warranty on replacement plant material for a period equal to the original warranty period.
- (g) Continue such replacement and warranty until plant material is acceptable.
- (h) Required replacements shall be by plants of at least the same size and species, as specified, and shall be supplied and planted in accordance with the drawings and specifications.

PRODUCTS

E22.7 PLANT MATERIAL

- (a) Type of root preparation, sizing, grading and quality: comply with Canadian Standards for Nursery Stock.
 - (i) Source of plant material: grown in Zone 3 in accordance with Plant Hardiness Zones in Canada.
 - (ii) Plant material must be planted in zone indicated as appropriate for its species.
 - (iii) Plant material in location appropriate for its species.

- (iv) Measure trees when branches are in their natural position. Height and spread dimensions refer to main body of trees and not from branch tip to branch tip.
- (v) Use trees of No. 1 grade.
- (b) Nomenclature of specified trees is to conform to the International Code of Nomenclature for Cultivated Plants and is to be in accordance with the approved scientific names given in the latest edition of the Standardized Plant Names.
- (c) Trees to be supplied in accordance with the Work of this Contract shall be inspected by the Contract Administrator at the nursery site. At the time of inspection, the Contractor shall tag a suitable branch of each tree with a distinct code clearly indicating the project title, location and the intended recipient of that tree. The tag must be kept on the tree at the time of planting, and removed only when authorized by the Contract Administrator.
- (d) Trees are to be characteristically developed for their species and structurally sound, well branched, healthy and vigorous and densely foliated when in leaf. Tree is to have healthy, well developed, fibrous root system, which may be verified through testing procedure that destructively samples one or more randomly selected root balls.
- (e) Trees are to have been root pruned regularly, but not later than one growing season prior to arrival on Site. Contractor may be required to furnish documentation to the Contract Administrator on root-pruning program. Trees in excess of 75 mm calliper are to have been half root pruned during each of two successive growing seasons, the latter at least one growing season prior to arrival on Site.
- (f) All parts of the trees, especially the lower branches, are to be moist and show live, green cambium tissue when cut.
- (g) Trees are to have only, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader.
- (h) Trees are to be free of disease, insect infestation, rodent damage, sun scald, frost cracks, abrasions, unhealed scars, scars exceeding 5 cm in diameter, major forks or crooks in the trunk, broken branches, or angled leaders. Contract Administrator will not accept trees having the above defects.
- (i) Contract Administrator will not accept trees having a leader, which has developed at sharp angle to the trunk as a result of pruning or trunk damage.
- (j) Contract Administrator will not accept trees exhibiting suppressed, weakly developed branches due to competition from other closely spaced trees in the nursery or trees exhibiting head branches.
- (k) Contract Administrator will not accept any tree that has come out of dormant stage and is too far advanced unless prior approval obtained. Approval is required for any tree that has been held in cold storage.
- (l) Balled and burlapped trees in excess of a 3m height must have been dug with large firm ball. Roots in root balls must be comprised of 75% fibrous and feeder root systems. Secure root balls with burlap, heavy twine and rope. For trees 75mm or more in calliper, wrap ball in double layer of burlap and drum lace with minimum 10mm diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.
- (m) Use of collected is not permitted unless approved by Contract Administrator. Approved collected stock: maximum 40 mm in calliper with well-developed crowns and characteristically branched. No more than 40% of overall height may be free of branches.
- (n) Substitutions to trees as indicated are not permitted unless approved by THE Contract Administrator in accordance with B7. Any variations to species, size or caliper of specified tree will require a request for approval from the Contract Administrator in accordance with B7.
- (o) The use of trees requiring treatments as ordered by Agriculture Canada is prohibited.

E22.8 WATER

- (a) Water: free of oils, acids, alkalis, salts and other substances that may be detrimental to plant growth.
- (b) Water suitable for human consumption shall be acceptable without testing.
- (c) Water from rivers and streams shall not be used without prior approval of Contract Administrator.
- (d) Should Contract Administrator determine that water quality testing is necessary, an approved testing laboratory shall perform the test at the sole expense of the Contractor.

E22.9 LANDSCAPE EDGING

- (a) 140mm height, grade A premium blend medium density polyethylene landscape edging to be installed and secured with stakes set at 45 degree angles.
- (b) Landscape edging joints to overlap 75mm min.
- (c) Maximum distance between stakes: 2m. Joints: staked through both pieces.
- (d) Minimum length of any single edging segment: not less than 1.5m

E22.10 GEO-TEXTILE

- (a) Fabric Style: 12 oz, Non-woven. Needle Punched.

E22.11 STAKES – FOR TREES PLANTED ON SLOPES ONLY.

- (a) T bar, steel, 40 x 40 x 5 x 2440 mm.

E22.12 WIRE TIGHTENER

- (a) Type 2: turnbuckle, galvanized steel, 9.5mm diameter with 270mm open length.

E22.13 GUYING WIRE

- (a) Type 1: steel, 3mm wire.

E22.14 ANCHORS

- (a) Wood: 38 x 38 x 460 mm.

E22.15 GUYING COLLAR

- (a) Tube: plastic, 13 mm diameter, nylon reinforced.

E22.16 MULCH

- (a) Mulch: clean, ground dyed wood mulch free of debris. Commercial grade. Colour – Dark Brown.

E22.17 FERTILIZER

- (a) Synthetic commercial type as recommended by soil test report.
- (b) Fertilizers containing phosphorous can be used only during plant installation period. 1% phosphorous max. Fertilizers used during plant establishment period can contain only nitrogen. No fertilizer may be used after establishment period.
- (c) Fertilizer shall be standard commercial brands meeting the requirements of the Canada Fertilizer Act and the Canadian Fertilizer Quality Assurance Program.
- (d) All fertilizers shall be slow release granular, pelletized or pill form, and shall be dry and free flowing.

E22.18 ANTI DESICCANT

- (a) Wax like emulsion permeable enough to permit transpiration.

E22.19 FLAGGING TAPE

- (a) Fluorescent colour.

E22.20 SOURCE QUALITY CONTROL

- (a) Obtain approval from Contract Administrator of plant material one-week prior to planting and in advance of shipment of plant material to the project site.
- (b) Imported plant material must be accompanied with necessary permits and import licenses. Conform to federal and provincial regulations.
- (c) Only those trees will be accepted which have been grown for at least the four (4) previous years in local nurseries located in an Agriculture Canada Plant Hardiness Zone designation equal to that of the project site and within a 250 kilometre radius the project site.

EXECUTION

E22.21 PRE PLANTING PREPARATION

- (a) Stake out locations of trees as indicated on Plant Materials List. Obtain approval of locations from Contract Administrator prior to planting.
- (b) Ensure plant material is acceptable to Contract Administrator.
- (c) Remove damaged roots and branches from plant material with sharp pruning shears. Make clean cuts, and cover cuts over 10mm diameter with a tree wound dressing.
- (d) Coordinate shipping of trees and excavating of holes to ensure minimum time lapse between digging and planting. Trees are to be planted within 48 hours of excavation from the nursery.
- (e) Give full support to root ball of trees during lifting.
- (f) Keep roots moist and protected from sun and wind. Heel-in trees that cannot be planted immediately in shaded areas and water well.
- (g) Plant deciduous trees during dormant period before buds have broken. Trees noted for spring planting only, must be planted in dormant period.
- (h) When permission has been obtained from the Contract Administrator to plant deciduous tree after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- (i) Plant only under conditions that are conducive to health and physical conditions of trees.

E22.22 TREE PITS

- (a) Excavate tree pits in soft landscaped areas using following methods:
 - (i) Excavate using a backhoe, not a tree spade.
 - (ii) Tree pits: minimum 2 times diameter of root ball.
 - (iii) Pit depth: such that top of root ball is even with existing grade.

E22.23 EXCAVATION AND PREPARATION OF EXISTING GRADE

- (a) Verify that grades are correct. If discrepancies occur, notify Contract Administrator and do not commence work until instructed by Contract Administrator.
- (b) Grade soil, eliminating uneven areas and low spots, to ensure positive drainage.
- (c) Remove debris, roots, branches, stones in excess of 50 mm diameter and other harmful materials. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris which protrudes more than 75 mm above surface. Dispose of removed material off site.

- (d) Cultivate entire area which is to receive topsoil to minimum depth of 100 mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.
- (e) For individual planting holes:
 - (a) Stake out location and obtain approval from Contract Administrator prior to excavating.
 - (ii) Excavate to depth and width as indicated.
 - (iii) Remove subsoil, rocks, roots, debris and toxic material from excavated material that will be used as planting soil for trees. Dispose of excess material.
 - (iv) Scarify sides and bottom of planting hole.
 - (v) Remove water which enters excavations prior to planting. Notify Contract Administrator if water source is ground water.

E22.24 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

- (a) Place topsoil after Contract Administrator has accepted subgrade.
- (b) Spread topsoil in uniform layers not exceeding 150 mm.
- (c) Manually spread topsoil/planting soil around trees, shrubs and obstacles.
- (d) Ensure that topsoil types are used in correct locations as per Section 32 91 21 – Topsoil Placement and Grading. Bio-Swale soils are to be specially formulated for drainage.

E22.25 PLACING OF GEO-TEXTILE

- (a) Place geo-textile over levelled top soil.
- (b) Overlap all edges 150mm minimum.
- (c) Tuck all outer ends under 150mm minimum.
- (d) Pin fabric along all edges and in the interior of the sheet at 1m intervals.

E22.26 PLACING DYED WOOD MULCH AT PLANTING BEDS

- (a) Manually spread wood mulch to a uniform depth of 75mm.
- (b) Leave tree stem fully exposed.

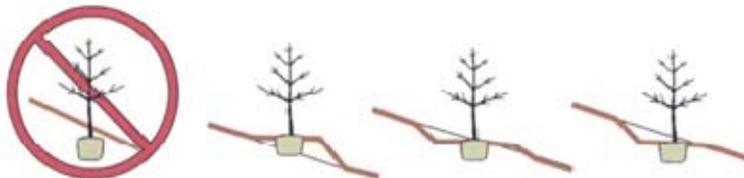
E22.27 PLANTING

- (a) Loosen bottom of planting hole to depth of 100 – 150mm. Cover bottom of each excavation with minimum of 150mm topsoil mixture, incorporate with subgrade material.
- (b) For jute burlapped root balls, cut away top 1/3 of wrapping and wire basket without damaging root ball. Do not pull burlap or rope from under root ball.
- (c) For container stock or root balls in non degradable wrapping, remove entire container or wrapping without damaging root ball.
- (d) Plant trees as follows:
 - (i) Set trees plumb and in centre of tree pit.
 - (ii) Place trees on undisturbed soil and to a depth such that top of root ball is even with existing grade.
 - (iii) Once tree has been set in its final position, fold back burlap on root ball from top 1/3 of root ball.
 - (iv) If wire basket has been used, cut off from top 1/3 of root ball. Remove twine from root ball.
 - (v) Tamp soil around root system to eliminate air voids.
 - (vi) Fine Grade area around tree according to drainage type.
 - (vii) Level, rake and edge planting areas to give a neat appearance.

- (viii) Orient plant material to give best appearance in relation to structure, roads and walks.
- (e) Upon completion of the planting operation:
 - (i) Form water dish from soil around outside edge of root ball with a berm 100 mm in height.
 - (i) Do not pile soil around tree trunk.
 - (ii) No water dish shall be formed when planting on hard surface boulevards.
 - (ii) Install dyed wood chips or other mulch.
 - (i) Administer watering.
- (b) Watering must be done slowly to ensure that water does not run away from the root zone and so the top 300 mm of the soil around the root system of the tree are well saturated.
 - (i) Use a deep root feeder (hard surface boulevards) or low-pressure open flow nozzle and hose (turf boulevards and parks).
 - (ii) Water stream must not gouge out a hole in the soil or mulch.
 - (iii) Secure necessary utility clearances when watering using a deep root feeder.
- (f) Replacement Plantings that are requested during the maintenance period shall be completed within thirty (30) Working Days of the request of the Contract Administrator.
- (g) For trees and shrubs:
 - (a) Backfill soil in 150 mm lifts. Tamp each lift to eliminate air pockets. When 2/3 of depth of planting pit has been backfilled, fill remaining space with water. After water has penetrated into soil, backfill to finish grade.
 - (b) Each tree is to have an earth saucer at its base having a diameter as large as the excavation with a 10cm lip formed at the perimeter of the saucer to retain water.
 - (h) For ground covers, backfill soil evenly to finish grade and tamp to eliminate air pockets.
 - (i) Water plant material thoroughly.
 - (j) After soil settlement has occurred, fill with soil to finish grade.
 - (k) Dispose of burlap, wire and container material off site.

E22.28 PLANTING TREES ON SLOPES

- (a) Cut into slope and back fill to achieve a flat terrace. See below for acceptable methods.



- (b) Provide a small depression on uphill side of tree to catch water.
- (c) Provide a small mound on downhill side of tree.
- (d) Trees on slopes must be staked.

E22.29 TRUNK PROTECTION

- (a) Install trunk protection on deciduous trees as indicated.
- (b) Install trunk protection prior to installation of tree supports when used.

E22.30 TREE SUPPORTS

- (a) For trees planted on slopes only.**

- (b) Install tree support for deciduous and evergreen trees.
- (c) Use single stake tree support for deciduous trees less than 3 m and evergreens less than 2m.
 - (i) Place stake on prevailing wind side and 150 mm from trunk.
 - (ii) Drive stake minimum 150 mm into undisturbed soil beneath roots. Ensure stake is secure, vertical and unsplit.
 - (iii) Install 150 mm long guying collar 1500 mm above grade.
 - (iv) Thread guying wire through guying collar tube. Twist wire to form collar and secure firmly to stake. Cut off excess wire.
- (d) Use three guy wires and anchors for deciduous trees greater than 3 m and evergreens greater than 2 m.
 - (i) Use guying wire for trees less than 75 mm in diameter and guying wire with clamps for trees greater than 75 mm in diameter.
 - (ii) Install guying collars above branch to prevent slipping at approximately 2/3 height for evergreens and 1/2 height for deciduous trees. Collar mounting height not to exceed 2.5 m above grade.
 - (iii) Guying collars to be of sufficient length to encircle tree plus 50mm space for trunk clearance. Thread guy wire through collar encircling tree trunk and secure to lead wire by clamp or multi wraps; cut wire ends close to wrap. Spread lead wires equally proportioned about trunk at 120 degrees.
 - (iv) Install anchors at equal intervals about tree and away from trunk so that guy wire will form 45 degree angle with ground. Install anchor at angle to achieve maximum resistance for guy wire.
 - (v) Attach guy wire to anchors. Tension wire and secure by multi wraps or installing clamps.
 - (vi) Install wire tightener ensuring that guys are secure and leave room for slight movement of tree.
 - (vii) Saw tops off wooden anchors which extend in excess of 100 mm above grade or as directed by Contract Administrator.
 - (viii) Install flagging tape to guys as indicated.
- (e) After tree supports have been installed, remove broken branches with clean, sharp tools.
- (f) Stakes must be removed prior to closeout of contract.

E22.31 MULCHING

- (a) Ensure soil settlement has been corrected prior to mulching.
- (b) Spread 100mm deep dyed, shredded wood mulch and fibre mat weed barrier.
- (c) No mulch to be in direct contact with tree trunk.

E22.32 PRUNING

- (a) A person with a valid Tree Pruner's Licence or certified arborist shall prune trees after planting to compensate for loss of roots suffered during transplanting. Postpone pruning of those trees where heavy bleeding may occur, until in full leaf. Employ clean sharp tools and make cuts flush with main and secondary branch collars, smooth and sloping as to prevent accumulation of water.
- (b) Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim out crown of trees without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.
- (c) Treat cut in excess of 20mm diameter and damaged parts with application of industry approved tree wound dressing.

- (d) Employ clean sharp tools. Make cuts co-incident with the branch collar near the main stem or branch. Cuts must be smooth and sloping to prevent accumulation of water on cut. Do not leave little stumps ("horns") on trunks or main branches.
- (e) Prune trees according to accepted horticultural practices as outlined in Agriculture Canada's Pruning Manual.

E22.33 FERTILIZING

- (a) Supply fertilizer only at frequent, ratio and rates as recommended by manufacturer. Water immediately after fertilizing.
- (b) Apply liquid fertilizer no later than May 30th of each maintenance year.
- (c) Apply tree fertilizer spikes twice per season. Follow manufacturer's instructions.

E22.34 WATERING

- (a) Water trees during the planting procedure and once a week thereafter, or more frequently if required, between May 1st and October 15th.
- (b) Allow soil to dry adequately between watering to prevent over saturation without creating water stress.
- (c) Apply 40 litres of water per 25mm calliper per application using deep root feeder or low/pressure nozzle and hose. The water stream must not gouge out a hole in the soil and mulch

E22.35 MAINTENANCE DURING ESTABLISHMENT PERIOD

- (a) Perform following maintenance operations from time of planting to acceptance by Contract Administrator.
 - (i) Water to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.
 - (i) For evergreen plant material, water thoroughly in late fall prior to freeze up to saturate soil around root system.
 - (ii) Remove weeds monthly.
 - (iii) Replace or re spread damaged, missing or disturbed mulch.
 - (iv) For non mulched areas, cultivate as required to keep top layer of soil friable.
 - (v) If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Contract Administrator prior to application.
 - (vi) Remove dead or broken branches from plant material.
 - (vii) Keep trunk protection and guy wires in proper repair and adjustment.
 - (viii) Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

E22.36 MAINTENANCE DURING WARRANTY PERIOD

- (a) From time of acceptance by Contract Administrator to end of warranty period, perform following maintenance operations.
 - (i) Water to maintain soil moisture conditions for optimum growth and health of plant material without causing erosion.
 - (ii) Reform damaged watering saucers.
 - (iii) Remove weeds monthly.
 - (iv) Replace or re spread damaged, missing or disturbed mulch.
 - (v) For non mulched areas, cultivate monthly to keep top layer of soil friable.
 - (vi) If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Contract Administrator prior to application.
 - (vii) Apply fertilizer in early spring as indicated by soil test.

- (viii) Remove dead, broken or hazardous branches from plant material.
- (ix) Keep trunk protection and tree supports in proper repair and adjustment.
- (x) Remove trunk protection, tree supports and level watering saucers at end of warranty period.
- (xi) Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.
- (xii) Ensure that the Contract Administrator is familiar with the standard practice of maintenance. Provide Contract Administrator with detailed printed maintenance instructions at completion of work.

E22.37 ACCEPTANCE

- (a) Approval of topsoil may be subject to testing and analysis. Testing of topsoil may be carried out by testing laboratory designated by Contract Administrator and paid by Contractor.
- (b) Soil sampling, testing and analysis to be in accordance with Provincial regulations.
- (c) Planted areas will be accepted by Contract Administrator provided that areas are well established, free of rutted, eroded, bare or dead spots and free of weeds.
- (d) Trees will be accepted if they are in good condition to the satisfaction of the Contract Administrator at the end of warranty period, showing no signs of damage, disease or loss of leaf canopy. Planting method must be as per spec. Trees buried too deep or too shallow will be rejected.
- (e) Stakes, guy wires, trunk guards and all other accessories must be removed prior to full acceptance.
- (f) A final pruning shall occur prior to full acceptance of trees.