



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 644-2009

SITWORKS AT DEER LODGE COMMUNITY CENTRE

TABLE OF CONTENTS

PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	3

PART B - BIDDING PROCEDURES

B1. Contract Title	1
B2. Submission Deadline	1
B3. Site Investigation	1
B4. Enquiries	1
B5. Addenda	1
B6. Substitutes	2
B7. Bid Components	2
B8. Bid	3
B9. Prices	4
B10. Qualification	4
B11. Opening of Bids and Release of Information	5
B12. Irrevocable Bid	5
B13. Withdrawal of Bids	5
B14. Evaluation of Bids	6
B15. Award of Contract	6

PART C - GENERAL CONDITIONS

C0. General Conditions	1
------------------------	---

PART D - SUPPLEMENTAL CONDITIONS

General

D1. General Conditions	1
D2. Scope of Work	1
D3. Definitions	1
D4. Contract Administrator	1
D5. Contractor's Supervisor	2
D6. Notices	2

Submissions

D7. Authority to Carry on Business	2
D8. Safe Work Plan	3
D9. Insurance	3
D10. Performance Security	3
D11. Subcontractor List	4

Schedule of Work

D12. Commencement	4
D13. Work by Others	4
D14. Substantial Performance	4
D15. Total Performance	4
D16. Liquidated Damages	5
D17. Scheduled Maintenance	5

Control of Work

D18. Job Meetings	5
D19. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	5

Measurement and Payment

D20. Payment	6
--------------	---

Warranty

D21. Warranty	6
---------------	---

Form H1: Performance Bond	7
---------------------------	---

Form H2: Irrevocable Standby Letter of Credit	9
Form J: Subcontractor List	11

PART E - SPECIFICATIONS

General

E1. Applicable Specifications and Drawings	1
E2. Soils Investigation Report	1
E3. Hazardous Materials	2
E4. Pre-Construction Meeting	2
E5. Site Access	2
E6. Pedestrian Safety and Traffic Management	2
E7. Site Condition	2
E8. Protection of Existing Trees	2
E9. Existing Services and Utilities	3
E10. Permits, Notices, Licenses, Certificates, Laws and Rules	4
E11. Protection of Survey Infrastructure	4
E12. Stakes and Marks	5
E13. Site Enclosures	5
E14. Product Approvals	5
E15. Surface Restoration	6

Site Development

E16. Removals	6
E17. Excavation and Grading	8
E18. Matching Existing Grades	10
E19. Base Course Material	11
E20. Sub-Surface Drainage	11
E21. Cast-In-Place Concrete Stairs	13
E22. Concrete Walkway	16
E23. Concrete Pavers on Concrete Base	17
E24. Chain Link Fencing	18
E25. Boulder Riprap	19
E26. Site Furnishings	21
E27. Planting Bed Preparation and Mulch	24
E28. Trees, Shrubs and Perennials Planting	26
E29. Topsoil and Sod	31
E30. Site Clean Up	32

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SITEWORKS AT DEER LODGE COMMUNITY CENTRE

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, May 18th, 2010..

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

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

B3. SITE INVESTIGATION

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

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

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

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

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

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

B5. ADDENDA

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

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

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

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

B5.2.3 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.

B6. SUBSTITUTES

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B14.
- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.7, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

B7. BID COMPONENTS

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

- (a) Form A: Bid;
- (b) Form B: Prices;

- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B7.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B7.5 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
- B7.5.1 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.
- B7.6 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.7 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 B14.1(a).
- B7.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to (204) 949-1178.
- B7.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B7.8.2 Bids submitted by internet electronic mail (e-mail) will not be accepted.

B8. BID

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than his own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.
- B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

- B8.4 Paragraph 10 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers;
 - (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B8.4.2 All signatures shall be original.
- B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B9. PRICES

- B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B9.1.1 Notwithstanding C.12.2.3(c), prices on Form B: Prices shall include the Manitoba Retail Sales Tax (MRST, also known as PST), but exclude the GST, which shall be extra where applicable.
- B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.
- B9.4 Prices from Non-Resident Bidders are subject to a Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B10. QUALIFICATION

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

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

B10.4 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B10.5 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B11. OPENING OF BIDS AND RELEASE OF INFORMATION

B11.1 Bids will not be opened publicly.

B11.2 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>

B11.3 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>

B11.4 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.

B12. IRREVOCABLE BID

B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.

B12.2 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.

B13. WITHDRAWAL OF BIDS

B13.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B13.1.1 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.

B13.1.2 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.

B13.1.3 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 B13.1.3(b), declare the Bid withdrawn.

B13.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B12.2 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.

B14. EVALUATION OF BIDS

B14.1 Award of the Contract shall be based on the following bid evaluation criteria:

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

B14.2 Further to B14.1(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.

B14.3 Further to B14.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he is responsible and qualified.

B14.4 Further to B14.1(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 10 and replacing item 10 with an additional 58 square meters of item 9 at the unit price indicated for item 9 on Form B: Prices, to achieve a Total Bid Price within the budgetary provision.

B14.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

B14.4.2 Further to B14.1(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.

B15. AWARD OF CONTRACT

B15.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B15.2 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.

B15.2.1 Without limiting the generality of B15.2, 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.

B15.3 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 B14.

B15.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid upon written request to the Contract Administrator.

B15.4 Notwithstanding C4, the City will issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.

B15.5 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 removal and disposal of existing play equipment, bases, safety surfaces, site furnishings and paving materials, site grading, excavation for new play areas, supply and installation of paving, site furnishings, topsoil, bark mulch, sod, trees and shrubs.

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

- (a) Removal and Site Preparation
- (b) Remove and dispose of existing sand safety surface;
- (c) Sawcut, excavation, remove and dispose of existing paving and unsuitable base courses;
- (d) Remove, salvage and reinstall 1.8m height chain link fence;
- (e) Excavation and Rough Grading;
- (f) Grading;
- (g) Construction of concrete piles for concrete planter and future entry columns;
- (h) Construction of a raised concrete planter with accessible seating nodes and pedra wood seating;
- (i) Construction of concrete walkway;
- (j) Construction of concrete stairs;
- (k) Supply and installation of concrete pavers on concrete base;
- (l) Supply and installation of large boulder Rip Rap with weed barrier;
- (m) Supply and Installation of trees;
- (n) Shrub bed preparation, supply and installation of shrubs, perennials and bark mulch;
- (o) Supply and installation of topsoil and sod as required in accordance with the requirements attached;
- (p) Supply and installation of site furniture.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "**CSA**" means Canadian Standards Association;
- (b) "**ASTM**" means American Society for Testing and Materials;

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is Scatliff+Miller+Murray Inc., represented by:

Ms. Jennifer Wagner
8th Floor – 136 Market Avenue
Winnipeg, MB
R3B 0P4

Telephone No. (204) 927-3444
Facsimile No. (204) 927-3443

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

D5. CONTRACTOR'S SUPERVISOR

- D5.1 At the pre-construction meeting, the Contractor shall identify his designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

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 address or facsimile number identified in D4.1.
- D6.3 Notwithstanding C21, all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:

The City of Winnipeg
Chief Financial Officer
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9
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 address or facsimile number:

The City of Winnipeg
Internal Services Department
Legal Services Division
Attn: City Solicitor
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1
Facsimile No.: (204) 947-9155

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/matmgmt/Safety/default.stm>

D9. INSURANCE

- D9.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
 - (b) automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;
- 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 one hundred thousand dollars (\$100,000.00), 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.

SCHEDULE OF WORK

D12. COMMENCEMENT

D12.1 The Contractor shall not commence any Work until he is in receipt of a Purchase Order from the Award Authority authorizing the commencement of the Work.

D12.2 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) evidence of the insurance specified in D9;
 - (iv) the performance security specified in D10 (if required); and
 - (v) the Subcontractor list specified in D11.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- (c) the Contractor has provided a written schedule of work outlining dates and duties to be performed.

D12.3 The Contractor shall commence the Work on the Site no later than May 28th, 2010.

D13. WORK BY OTHERS

D13.1 Works by others on or near the Site will include but not necessarily be limited to:

- (a) Maintenance Work by City of Winnipeg;
- (b) Supply and Installation of Play Equipment and Safety Surfacing by Play Equipment Contractor(s);

D14. SUBSTANTIAL PERFORMANCE

D14.1 The Contractor shall achieve Substantial Performance within thirty (30) consecutive Working Days of the commencement of the Work as specified in D12.3.

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 within forty (40) consecutive Working Days of the commencement of the Work as specified in D12.3.

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 Total Performance in accordance with the Contract by the day fixed herein for Total Performance, the Contractor shall pay the City five hundreds dollars (\$500) per Working Day for each and every Working Day following the day fixed herein for Total 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 Total 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 assessed.

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) Trees as specified in E28;
- (b) Shrubs and perennials as specified in E28;
- (c) Topsoil and Sod as specified in E29.

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 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).

MEASUREMENT AND PAYMENT

D20. PAYMENT

- D20.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D21. WARRANTY

- D21.1 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.
- D21.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.
- D21.2 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.
- D21.2.1 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. 644-2009

SITWORKS AT DEER LODGE COMMUNITY CENTRE

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)

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS 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>Specification No.</u>	<u>Specification Title</u>
CW 1110	General Instruction
CW 1120	Existing Services, Utilities and Structures
CW 1130	Site Requirements
CW 2110	Watermains
CW 2160	Concrete Underground Structures and Works
CW 3110	Sub-Grade, Sub-Base and Base Course Construction
CW 3130	Supply and Installation of Geotextile Fabrics
CW 3310	Portland Cement Concrete Pavement Works
CW 3325	Portland Cement Concrete Sidewalk
CW 3330	Installation of Interlocking Pavement Stones
CW 3510	Sodding
CW 3540	Topsoil and Finish Grading for Establishment of Turf Areas
CW 3615	Riprap

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
L1	Existing Condition & Removals Plan
L2	Site Plan
L3	Layout Plan
L4	Grading Plan
L5	Planting Plan
L6	Raised Concrete Planter with Timber Seating
L7	Details
L8	Details
L9	Details
S01	Structural Planter, Bench and Sign Foundations
1	72 Inch L-Balustrade Backed Bench
2	51 Inch Splash Pad
3	96 Inch Splash Pad

E1.3.1 Above drawing is available on request in AutoCAD .dwg format from the Contract Administrator.

E2. SOILS INVESTIGATION REPORT

E2.1 Further to C3.1, no soil inspection has been done. Contractor to supply soils investigation report if site conditions warrant.

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. PRE-CONSTRUCTION MEETING

- E4.1 The Contractor shall not begin the Work under this Contract until a pre-construction meeting has been held between representatives of the Play Equipment Contractor, the Site Works Contractor, the City of Winnipeg, Deer Lodge Community Centre and the Contract Administrator.

E5. SITE ACCESS

- E5.1 All access to be on the designated routes through the Site. These routes will be as shown on the drawings.
- E5.2 Access to the Site as required by the Contractor shall be provided and maintained by the Contractor at his own expense and approved by the Contract Administrator.
- E5.3 The Contractor's operation shall be limited to the minimum area necessary for undertaking the Work and he shall be responsible for all damage resulting from his Work on private property. Damage to areas beyond the marked routes shall be repaired by and at the expense of the Contractor to the satisfaction of the Contract Administrator.

E6. PEDESTRIAN SAFETY AND TRAFFIC MANAGEMENT

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

E7. SITE CONDITION

- E7.1 The Contractor shall examine the Site and make themselves familiar with the existing conditions (both above and below grade) and nature of Work to be done.
- E7.2 No responsibility will be assumed by the City for correctness or completeness of the Drawings, when provided, with respect to the existing utilities, pipes or other objects either underground or on the surface; the City shall not be liable for the incorrectness and inadequacy thereof. Surface and sub-surface conditions shown on the Drawings and included herein are provided for general information and variations there from shall not affect the terms of the Contract. It shall be the responsibility of the Contractor to determine the location of all such utilities, pipes and other objects and to make good any damage done to them.
- E7.3 The Contractor shall set all necessary control lines, benchmarks, survey, elevation stakes and layout in accordance with the individual site conditions and in consultation with the Contract Administrator.

E8. PROTECTION OF EXISTING TREES

- E8.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities:

- (a) All trees will have a 3m radius protective zone calculated from the circumference at the base of the trunk which will remain free of digging, trenching, grade changes, stock piling of materials and soil compaction, except as minimum to construct berm or swales throughout the duration of the Contract. Protective fencing around these areas is required.
- (b) Trees within and immediately adjacent to proposed construction and those identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400 mm wood planks, or suitably protected as approved by the Contract Administrator. Do not use nails or other fasteners that penetrate the tree trunk. The width and length of strapping may be reduced to suit the tree being 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) where 1 inch diameter equals 1 foot measured from the outside edge of the trunk of the tree at 6 inches above grade. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation. They must be properly trimmed with sharp tools to prevent crushing or being pulled by construction equipment. No paint is required. All exposed roots must be mulched until the excavated area is filled with clean earth to avoid exposure to sunlight and desiccation.
- (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.
- (f) Repair, replace and maintain tree protection materials during construction until the Project completion.
- (g) Carefully remove safety fencing and strapping material without harming the tree as soon as the construction and restoration Work is complete.

E8.2 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.

E8.3 No separate measurement or payment will be made for the protection of existing structures, trees and property.

E9. EXISTING SERVICES AND UTILITIES

E9.1 This Specification shall amend and supplement CW 1120-R1.

E9.2 Other than required to be done by the Contractor under the Work of this contract, all necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing plant material, pavements, streets, roads, boulevards, light standards, hydro poles, fences, fire hydrants, culverts, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing facilities and equipment at the Site of the Work. For all damage incurred in the performance of the Work (either directly or indirectly), the Contractor shall either replace and repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to the Contract Administrator, and the cost of which shall be borne entirely by the Contractor. The Contractor shall also indemnify and save harmless the City from all claims made directly or indirectly against it in respect to any such damage.

E9.3 The Contractor's attention is drawn to the existing underground lines or services that may be located in the area of the Work.

- E9.4 The Contractor shall take all necessary precautions when performing the Work to ensure that no damage is done to these existing services.
- E9.5 No responsibility will be assumed by the City for correctness or completeness of the Drawings, when provided, with respect to the existing utilities, pipes or other objects either underground or on the surface; the City shall not be liable for the incorrectness and inadequacy thereof. It shall be the responsibility of the Contractor to determine the location of all such utilities, pipes and other objects and to make good any damage done to them.
- E9.6 All costs in connection with this item including location of the existing service, repairs to any existing services damaged by the construction operation, etc. shall be included in the unit prices bid for supply and installation of the items included under this Contract.
- E9.7 The Contractor will be required to make his own arrangements in connection with the temporary use of lighting, power, gas, sewer, water or other utilities, and pay all costs in connection therewith.
- E9.8 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. PERMITS, NOTICES, LICENSES, CERTIFICATES, LAWS AND RULES

- E10.1 The Contract Administrator will take out a Development Permit for the Work described within this Bid Opportunity at this Site.
- E10.2 Further to C6.12, 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.
- E10.3 The Contractor shall comply with all laws, ordinances, rules and regulations that would relate to the Work.
- E10.4 All notices, consents, approvals, statements, authorizations, documents or other communications to the City shall be submitted to the Contract Administrator.
- E10.5 All Work shall be performed in compliance with the Manitoba Workplace Health and Safety Act.
- E10.6 All Work shall be performed in compliance with the Manitoba Workplace Health and Safety Fall Protection guidelines.
- E10.7 The Contractor and Sub-contractors must be fully aware of all Work involving hazardous materials. All Work must be performed in compliance with the Manitoba Department of Labour Workplace Health and Safety Guidelines and all other applicable codes. The Contractor is responsible for the immediate notification to the Contract Administrator of his/her encountering of suspected hazardous material during their course of Work.

E11. PROTECTION OF SURVEY INFRASTRUCTURE

- E11.1 Notwithstanding clause 4 "Protection of Survey Bars" of the Standard Provisions; Current legislation, The Surveys Act, places the onus on those undertaking construction to protect the Survey Infrastructure from damage as a result of their activity.
- E11.2 Further to C:6.26 (g), at least 72 hours prior to the commencement of the On-Site Work the Contractor shall contact the City of Winnipeg, Geomatics Services Branch at 986-4826 (8:00 am to 4:00 pm Monday to Friday excluding holidays) to obtain underground clearance. Geomatics Services will locate and mark all known outline survey monuments and geodetic control monuments and confirm the physical condition of those monuments upon completion of construction, at no cost to the Contractor.

- E11.3 Where a survey post, bar or control monument lies in the line of the proposed Work and must be disturbed, the Contractor shall provide the Contract Administrator with 48 hours notice to permit referencing for future replacement, at no cost to the Contractor. Failure to provide the specified notice shall result in the Contractor paying for all costs associated with replacing or relocating the disturbed outline survey monuments and geodetic control monuments.
- E11.4 Survey monuments and geodetic control monuments at or adjacent to the Site, not in the line of the proposed construction that are damaged or disturbed by the Contractor shall be replaced or relocated by the City or its agent and all associated costs shall be paid for by the Contractor. An approximate estimate of the costs involved to restore a legal survey monument is \$1,000 per bar and \$3,000 per control monument. Contractors must ensure their landscaping and other subcontractors are aware of this clearance procedure and the potential restoration costs.
- E11.5 Where possible, amounts owed to the City in accordance with the above will be deducted from any payments to be made by the City to the Contractor.

E12. STAKES AND MARKS

- E12.1 The Contractor will mark, to the extent he determines to be necessary, the location, alignment and elevation of the Work by means of stakes or marks, for review and approval by the Contract Administrator. The Contractor shall make the completed Works conform to the lines and marks thus approved and indicated.
- E12.2 The Contractor shall notify the Contract Administrator immediately of the disturbance of any such stakes or marks. The cost of correcting any errors arising out of neglect of the Contractor to so notify the Contract Administrator shall be borne entirely by the Contractor, as well as the cost of replacing any disturbed stakes or marks.
- E12.3 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 on account of any alleged inaccuracies. If any error is suspected in the Drawings, 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.
- E12.4 The Contractor shall determine and provide all dimensions and elevations measured from the stakes or marks.
- E12.5 The Contract Administrator shall be advised of the staking of the play area layout at least twenty-four (24) hours in advance in order that the layout may be inspected and adjusted as required prior to construction. The cost of correcting any errors arising out of neglect of the Contractor to so notify the Contract Administrator shall be borne entirely by the Contractor, as well as the cost of removing and reinstalling the timbers to suit the play equipment layout.

E13. SITE ENCLOSURES

- E13.1 Temporary Site enclosures, as determined necessary at the pre-construction meeting, shall be erected and maintained as required for the duration of the construction period.
- E13.2 Site enclosures shall be considered incidental to the Contract Work.

E14. PRODUCT APPROVALS

- E14.1 The Contractor shall, following award, prepare a complete list of all material to be used on the project and submit the list to the Contract Administrator seventy-two (72) hours prior to start of construction.
- E14.2 The Contractor shall only use material which has been approved by Contract Administrator or designate. The list shall provide the product, the manufacturer and the supplier.

E14.3 All Workmanship and materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator. The Contract Administrator reserves the right to reject any materials or Works which are not in accordance with the requirements of the Specifications.

E14.4 The Contractor shall wholly be responsible for the supply, safe storage, and handling of all materials set forth in this specification, and the control of all operations, incidental thereto notwithstanding any inspection or approval that may have been previously given.

E15. SURFACE RESTORATION

E15.1 Further to Section 3.3 of CW 1130-R1, the Contractor shall temporarily repair any Work commenced and not completed in the 2009 construction season to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

SITE DEVELOPMENT

E16. REMOVALS

E16.1 Description

E16.1.1 This Specification is supplemental to CW 3010-R4 and CW3110-R10.

E16.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as herein specified.

E16.1.3 Work shall include, but not necessarily confined to, the following:

- (a) Stockpile suitable, approved material on site for reuse (clean topsoil, clay fill and gravel fill) in a secure location. Remove and legally dispose of unsuitable material. Stockpile location to be restored to original condition following removal and re-use of material;
- (b) Remove and legally dispose of existing sand surface as per drawing L1;
- (c) Remove and legally dispose of existing concrete curb as identified on drawing L1;
- (d) Sawcut, remove and legally dispose of existing raised edge, asphalt and base as identified on drawing L1;
- (e) Sawcut, remove and legally dispose of concrete paving and stone as identified on drawing L1;
- (f) Remove and legally dispose of existing concrete landings, stairs, sloped walkway and steel tube railing as identified on drawing L1;
- (g) Remove and legally dispose of existing sod as identified on drawing L1;
- (h) Remove, salvage and stockpile 1 waste receptacle as identified on drawing L1;
- (i) Remove, salvage and stockpile 3 concrete splash pads as identified on drawing L1;
- (j) Remove, salvage and stockpile of existing rubber surface as identified on drawing L1;
- (k) Remove, salvage and stockpile 1.8m height chain link fence for reinstallation as identified on drawings L1 and L2.

E16.2 Construction Methods

E16.2.1 The Contractor shall remove existing pavement in accordance with CW 3110-R11.

E16.2.2 Prior to beginning the earthwork and grading the Contractor shall clear the Site and remove all existing trees and shrubs to be removed as indicate on the Removal Plan,

including roots masses, and debris, etc. that is located within the limits of the Work. Obtain Contract Administrators approval prior to removing any trees. The material shall be loaded, hauled and legally disposed of off site at a location approved by the Contract Administrator.

- E16.2.3 All tree stumps for removed trees shall be removed to the satisfaction of the Contract Administrator. The Contractor shall load and haul all stumps, rubbish and all other surface litter from the Site and legally dispose of these materials at dumps located by the Contractor and approved by the Contract Administrator. Any materials dropped or spilled on any streets during the hauling operations shall be promptly cleaned up by and at the expense of the Contractor, to the satisfaction of the Contract Administrator.
- E16.2.4 All foundations shall be removed to full depth to the satisfaction of the Contract Administrator. Fill all holes resulting from removals with compacted clay fill in seeded or sodded areas and compacted granular fill in paved areas.
- E16.2.5 Excavate and remove existing paving and base courses. Dispose of unsuitable material off site at a facility approved by the City of Winnipeg. The Contractor shall sawcut the existing paving to produce a clean straight edge when excavating.
- E16.2.6 The Contractor shall ensure that upon completion of the removal operations, the Site is left in a neat condition free from debris, etc. for approval by the Contract Administrator prior to placing base courses and clean fill.
- E16.2.7 The Contractor and all sub-contractors shall examine the Site and make themselves familiar with the existing conditions and the nature of the Work to be done.
- E16.2.8 Prevent damage to surface or underground utility lines which are to remain. Make good any damage.
- E16.2.9 Do not disturb soil within branch spread of trees to remain.
- E16.2.10 All extraneous materials to be removed from the Site and disposed of in a safe and legal manner. This specification shall amend and supplement City of Winnipeg Standard Construction Specifications CW 3110-R11.
- E16.2.11 Disposal of material shall be understood to mean the hauling of all unsuitable material from the Site and the unloading in a legal manner acceptable to the Contract Administrator. If arrangements are made in advance excavated material may be disposed of on Site at a location designated by the Contract Administrator.
- E16.2.12 Contractor must coordinate with the Contract Administrator for a site inspection to ensure all removals have occurred.
- E16.3 Method of Measurement
- E16.3.1 Removals, sawcutting, disposal and related Work in accordance with the Drawings and Specification shall be incidental to the lump sum prices for "Removals and Site Preparation" as indicated in Form B: Price. No payment will be made for material removed outside of the limits of excavation as established by the Contract Administrator.
- E16.3.2 Quantities of units are based on the proposed design drawings as supplied by the Contract Administrator.
- E16.4 Basis of Payment
- E16.4.1 Removals, sawcutting, disposal and related Work will be paid for at the Contract Unit Prices for Item 1): "Removal and Site Preparation" on Form B: Prices and measured as specified herein. The amount to be paid for shall be the total number of units, measured as specified herein, which price shall be for full payment for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work and accepted by the Contract Administrator.

E17. EXCAVATION AND GRADING

E17.1 Description

E17.1.1 This Specification shall amend and supplement CW 3110-R11 and CW 3170-R3.

E17.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as herein specified.

E17.1.3 Work shall include, but not necessarily confined to, the following:

- (a) Excavation, removals, sawcutting, disposal, subgrade compaction and rough grading of the existing Site for the construction of concrete paving, landings, stairs, sodded areas, planting areas and play areas to the design requirements noted on the Drawings and the Specifications, approved on site by the Contract Administrator, to depths as required for each surface;
- (b) Earthwork and grading of the existing Site (cut and fill including compaction of subgrade and fill material) to ensure positive drainage in all paved areas, adjacent sodded areas and play areas;
- (c) Supply and install imported fill in areas as required to ensure positive drainage;
- (d) Excavate, remove and legally dispose for play areas in accordance with the proposed design drawings and to the depths required for each play surface;
- (e) Excavate, remove and legally dispose of unsuitable subgrade and replace with compacted granular material;
- (f) Excavate, remove, legally dispose, rough grade and Ffill areas where items were removed and will not be replaced.

E17.2 Materials

E17.2.1 All fill materials shall conform to CW 3170-R3.

E17.3 Construction Methods

E17.3.1 The Contractor shall construct the Site, within the limits indicated, to the design elevations and gradients noted on the Drawings (less the appropriate surface treatment depths specified) and shall excavate, remove and dispose of all unsuitable materials of whatever nature encountered.

E17.3.2 The Contractor shall construct all sub-grades in accordance with Specification CW 3110-R11. Excavation will be performed as per Section 4.3 of CW 3110-R11. Unsuitable Excavated material shall be disposed of as per Section 3.4 of CW 1130-R1. The Contractor is advised that there may be a surplus of fill on the Site after the design sub-grade level has been achieved. All surplus material will be disposed of in accordance with Section 3.4 of CW 1130-R1.

E17.3.3 Excavated or graded materials to be approved before use as fill for grading Work. Protect such approved material from contamination. Stockpile in approved locations. Protection and stockpiling are incidental to unit price bid for removals, excavation and rough grading.

E17.3.4 The Contractor shall excavate topsoil as per Section 4.3 of CW 3110-R11. Topsoil excavation is incidental to the unit price bid for removals, excavation and rough grading.

E17.3.5 The Contractor and all sub-contractors shall examine the Site and make themselves familiar with the existing conditions and the nature of the Work to be done.

E17.3.6 Prevent damage to surface or underground utility lines which are to remain. Make good any damage.

- E17.3.7 The Contractor shall excavate to the design grades shown less the appropriate allowance for surface treatment and shall excavate, remove and dispose of all unsuitable materials of whatever nature encountered.
- E17.3.8 Except for drainage swales, berms and embankments indicated, the design gradient for all other areas shall be considered to be straight grade between the design elevations shown. Changes in grade at swales, berms, embankments and field shall be gently contoured as directed by the Contract Administrator to provide future ease of grass mowing operation.
- E17.3.9 In fill areas, where the difference between the existing grade elevation and the design elevation is less than 300mm the Contractor shall scarify the existing ground to a minimum depth of 150mm prior to placement of any fill.
- E17.3.10 The Contractor is advised that there may be useable clay and gravel fill on site. All suitable material will be reviewed and approved by Contract Administrator and then re-used on site. The re-use of this material on site may reduce the quantity of imported gravel and clean earth fill required. The Contractor shall re-use existing site material prior to delivering new material to the Site.
- E17.3.11 No direct payment will be made for placing and grading of existing fill as all costs for this Work is incidental to the unit price bid for excavation, rough grading and site grading.
- E17.3.12 Areas to Fill
- (a) Fill low areas in subgrade of paved areas (concrete and concrete pavers on concrete base) with compacted granular subbase material specified in E19 . Cost incidental to unit price bid for paved areas.
 - (b) Fill low areas in sodded areas with excavated clay material (from site excavations or imported as required) free from roots, muskeg, organic or cohesive matter, building debris, waste materials, rubble, rubbish, frozen portions, soluble materials and rocks larger than 25mm (1") in diameter and capable of sustaining plant and seed growth. Compact to 90% S.P.D. in 150mm (6") lifts. Cost of site excavated materials incidental to unit price bid for excavation, rough grading and site grading.
 - (c) Construct berms, sloped areas using excavated clay material (from site excavations or imported as required) free from roots, muskeg, organic or cohesive matter, building debris, waste materials, rubble, rubbish, frozen portions, soluble materials and rocks larger than 25mm (1") in diameter and capable of sustaining plant and seed growth. Compact to 90% S.P.D. in 150mm (6") lifts.
 - (d) Prior to placing fill over existing ground, scarify surface to depth of 150mm. Maintain fill and existing surface at approximately the same moisture content to facilitate bonding.
- E17.3.13 The Contractor shall construct all subgrades in accordance with Specification CW 3110-R11. This shall include the use of sheep's foot or other suitable compaction equipment as approved by the Contract Administrator to achieve a minimum compaction of 98% Standard Proctor Density below all paved areas (asphalt, concrete, stone chip and limestone paving), and 90% Standard Proctor Density in all other areas disturbed under this Contract unless otherwise indicated
- E17.3.14 Areas of the Site which are new play areas are to be excavated to the depths required to accept granular surfacing and a minimum of 300mm depth (after compaction) of wood fibre (top of safety surface to be flush with top of surrounding concrete walkway). Exact excavation depth required for safety surface to be coordinated with Play Equipment Contractor. The areas shall be within the available areas for new play equipment as shown on Drawings.
- E17.3.15 Areas of the Site which are to be sodded are to be excavated to meet the depths as per E29.
- E17.3.16 The Contractor shall construct the sub-grade surface to the depths as shown on the drawings.

- E17.3.17 The Contractor is advised that all excavations, removals, disposal, rough grading, compaction and related Work for construction of sub-base, base course, granular paving and planting areas and sodded areas (adjacent to paved areas) shall be incidental to the unit prices bid for each item as listed in the Schedule of Prices.
- E17.3.18 Following earth moving, rough grading and compaction the Work areas shall be fine graded to provide a maximum deviation of 50mm in 10 metres from the design grade with no low areas that hold water. The finished surface of all disturbed areas shall be dragged and smoothed in such a manner that there are no loose soil particles greater than 50mm in maximum dimensions.
- E17.3.19 Do not disturb soil within branch spread of trees to remain.
- E17.3.20 If required and at locations directed by the Contract Administrator the Contractor shall excavate and remove unsuitable subgrade material and replace it with compacted granular material in accordance with Specification CW3110-R10.
- E17.3.21 Excavation and rough grading includes the removal of items as indicated on the Drawings and as directed by the Contract Administrator. Work includes the satisfactory disposal of unsuitable Site material such as clay susceptible to frost-heaving, silts, rock rubble rubbish and any surplus suitable Site material. Do not disturb adjacent items designated to remain in place.
- E17.3.22 All extraneous materials to be removed from the Site and disposed of in a safe and legal manner. This specification shall amend and supplement City of Winnipeg Standard Construction Specifications CW 3110-R11.
- E17.3.23 Disposal of material shall be understood to mean the hauling of all unsuitable material from the Site and the unloading in a legal manner acceptable to the Contract Administrator. If arrangements are made in advance excavated material may be disposed of on Site at a location designated by the Contract Administrator.
- E17.3.24 The Contractor is to coordinate the layout of play area with the Play Equipment Contractor to ensure that CSA requirements are met. Final layout of all play spaces has to be approved by Contract Administrator prior to any construction or removal.
- E17.3.25 Excavation should be coordinated with the installation of play equipment so as not to leave an open excavation area subject to ponding water.
- E17.4 Method of Measurement
- E17.4.1 All Excavation and Rough Grading shall be measured on a cubic metre basis. The numbers to be paid shall be the total number of cubic meters completed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.
- E17.4.2 Quantities of units are based on the proposed design drawings as supplied by the Contract Administrator.
- E17.5 Basis of Payment
- E17.5.1 Excavation and Rough Grading will be paid for at the Contract Unit Prices per cubic meter for Item 2): "Excavation and Rough Grading" on Form B: Prices and measured as specified herein. The amount to be paid for shall be the total number of cubic meter, measured as specified herein, which price shall be for full payment for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work and accepted by the Contract Administrator.

E18. MATCHING EXISTING GRADES

- E18.1 Whenever the proposed paving or sod meets existing building edge, doorway, or property line, the Contractor shall construct the proposed element to an acceptable grade, as directed by the Contract Administrator, to ensure that proper drainage and accessibility are maintained.

E19. BASE COURSE MATERIAL

- E19.1 The Specification shall supplement Standard Construction Specification CW 3110-R11 and CW 3130-R2.
- E19.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:
 - (a) Supply and Placement of Base Course Material;
 - (b) Supply and Placement of Sub-Base;
 - (c) Supply and Installation of Separation/ Reinforcement Geotextile Fabric;
 - (d) Compaction.
- E19.3 There will be no separate measurement and payment for supply and placement of sub-base. All Work shall be considered incidental to this specification.
- E19.4 There will be no separate measurement and payment for supply and installation of Separation/ Reinforcement Geotextile Fabric. All Work shall be considered incidental to this specification.
- E19.5 There will be no separate measurement and payment for compaction. All Work shall be considered incidental to this specification.
- E19.6 All costs in connection with the testing and approval of base courses shall be considered incidental to this specification.
- E19.7 Method of Measurement/ Basis of Payment
 - E19.7.1 The Contractor is advised that all Work under this section is incidental to the unit prices bid in those items for which base course material is required under this Contract.

E20. SUB-SURFACE DRAINAGE

- E20.1 Description
 - E20.1.1 This Work shall consist of providing and placing a geocomposite prefabricated drain system as described in the drawings. The drainage system shall be installed in accordance with these Specifications and in reasonably close conformity with the locations and dimensions as shown on the drawings or specified by the Contract Administrator. The quantities of drain as shown on the drawings may be increased or decreased at the direction of the Contract Administrator based on actual Site conditions that occur during construction of the project. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the Work.
- E20.2 Materials
 - E20.2.1 The drain conduit shall be of flexible, prefabricated, rounded rectangular shaped, composite product. The drain conduit shall be wrapped with a non-woven geotextile and shall be a non-woven needle-punched construction and consist of long-chain polymeric fibers composed of polypropylene, polyethylene or polyamide. The fibers shall be oriented into a multi-directional stable network whereby they retain their positions relative with each other and allow the passage of water as specified. The fabric shall be free of any chemical treatment or coating, which reduces permeability and shall be inert to chemicals commonly found in soil. The geotextile shall conform to the following minimum average roll values.

Weight	ASTM D-3776	3.0 - 4.0
Tensile Strength	ASTM D-4632	100 - 130
Elongation %	ASTM D-4632	50 - 70

Puncture, lb	ASTM D-751	35 - 60
Mullen Burst, psi	ASTM D-3786	110 - 215
Trapezoidal Tear, lb	ASTM D-4533	40 - 42
Coefficient of Permeability	ASTM D-4491	.2 - .4 cm/sec
Flow Rate, gpm/ft ²	ASTM D-4491	100 - 140
Permittivity, 1/sec	ASTM D-4491	1.3 - 2.0
Apparent Opening Size	ASTM D-4751	60/70 Max. US Std Sieve Opening
Seam Strength, lb/ft	ASTM D-4595	100
Fungus	ASTM G-21	No Growth

E20.2.2 The drainage core shall be made of a high-density polyethylene. The core shall be constructed using interconnected corrugated pipes that define and provide the flow channels and structural integrity of the drain. The geotextile shall function only as a filter. The core of the edge drain shall conform to the following physical property requirements.

Thickness, inches	ASTM D-1777	1.0
Flow Rate, gpm/ft ^{***}	ASTM D-4716	30
Compressive Strength, psf	ASTM D-1621 (modified sand method)	6000
Pipe Stiffness, pii	ASTM D-2412	100

*** At gradient = 0.01, pressure = 10 psi for 100 hours.

E20.2.3 The fittings used with the edge drain shall be of a "snap together" design. In no case shall any drainage product be joined without the use of the manufacturers connector designed specifically for the purpose.

E20.2.4 Drainage pipe shall be Multi-Flow or approved substitute in accordance with B6. Size shall be 150 mm. All fittings shall be sized to fit approved for use with Multi-Flow or approved substitute in accordance with B6. Cleanouts shall be provided as indicated on the drawing.

E20.2.5 Where specified the emitter shall be NDS #620 or approved substitute in accordance with B6.

E20.2.6 Pipe for edge drain outlet laterals shall be either PVC pipe meeting the requirements of ASTM D-2729 or ASTM F-949, or high-density polyethylene pipe meeting the requirements of AASHTO M252. 2.4. A rodent screen made of 7.6 mm by 7.6 mm square opening size, 1.6 mm gauge, stainless steel or galvanized, welded wire mesh shall be installed in each outlet lateral line. When using galvanized welded wire mesh, the rodent screen shall be galvanized after it has been formed to the shape and dimensions required.

E20.2.7 Backfill shall be coarse sand whose particle size is defined as less than 5% retained on a #10 screen, and less than 5% passing through a # 30 screen. (US Std Sieve) In no case shall more than 1% pass a #60 screen.

E20.3 Construction Methods

E20.3.1 Installation of Subdrain is not to proceed until after the excavation/grading has been approved by the Contract Administrator.

E20.3.2 The layout of the subdrain is to be marked on Site and approved by the Contract Administrator prior to trenching.

- E20.3.3 Trenches are to be excavated with a trenching machine or by hand. Locations where the trench has to cross existing utilities, existing irrigation pipes and all other subsurface pipes or fixtures are to be excavated by hand. The amount of trench excavated at any time shall not exceed the amount of drain that can be set and backfilled completely prior to the end of that Working Day. Trench shall be of the width specified on the Drawings.
- E20.3.4 The bottom surface of the trench is to be free of loose particles and is to have the slope shown on the Drawings. Over excavation in the bottom of the excavation shall be backfilled to the proper grade with excavated material or sand prior to the placement of the drain. Where sand or excavated material is used to fill the trench to the proper elevation that material shall be compacted to 95% of standard proctor density using appropriate means. Where the trench is to pass through an area of existing sod the excavated material is not to remain on the grassed surface for a period longer than 24 hours. Excavated material if not required as fill elsewhere on Site shall be removed from Site and disposed of legally.
- E20.3.5 Multi-Flow drain pipe is to be placed in trench using Multi-Flow centering device. Trench is to be backfilled with coarse sand to the surface. Backfill shall be placed in maximum of 45 cm loose lifts. Backfill is to be lightly tamped into place and watered. In the case of trenches extending into existing grassed areas coarse sand backfill is to be seeded with grass seed.
- E20.3.6 Contractor is to maintain top surface of the backfilled sand even with the surrounding grade during the grow in phase.
- E20.3.7 Fittings for the drain shall be installed in accordance with the manufacturer's recommendations.
- E20.3.8 Any damaged edge drain or outlet lateral shall be replaced or repaired by splicing in an undamaged section of drain at the Contractor's expense.
- E20.3.9 The Contractor shall be responsible for restoration of any surfaces damaged during the Work under this section. There shall be no separate measurement or payment for restoration Work required as a result of this Work.
- E20.4 Measurement and payment
- E20.4.1 Measurement and payment for Subsurface Drainage Multi-Flow Lines will be measured on a linear metre basis for and paid for at the unit prices on item 3) on Form B: Prices. This price shall be full payment for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work and as accepted by the Contract Administrator.
- E20.4.2 Measurement and payment for Subsurface Drainage Emitter will be measured on a lump sum basis for and paid for at the unit prices on item 4) on Form B: Prices. This price shall be full payment for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work and as accepted by the Contract Administrator.
- E20.4.3 All trenching, backfill, fittings, cleanouts, are to be considered incidental to the supply and installation of the pipe. Only the pipe installed according to the drawings will be measured.
- E20.4.4 Subsurface drainage required as part of the play safety surfacing installation will not be measured separately under this section but will be considered incidental to the installation of the play safety surfacing.

E21. CAST-IN-PLACE CONCRETE STAIRS

E21.1 Description

- E21.1.1 The specification shall supplement City of Winnipeg Specification CW 3325-R3 and CW 3310-R13.
- E21.1.2 The Work of this section comprises the furnishing of all labour, equipment and materials required to complete the supply and installation of all cast-in-place concrete stairs, as shown

on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:

- (a) Sub grade compaction as required.
- (b) Compacted granular fill work as required.
- (c) Supply, erection and removal of all formwork as required.
- (d) Design of concrete mixes.
- (e) Supply, placing and curing of concrete stairs.
- (f) Surface preparation and waterproofing of concrete works.
- (g) Cleanup

E21.1.3 Reference

- (a) All concrete formwork is to be done in accordance with CAN/CSA-A23.1-M77 and CAN/CSA-A23.2, except where specified otherwise.

E21.1.4 Sample

- (a) At least one (1) week prior to commencing Work, inform Contract Administrator of proposed source of aggregates and provide access for sampling.

E21.1.5 Certificate

- (a) Minimum one (1) week prior to starting concrete work submit (if requested) to Contract Administrator manufacturer's test data and certification by qualified independent inspection and testing laboratory that the following materials will meet specified requirements:
 - (i) Portland cement.
 - (ii) Cement slurry bonding agent.
 - (iii) Admixtures.
 - (iv) Aggregates.
 - (v) Water.
 - (vi) Waterproofing
 - (vii) Emulsified asphalt.
 - (viii) Epoxy grout.
- (b) Provide certification that plant, equipment, and materials to be used in concrete complies with requirements of CAN/CSA-A23.1 and that mix design is adjusted to prevent alkali aggregate reactivity problems.
- (c) Provide certification that mix proportions selected will produce concrete of specified quality and yield and that strength will comply with CAN/CSA-A23.1 and that mix design is adjusted to prevent alkali aggregate reactivity problems.
- (d) Construction Quality control and Placement Procedures.
- (e) Submit proposed quality control procedures for Contract Administrator's approval.
- (f) Submit proposed concrete placement procedures for Contract Administrator's approval.

E21.2 Material

E21.2.1 Portland cement to CAN3-A5-M 1983.

E21.2.2 Aggregates to CAN/CSA-A23.1-M90. Coarse aggregates to be normal density.

E21.2.3 Chemical admixtures to CAN3-A266.2-M78. Contract Administrator to approve accelerating or set retarding admixtures during cold and hot weather placing. Use of calcium chloride is not permitted.

- E21.2.4 Curing and sealing compound to: CAN/CSA-A23.1-M90, CPD Acrylic cure and seal or equal and to ASTM C309-81, Type 1 - chlorinated rubber.
- E21.2.5 Accessories and Application Equipment: As per manufacturers specifications.
- E21.2.6 Pre-molded joint fillers:
- (a) Flexcell Expansion Joint Filler
- E21.2.7 Concrete Mixes:
- (a) All concrete Work shall be in accordance with CSA A23.1 Concrete Materials and methods of concrete construction.
 - (b) Proportion normal density concrete in accordance with CSA A23.1 to give the following properties.
 - (c) Concrete for stairs:
 - (i) Cement: Type 50 Sulphate resistant
 - (ii) Maximum Coarse Aggregate: 20mm
 - (iii) Minimum Compressive Strength at 28 days: 32 Mpa
 - (iv) Maximum Water/Cement Ratio: 0.45
 - (v) Class of Exposure: C-2
 - (vi) Maximum Slump: 80mm \pm 30mm
 - (vii) Air Content: 5-8%
- E21.3 Construction Methods
- E21.3.1 Workmanship
- (a) Do all concrete Work in accordance with CAN/CSA-A23.1. All testing of concrete shall be done in accordance with CAN/CSA-A23.2. Obtain Contract Administrator's approval before placing concrete. Provide 3 Calendar Days notice prior to placing of concrete.
 - (b) Pumping of concrete is permitted only after approval of equipment and mix.
 - (c) Ensure reinforcing bars and reinforcement and inserts are not disturbed during concrete placement.
 - (d) Do not place load upon new concrete until authorized by Contract Administrator.
- E21.3.2 Construction Joints
- (a) Joint Fillers
 - (i) Furnish filler for each joint in a single piece for depth and width required for joint, unless otherwise authorized by Contract Administrator. When more than one piece is required for a joint, fasten abutting ends and hold securely by stapling or other positive fastening.
- E21.3.3 Finishing of Concrete
- (a) General
 - (i) Finish concrete in accordance with CAN/CSA/A23.1.
 - (b) Final finish shall be as follows:
 - (i) Trowel finish with fine hair brooming.
 - (ii) All shall be finished by a specialty concrete finisher.
 - (iii) The size of finishing crews shall be planned with due regard for the effects of concrete temperatures and atmospheric conditions of the rate of hardening of the concrete.
 - (iv) Finish of all items shall be clean with no pits, chips, bumps or other surface imperfections.
- E21.3.4 Cleanup and Damage

- (a) Immediately on completion of concrete Work the Contractor shall remove from Site all equipment, timbers, shores, excavated materials, unused concrete, rubbish etc. caused by his operations, and leave the Site clean, level and ready for other Works.
- (b) The Contractor shall be responsible for making good all areas damaged by his operations.

E21.4 Method of Measurement

E21.4.1 Concrete Stairs shall be measured on a lump sum basis. The units to be paid for shall be the total number of units that are installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.

E21.5 Basis of Payment

E21.5.1 Concrete Stairs will be paid for at the Contract Unit Prices per unit for Item 11): "Concrete Stairs" as indicated on Form B: Prices and measured as specified herein, which price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E22. CONCRETE WALKWAY

E22.1 Description

E22.1.1 The specification shall supplement City of Winnipeg Specification CW 3325-R3 and CW 3310-R13.

E22.2 Material

E22.2.1 All material shall conform to Specification CW3325-R3 and CW 3310-R13 and all other applicable City of Winnipeg Specifications, whether listed herein or not.

E22.3 Supply of Materials and Equipment

E22.3.1 The Contractor shall supply all materials and use equipment in accordance with Specification CW 3325-R3.

E22.4 Construction Methods

E22.4.1 No concrete work shall commence until the excavation has been completed in accordance with Specification CW 3110-R11 and the drawings and has been approved by the Contract Administrator.

E22.4.2 Sub-base compaction shall be in accordance with Specification CW 3110-R11.

E22.4.3 Base Course to be installed to a depth of 150mm in accordance with Specification CW 3110-R11 and the drawings.

E22.4.4 Concrete walkway shall be installed as shown on Drawings in accordance with Specification CW 3310-R13.

E22.4.5 Walkway joints shall be constructed, where required, as directed by the Contract Administrator and shall be completed in accordance with Specification CW 3325-R3.

E22.4.6 Concrete Placement for concrete walkways shall be installed to a depth of 125mm in accordance with Specification CW 3310-R13, Section 9.4.

E22.5 Method of Measurement

E22.5.1 Concrete Walkways shall be measured on an area basis. The area to be paid for shall be the total number of square meters that are installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.

E22.6 Basis of Payment

- E22.6.1 Concrete for Concrete Walkway will be paid for at the Contract Unit Prices per square meter for Item 9): "Concrete Walkway" measured as specified herein, which price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E23. CONCRETE PAVERS ON CONCRETE BASE

E23.1 Description

- E23.1.1 The specification shall supplement Specification CW 3310-R13, CW 3325-R3 and CW 3330-R5.
- E23.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:
- (a) Excavation, supply and installation of concrete pavers on concrete base for areas as indicated on the Drawing.
- E23.1.3 Submit Full size sample of paving stones for Contract Administrator's approval. Deliver samples prepaid to Contract Administrator's business address and Notify Contract Administrator in writing, at time of submission of deviations in samples from requirements of Contract Documents

E23.2 Material

- E23.2.1 Concrete Mix shall be supplied as specified in CW 3310-R13 and CW 3325-R3
- E23.2.2 Concrete Unit Pavers: Barkman Holland, Antique Brown colour. Sizes to be 210mm x 105mm x 60mm (4.125" x 8.25" x 2.375");
- E23.2.3 Bedding sand shall be fine aggregate as specified in Section 5.3.1 of CW 3310-R13 and Section 5.2.3 of CW 3330-R5;
- E23.2.4 Filler Sand shall have a maximum aggregate size of 2.5mm.

E23.3 Construction Methods

E23.3.1 Excavation

- (a) Excavation shall comply with CW 3110-R11.
- (b) The excavation shall not extend beyond the specified limits of excavation. The limits of excavation shall be taken as a vertical plane 150mm beyond the limits of the proposed walkway, unless otherwise specified on the Drawings or in the Specifications for the Work.
- (c) The sub-grade shall be excavated to the minimum depth as shown on the drawings, unless otherwise directed by the Contract Administrator.

E23.3.2 Preparation of Sub-Grade, Concrete Base and Bedding Sand

- (a) The construction of sub-grade shall be completed in accordance with CW 3110-R11 and to the depth as specified on the Drawings.
- (b) The concrete base shall be placed to a minimum thickness of 125mm. The surface shall be smooth, true to line, grade, and cross-section.
- (c) On top of the concrete base a 15mm layer of bedding sand shall be placed.
- (d) The bedding sand layer shall be spread and levelled so that the paving stones when installed are 5 mm higher than the finished grade. No more sand shall be spread than can be covered in one day by paving stones. The bedding sand layer shall not be compacted prior to laying the paving stones.

- (e) The cost of supplying and placing bedding sand shall be incidental to the installation of the paving stones.
- (f) No paving stones shall be placed until construction of the underlying layers has been approved by the Contract Administrator.

E23.3.3 Installation of Paving Stones

- (a) The paving stones shall be installed such that spaces between joints do not exceed 5 mm. Spaces between paving stones shall be uniform and consistent while maintaining straight and true patterns.
- (b) Work shall commence with edge stones along the longest straight section of curb or property line and work towards the opposite edge. Edge stones shall be used along the limits of the sidewalk.
- (c) If cutting of paving stones is required, the sawn or sheared edges shall be true, even and undamaged. Coloured mortar shall be used to fill small voids between blocks and curbs or other structures.
- (d) Paving stones shall be compacted into the sand layer using approved vibratory compactors until they are at the proper grade, uniformly level and free of any movement. Filler sand shall be swept into the joints until full.
- (e) The cost of supplying and placing filler sand shall be incidental to the installation of the paving stones.

E23.4 Method of Measurement

E23.4.1 Unit Paving on Concrete Base shall be measured on an area basis. The area to be paid for shall be the total number of square meters that are installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.

E23.5 Basis of Payment

E23.5.1 Unit Paving on Concrete Base will be paid for at the Contract Unit Prices per square meter for Item 10): "Concrete pavers on Concrete Base" on Form B: Prices and measured as specified herein. This price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E24. CHAIN LINK FENCING

E24.1 Description

- E24.1.1 The specification shall supplement City of Winnipeg specification CW 3550-R2.
- E24.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:
 - (a) Reinstallation of Salvaged Chain Link Fencing as indicated on the Drawings.

E24.2 Material

E24.2.1 Salvaged 1800mm height chain link fencing, fence posts, rails, stretcher bars and mesh as indicated on the Drawings and directed by Contract Administrator.

E24.3 Construction Methods

- E24.3.1 Measure length of fencing to be installed prior to construction.
- E24.3.2 Work to be coordinated with installation of boulder riprap and planting bed.

E24.3.3 Reinstallation of chain link fencing shall be at location shown on the Drawings and in accordance with CW 3550-R2.

E24.3.4 Reinstall post as per manufacturer's specifications.

E24.3.5 Reinstall manufacturer's standard fittings, fasteners and hardware as required.

E24.4 Method of Measurement

E24.4.1 Measurement of 1800mm Ht. Chain Link Fencing shall be made on a linear metre basis for Item 12): "Reinstall 1.8m Height Chain Link Fence" on Form B: Prices and measured as specified herein. The numbers to be paid shall be the total number of linear metres constructed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E24.5 Basis of Payment

E24.5.1 Payment of 1800mm Ht. Chain Link Fencing will be paid for at the Contract Unit Price which price shall be payment in full for supply and installation of all chain link fencing, posts, associated hardware, concrete footings herein described and for all of the items incidental to the Work included in the specification and shown on the drawings.

E25. BOULDER RIPRAP

E25.1 Description

E25.1.1 The specification shall supplement Specification CW 3110-R11, CW3130-R2 and CW3615-R2.

E25.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:

- (a) Supply and installation of Boulder Riprap and filter fabric on planting bed as indicated on the Drawings.

E25.2 Materials

E25.2.1 All materials shall conform to CW 3110-R11, CW 3130-R2, CW3615-R2 and this Specification. Where the two do not agree, this Specification shall take precedence. All materials supplied under this Specification shall be of a type approved by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.

E25.2.2 It is the Contractor's responsibility to contact the Contract Administrator with a minimum of two (2) days notice to come and approve the riprap material on the truck at the site prior to unloading and installing.

E25.2.3 Boulder Riprap shall be clean fieldstone of random profile with no cracks or splits. Boulders shall be light in colour with diameters ranging from 250mm to 400mm and shall conform to CW 3615-R2 as per Random Stone Rip Rap.

E25.2.4 Bark mulch shall be locally available clean bark or wood chip mulch free of leaves, branches and other extraneous matter. The recommended mulch shall consist of chips not less than 15mm not larger than 75mm in size and not more than 20mm thick.

E25.2.5 Filter Fabric shall conform to CW 3130-R2.

E25.3 Method

E25.3.1 Bed for Riprap

- (a) The bed for the riprap shall be cleared and trimmed to the lines as shown on the drawings or as stated in the field by the Contract Administrator, prior to the placing of

any riprap. No filter fabric or riprap shall be placed until the bed has been approved. No riprap shall be unloaded and placed until the boulder material has been approved.

E25.3.2 Installation of Filter Fabric

- (a) The filter fabric shall be installed in width as shown on drawings, in accordance with the manufacturer's recommended procedure. The weed barrier shall be installed with the long dimension parallel to the slope and shall be laid smooth and free of tension, stress, folds, wrinkles or creases.
- (b) Joints in the filter fabric shall be overlapped not less than 0.5 metres.
- (c) Securing pins with washers shall be inserted through the fabric at intervals not greater than 1.5 metres along a line 100 mm from both the lowest and highest exterior edge of the filter fabric.
- (d) The supply and installation of the securing pins shall be incidental to the cost of the filter fabric.
- (e) At locations confirmed on site by the Contract Administrator, holes will be cut in filter fabric for designated planting. Planting to be protected as riprap is installed.

E25.3.3 Placement of Boulder Riprap

- (a) Boulder riprap shall be pushed or rolled into place in such a manner that the larger boulders are uniformly distributed around the planting first and smaller boulders serve to fill the places between the larger boulders. Protect plantings at all time. Sufficient handwork and work/equipment shall be utilized to ensure gaps between boulders are filled to the satisfaction of the Contract Administrator.
- (b) Work to be coordinated with installation of chain link fencing and planting of Engelmann's Ivy.

E25.3.4 Mulch Fill between Boulder Rip Rap

- (a) Upon approval of the large boulder riprap placement by the Contract Administrator, bark mulch fill shall be sprinkled and swept into remaining small gaps to conceal sub-grade.

E25.4 Method of Measurement and Basis of Payment

E25.4.1 Method of Measurement shall be as follows:

- (a) Boulder Riprap shall be measured on an area basis. The area to be paid for shall be the total number of square meters that are installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.
- (b) Mulch Fill shall be measured on a volume basis. The volume to be paid for shall be the total number of cubic meters that are installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.

E25.4.2 Basis of Payment shall be as follows:

- (a) Boulder Riprap will be paid for at the Contract Unit Prices per square meter for Item 15): "Boulder Riprap" on Form B: Prices and measured as specified herein. This price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.
- (b) Mulch Fill will be paid for at the Contract Unit Prices per cubic meter for Item 20): "Bark Mulch (100mm depth)" on Form B: Prices and measured as specified herein. This price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E26. SITE FURNISHINGS

E26.1 Description

E26.1.1 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:

- (a) Supply and Installation of In-ground Benches
- (b) Supply and Installation of Pedra Benches on Raised Concrete Planter
- (c) Supply and Installation of Splash Pads

E26.1.2 Submit sample of Treated sample of wood used for Pedra Bench seats for Contract Administrator's approval. Deliver samples prepaid to Contract Administrator's business address and Notify Contract Administrator in writing, at time of submission of deviations in samples from requirements of Contract Documents

E26.1.3 The Contractor shall be responsible for the supply, safe storage and handling of all miscellaneous metal materials as set forth in this Specification.

E26.1.4 Metal Work performed under this specification shall cover supply, fabrication, galvanizing, transportation, handling and installation of miscellaneous metal, including all miscellaneous metal elements and incidental component/fasteners, as specified herein.

E26.2 Samples

E26.2.1 Submit Full size sample of Treated sample of Wood used for bench seat for Contract Administrator's approval. Deliver samples prepaid to Contract Administrator's business address and Notify Contract Administrator in writing, at time of submission of deviations in samples from requirements of Contract Documents

E26.3 Materials

E26.3.1 All materials supplied under this specification shall be of a type approved by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.

E26.3.2 In-ground Benches shall be "Balustrade Bench – Backed with Arms – 72" Length" in bark coloured polysite, or substitute approved in accordance with B6.

- (a) Contact for Benches:

Lee Day
Area Representative
Landscape Forms Inc.

Telephone No. 416-968-6655
Facsimile No. 416-968-1944

E26.3.3 Pedra Benches on Raised Concrete Planter

- (a) Shop Drawings
 - (i) Shop drawings are required for custom built benches.
 - (ii) Drawings showing all sizes and dimensions, position and spacing of reinforcing, openings, connection details, layout plan, finishes, all inserts, and all other relevant information showing immediate adjacent materials for proper coordination shall be submitted to the Contract Administrator for review prior to fabrication. Five copies of all shall be provided.
 - (iii) Contractor to submit shop drawings for review and approval prior to any fabrication.

- (b) Pedra Benches
 - (i) The Minimum width of laminations of Pedra for wood bench seating to be 20mm.
 - (ii) Adhesive to be exterior grade 100% waterproof glue.
 - (iii) Finish to be 3-coat system of Sikkens Cetol 1 translucent basecoat and Cetol 23 Plus topcoat. Sample of finish to be provided to Contract Administrator for approval prior to completion of bench finishes.
- (c) Metal Work
 - (i) Metal for bench supports to be as dimensioned on the drawings. All metal to be galvanized, sanded and powder coated. Colour to be black.
 - (ii) Standard angles and plates, unless otherwise specified, all steel for new members shall conform to the requirements of CSA Standard CAN/CSA-G40.21-M87, Grade 300W.
 - (iii) Welding consumables for all processes shall be certified by the manufacturer as complying with the requirements of the following specifications:
 - (iv) Manual, shielded metal arc-welding (SMAW):
 - (v) All electrodes for manual, shielded metal arc welding shall conform to CSA Standard CSA W48.1-M1991 classification number E7018 for single pass tack welds and CSA W48.3-M1982, classification numbers E8016-B1, E8016-C3, E8018-B1 or E8018-C3 for final welds.
 - (vi) Hardware: All bolts, nuts, washers, inserts, etc., as required for a complete installation shall be stainless steel, Type 316 unless noted otherwise.
 - (vii) Equipment: All equipment shall be of a type approved by the Contract Administrator and shall be kept in good working order
- (d) Grout
 - (i) Grout shall be nonmetallic, nonshrink, Sternson M-Bed Standard Grout, or equal as accepted by the Contract Administrator.

E26.3.4 Concrete Splash Pads

- (a) 51" Splash Pads shall be Barkman Concrete 51" Natural Splash Pad, Item #45-41001, or substitute approved in accordance with B6.
- (b) Mounting Brackets for 51" Splash Pads shall be Barkman Concrete Mounting Bracket, Item #45-41005, or substitute approved in accordance with B6.
- (c) 96" Splash Pad shall be Barkman Concrete 96" Natural Splash Pad, Item #45-41008, or substitute approved in accordance with B6.
- (d) Contact for Splash Pads and Mounting Brackets:

Wayne Wiebe
Barkman Concrete
909 Gateway Road
Winnipeg. MB R2K 3L1

Telephone No. (204) 667-3310
Facsimile No. (204) 663-4854

E26.4 Construction Methods

- E26.4.1 All Work is to be located and installed in accordance with the drawings using approved non-rusting, vandal resistant fasteners to ensure solid, durable, finished Work suitable for the purpose intended. Fasteners and assembly hardware shall be incidental to the Work.
- E26.4.2 All furnishings and fixtures to be installed plumb and true to correct elevations and location, as directed the Contract Administrator. The Contractor shall confirm proposed locations of all Site furnishings with Contract Administrator prior to installation.

- E26.4.3 All furnishings and fixtures to be carefully handled so that no parts will be bent, broken or otherwise damaged. Hammering, which will injure or distort fixture, is prohibited.
- E26.4.4 In-ground Benches
- (a) In-ground benches shall be installed as per manufacturer's specifications and shall be set plumb and level.
 - (b) Installation of Benches to be coordinated with the installation of concrete pavers on concrete base.
- E26.4.5 Pedra benches on Raised Concrete Planter
- (a) Pedra benches on Raised Concrete Planter shall be installed as per the drawings, and shall be set plumb and level.
 - (b) Galvanized washers and/or neoprene spacers to be used as required to set benches level along their length.
 - (c) Except as otherwise specified herein, steelwork should be fabricated in accordance with the latest A.W.S. Specification D1.A and subsequent revisions. Fabrication shall be in accordance with the latest AASHTO specification and all subsequent revisions.
 - (d) No fabrication or welding of steelwork shall commence until permission to do so has been received from the Contract Administrator.
 - (e) The repair of any members damaged during fabrication shall be approved by the Contract Administrator.
 - (f) Shipping: Structural members shall be loaded in such a manner that they can be transported and unloaded at their destination without being excessively stressed, deformed or otherwise damaged.
 - (g) Hot-Dip Galvanizing: All items under this specification, except stainless steel fasteners shall be hot-dip galvanized. Hot-dip galvanizing of complete items shall be done after fabrication in accordance with CSA Standard G164-M1981 to a retention of 600 gm/m² unless noted otherwise. All metal surfaces to be galvanized shall be thoroughly cleaned of rust, rust scale, mill scale, dirt and other contaminants by commercial sand, grit or shot blasting and/or pickling prior to galvanizing. Heavy deposits of oil and grease shall be removed with solvents prior to blasting or pickling.
 - (h) Handling and Storage of Materials: Material to be stored shall be placed on skids above the ground. It shall be kept clean and properly drained. Long members shall be supported on skids placed near enough to prevent injury from deflection.
 - (i) Welding to Galvanized Metal: All Galvalloy repairs shall be made flush with adjacent metal.
 - (j) Drill and grout in 4 – M10 Stainless Steel bolts in concrete base in pattern shown to a depth of 100mm.
 - (k) Pedra bench anchor plates to be set over exposed anchor bolts and secured with stainless steel nuts.
- E26.4.6 Splash Pads and Mounting Brackets
- (a) Install Barkman Concrete 96" Natural Splash Pad as per manufacturer's specifications.
 - (b) Install Barkman Concrete Mounting Bracket as per manufacturer's specifications
 - (c) Barkman Concrete 51" Natural Splash Pad shall be saw-cut to fit within the planting bed as shown on drawings and installed in conjunction with Mounting Brackets as per manufacturer's specifications.
- E26.5 Testing
- (a) All materials, welding procedures, shop drawings and steel Work fabrication will be inspected by the Contract Administrator to ascertain compliance with the Specifications and Drawings.

- (b) All welds will be visually inspected.
- (c) The Contract Administrator shall have access to all the fabricator's normal quality control records for this Contract.
- (d) Weld inspection will be carried out in accordance with the requirements of A.W.S. D1.1.
- (e) Welds that are found by any of the inspection methods to be inadequate and unsatisfactory shall be repaired in accordance with A.W.S. D1.1 and then re-tested. The cost of the repairs, and of the tests that reveal inadequate and unsatisfactory welds shall be paid for by the Contractor.
- (f) No repair shall be made until agreed to by the Contract Administrator.

E26.6 Method of Measurement and Basis of Payment

E26.6.1 Method of Measurement shall be as follows:

- (a) In-ground Benches will be measured on a per unit basis. The total unit to be paid for shall be the total number of units that are installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.
- (b) Pedra Benches on Raised Concrete Planter shall be measured on a lump sum basis. The units to be paid for shall be the total number of units that are installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator
- (c) Splash Pads and Mounting Brackets shall be measured on a lump sum basis. The units to be paid for shall be the total number of units that are installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator

E26.6.2 Basis of Payment shall be as follows:

- (a) In-ground Benches will be paid for at the Contract Unit Prices for Item 13): "Benches" on Form B: Prices and measured as specified herein. This price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.
- (b) Pedra Benches on Raised Concrete Planter will be paid for at the Contract Unit Prices for Item 8): "Pedra Benches on Raised Concrete Planter" on Form B: Prices and measured as specified herein. This price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.
- (c) Splash Pads and Mounting Brackets will be paid for at the Contract Unit Prices for Item 14): "2 – 51" Splash Pads with Mounting Brackets and 1 – 96" Splash Pad" on Form B: Prices and measured as specified herein. This price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E27. PLANTING BED PREPARATION AND MULCH

E27.1 Description

- E27.1.1 The Work to be done by the Contractor under this Specification shall cover planting bed preparation, include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and herein specified.

E27.2 Materials

Planting Soil

- E27.2.1 Planting Soil shall consist of black top soil, a fertile friable natural loam containing by volume not less than 4% and no more than 25% of organic matter for clay loams, and not less than 2% and no more than 25% for sandy loams, with an acidity value ranging from pH 6.0 to 8.0 and capable of sustaining vigorous plant growth. Topsoil is to be free of any mixture of subsoil, clay lumps and free of stones and other extraneous matter. It is not to contain couch or crab grass rhizomes.

Mulch

- E27.2.2 Mulch shall be locally available clean bark or wood chip mulch free of leaves, branches and other extraneous matter. The recommended mulch shall consist of chips not less than 15mm not larger than 75mm in size and not more than 20mm thick.

Water

- E27.2.3 Water shall be potable and free of minerals which may be detrimental to plant growth.

Fertilizer

- E27.2.4 Fertilizer shall be complete synthetic slow release fertilizer with maximum 35% water-soluble nitrogen.

E27.3 Construction Methods

General

- E27.3.1 Contractor shall visit the Site and verify all data and dimensions and report any errors, omissions or discrepancies to the Contract Administrator prior to any installation.

Planting Bed Preparation

- E27.3.2 Contractor shall co-ordinate Site excavation Works with landscaping to ensure minimal additional excavation for shrub beds. All remaining areas to be excavated shall be to the shape shown on the Drawings. Planting Beds shall be excavated with vertical sides and material removed to a minimum depth of 300mm in areas as shown on Drawings.
- E27.3.3 Upon excavation of the planting bed, the excavation shall be backfilled with a topsoil mixture to a depth to permit adequate installation and stabilization of the plant material. Topsoil shall be placed in accordance with City of Winnipeg Standard Construction Specification CW 3540-R5 to a 300mm depth.
- E27.3.4 All areas and locations provided for planting shall be staked according to layout shown on the Drawings. Excavation shall not proceed until the layout has been inspected and approved by the Contract Administrator. Excavation shall not be undertaken until all underground utilities have been located and protected.

Supply and Installation of Mulch

- E27.3.5 Contractor to supply and install bark mulch in planting bed and boulder riprap area. Mulch supplied shall cover entire planting area to a consistent depth of 100mm. Also refer to Specification Section E25: Boulder Rip Rap.

E27.4 Method of Measurement

- E27.4.1 Planting Bed Preparation shall be measured on a volume basis. The area to be paid for shall be the total number of cubic meters of Shrub Bed Preparation, acceptably constructed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.
- E27.4.2 Mulch shall be measured on a volume basis. The area to be paid for shall be the total number of cubic meters of Shrub Bed Preparation, acceptably constructed in accordance

with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.

E27.5 Basis of Payment

E27.5.1 Planting Bed Preparation will be paid for at the Contract Unit Prices per cubic meter for Item 16): "Planting Bed Preparation" on Form B: Prices and measured as specified herein. This price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E27.5.2 Bark Mulch will be paid for at the Contract Unit Prices per cubic meter for Item 20): "Bark Mulch (100mm depth)" on Form B: Prices and measured as specified herein. This price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E28. TREES, SHRUBS AND PERENNIALS PLANTING

E28.1 Description

E28.1.1 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:

- (a) Supply and Installation of trees.
- (b) Supply and Installation of shrubs and perennials.

E28.1.2 Reference

- (a) Install trees, shrubs and perennials work in accordance with the Canadian Standards for Nursery Stock Current Edition, published by the Canadian Nursery Trades Association, except where specified otherwise.

E28.1.3 Source Quality Control

- (a) All plant material shall be randomly inspected at the source upon request of the Contract Administrator.
- (b) Trees are to be grown in nurseries under proper cultural practices as recommended by the Canadian Nursery Trades Association.
- (c) Only those trees that have been grown for at least the four (4) previous years in local Manitoba nurseries located in an Agriculture Canada Plant Hardiness Zone designation of 2(a or b) or 3(a or b) and within a 250 kilometre radius of Winnipeg, will be accepted. Trees that have grown in plant hardiness zones 1 and 4 or greater will be rejected.

E28.1.4 Maintenance

- (a) The Contractor shall be responsible for the maintenance of the trees for a period of one (1) year from the date of Substantial Performance. Any areas planted after September 15th, the maintenance period will commence on May 15th of the following year or such date as mutually agreed upon by all parties.
- (b) The Contractor shall be responsible for the maintenance of the shrubs and perennials for a period of one (1) year from the date of Substantial Performance. Any areas planted after September 15th, the maintenance period will commence on May 15th of the following year or such date as mutually agreed upon by all parties.
- (c) Water to ensure soil moisture conditions for optimum growth and health of plant material. Ensure watering techniques do not cause erosion.
- (d) Reform damaged watering saucers.

- (e) Remove weeds bi-monthly.
- (f) Replace or re-spread damaged, missing or disturbed mulch.
- (g) For non-mulched areas, cultivate monthly to keep top layer of soil friable.
- (h) 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.
- (i) Apply fertilizer as directed by manufacturer's specifications.
- (j) Remove dead, broken or hazardous branches from plant material.
- (k) Keep trunk protection and tree supports in proper repair and adjustment.
- (l) Remove trunk protection, tree supports and level watering saucers at end of warranty period.
- (m) Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.
- (n) Submit monthly written reports to Contract Administrator identifying:
 - (i) Maintenance work carried out.
 - (ii) Development and condition of plant material.
 - (iii) Preventative or corrective measures required which are outside Contractor's responsibility.

E28.1.5 Warranty

- (a) The Contractor shall, at his/her expense, warrant the Work against any and all defects or deficiencies resulting from insect infestation, disease and mechanical damage due to improper handling, installation or maintenance, for a period of two (2) years for trees and one (1) year for shrubs and perennials from the date of the Total Performance. Nursery stock damaged by vandalism or reasons beyond the control of the Contractor shall be replaced by the client.
- (b) End-of-Warranty inspection will be conducted by the Contract Administrator.
- (c) The Contract Administrator reserves the right to request material replacement or extend the Contractor's Maintenance responsibilities for an additional one (1) year if, at the end of the Warranty Period, leaf development and growth are not sufficient to ensure future survival of the plant material.

E28.1.6 Replacements

- (a) During the Maintenance Period, the Contractor shall remove from Site any plant material that has died or failed to grow satisfactorily as determined by the Contract Administrator and replace as per Specifications within a maximum ten (10) day period from notification.
- (b) Defective plants shall be replaced within three (3) days of notification to the Contractor.
- (c) The Contractor shall extend Maintenance and Warranty on replacement tree for a period equal to the original Maintenance and Warranty Periods.
- (d) The Contractor shall continue such replacement, Maintenance and Warranty until tree is acceptable.

E28.2 Materials

E28.2.1 Miscellaneous Materials

- (a) Water shall be potable and free of minerals which may be detrimental to plant growth.
- (b) Stakes shall be metal T-Bar, steel, 40x40x5x2440mm.
- (c) Guying Wire shall be 3mm diameter multi-strand galvanized steel cable.
- (d) Guying Collar shall be plastic tube, 13mm diameter, nylon reinforced.

- (e) Trunk Protection shall be plastic perforated spiraled strip.
- (f) Fertilizer shall be a slow release formulation of low nitrogen and high phosphorus e.g. 10-50-12. Apply quantities at rates stated by product manufacturer.
- (g) Planting Soil shall be as per specification E27 - Planting Bed Preparation.
- (h) Root Ball Burlap shall be 150 g Hessian burlap, biodegradable.
- (i) Wire Baskets shall be horticultural accepted product designed to carry the weight and to contain a burlap-covered root ball. Minimum diameter basket size is to conform to the same minimum diameter of the tree root ball for the respective minimum tree caliper sizes.

E28.2.2 Plant Material

- (a) 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.
- (b) Trees are to be characteristically developed for their species and structurally sound, well branched, healthy and vigorous and densely foliated when in leaf. The tree is to have a healthy, well developed, fibrous root system which may be verified through a testing procedure that destructively samples one or more randomly selected root balls.
- (c) Trees are to have been root pruned regularly, but not later than one growing season prior to arrival on Site. The Contractor may be required to furnish documentation to the client on their root-pruning program. Trees in excess of 75mm caliper 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.
- (d) All parts of the trees, especially the lower branches, are to be moist and show live, green cambium tissue when cut.
- (e) Trees are to have only one, sturdy, reasonably straight and vertical trunk, and a well balanced crown with fully developed leader.
- (f) Trees are to be free of disease, insect infestation, rodent damage, sun scald, frost cracks, abrasions, unhealed scars, scars exceeding 5cm in diameter, major forks or crooks in the trunk, broken branches, or angled leaders. Trees having the above defects will not be accepted by the Contract Administrator.
- (g) Trees having a leader which has developed at a sharp angle to the trunk as a result of pruning or trunk damage will not be accepted.
- (h) Trees exhibiting suppressed, weakly developed branches due to competition from other closely spaced trees in the nursery will not be accepted. Trees exhibiting dead branches will not be accepted.
- (i) Any tree that has come out of dormant stage and is too far advanced will not be accepted unless prior approval obtained. Approval is required for any tree which has been held in cold storage.
- (j) 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 caliper, 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.
- (k) Tree spade dug trees are to be dug with mechanized digging equipment with hydraulic spade. Lift root ball from hole, place in wire basket designed for purpose and lined with burlap. Tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.
- (l) Use of collected or native trees is not permitted.

E28.2.3 Tree Quantity and Size

- (a) Trees are to be planted at the quantities and caliper listed on the Plant Lists which are shown on the drawings. Any variation from the specified quantity is to be clearly identified on the Schedule of Prices. Any variations to species, size or caliper of specified trees will require a request for approval from the Contract Administrator.
- (b) Any changes in planting locations will be determined on-site by the Contract Administrator.
- (c) The Contractor shall supply trees as indicated in the Schedule of Prices and PLANT LISTS.
- (d) Trees are to conform to the measurements specified in the on drawing PLANT LISTS, except that trees larger than specified may be used if approved by the Contract Administrator.
- (e) Trees are to be measured when the branches are in their normal position. Height dimensions specified are to refer to the main body of the tree and not from branch tip to root base. Where trees have been measured by caliper or diameter, reference is to be made to the diameter of the trunk measured 15cm above the ground as the tree stands in the nursery prior to lifting. Caliper of tree shall be appropriately designed on a permanently fixed tag on one of the branches.

E28.2.4 Shipment and Pre-Planting Care

- (a) Coordinate shipping of trees and excavation of holes to ensure minimum time lapse between digging and planting.
- (b) Tie branches of trees securely, and protect trees against abrasion, exposure and extreme temperature change during transit. Avoid binding of trees with rope or wire which would damage bark, break branches or destroy natural shape of tree. Give full support to root ball of trees during lifting.
- (c) Cover tree foliage with tarpaulin, and protect bare roots by means of dampened straw, peat moss, saw dust or other acceptable material to prevent loss of moisture during transit and storage.
- (d) Remove broken and damaged roots with sharp pruning shears. Make clean cuts, and cover cuts over 10mm diameter with a tree wound dressing.
- (e) Keep roots moist and protected from sun and wind. Heel-in trees which cannot be planted immediately in shaded areas and water well.

E28.3 Construction Methods

E28.3.1 Workmanship

- (a) Location of trees will be staked out or painted on Site by the Contractor. Locations shall be approved by the Contract Administrator prior to installation.
- (b) Coordinate operations. Keep Site clean and planting holes drained. Immediately remove soil or debris spilled onto street pavement, grass or sidewalk.

E28.3.2 Planting Time

- (a) Plant deciduous trees during dormant period before buds have broken. Trees noted for spring planting only, must be planted in dormant period.
- (b) Plant only under conditions that are conducive to health and physical conditions of trees.
- (c) Provide planting schedule to Contract Administrator. Extending planting operations over long period using limited crew will not be accepted.
- (d) The Contractor must obtain all above and below ground clearances from all the utilities as well as the appropriate District Operations Branch in a timely manner so as not to jeopardize the schedule of the complete tree planting Contract.

E28.3.3 Excavation

- (a) Refer to specification E27 - Planting Bed Preparation for preparation of planting beds.
- (b) Excavate planting pits as indicated by stakes or paint marks.
- (c) Protect bottom of excavations against freezing.
- (d) Remove water which enters excavations prior to planting. Ensure source of water is not ground water and notify Contract Administrator.

E28.3.4 Installation

- (a) Planting shall be done during periods of suitable weather conditions and in accordance with locally accepted practice.
- (b) Trees are to be planted within forty eight (48) hours of excavation from the nursery.
- (c) No tree pit is to be left open at the end of the Contractor's Work Day. Planting program is to be planned to ensure that all approved trees delivered to the Site at designated planting locations are installed and thoroughly watered the same day as delivery.
- (d) With balled and burlapped root balls and root balls in wire baskets, burlap shall be loosened and cut away from the top 1/3 without disturbing root ball. Wire shall be cut away and removed from the top 1/3 of the root ball. Burlap or rope shall not be pulled from under root ball. Non-biodegradable wrapping shall be removed.
- (e) After inserting the tree and tamping the root system with topsoil in layer of 150mm, water shall be poured in until the pit is thoroughly soaked. Filling of the hole shall then be completed and the fill-in soil shall be packed firmly around the roots, leaving a concave surface for convenient watering. After filling, the planting shall be watered at frequent intervals.
- (f) 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.
- (g) All nursery stock shall be set plumb in the centre of pits and at levels as shown on the planting details after settlement has taken place.
- (h) Nursery stock shall be faced to give the best appearance or relationship to adjacent structure and to the approval of the The City of his representative. Trees shall be placed equal to depth they were originally growing in nursery.

E28.3.5 Fertilizing

- (a) When planting is completed, give surface of planting saucer dressing of fertilizer meeting the requirements of Specification. Mix fertilizer thoroughly with top layer of planting soil and water in well.

E28.3.6 Trunk Protection

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

E28.3.7 Pruning

- (a) The Contractor shall provide a licensed Manitoba Certified Arborist for each work crew or work site.
- (b) Employ clean sharp tools and make cuts flush with branch collars. Remove dead and injured branches.

E28.3.8 Watering

- (a) Trees are to be watered during the planting procedure as described previously, and once a week thereafter, or more frequently if required, during the growing season.

- (b) A complete record is to be kept of each series of waterings for all planted trees noting:
1) location, and 2) date of watering. This record shall be sent bi-weekly to
Scatliff+Miller+Murray Inc. - Fax: (204) 927-3443.
- (c) Apply 40 litres of water per 25mm caliper 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.

E28.4 Method of Measurement

- E28.4.1 Installation of trees, shrubs and perennials shall be measured on a per unit basis. The
amount to be paid for shall be the total number of trees, shrubs and perennials supplied
and installed in accordance with this Specification and the Construction Drawings, and as
acceptable to the Contract Administrator.

E28.5 Basis of Payment

- E28.5.1 Payment for Installation of trees, shrubs and perennials shall be paid for at the Contract
Unit Prices for the "Items of Work" listed below. This price shall be payment in full for
supplying all labour, equipment and materials, and performing all operations herein
described and all other items incidental to the Work included in this Specification and
accepted by the Contract Administrator.

Item of Work:

- 17) Deciduous Tree (c/w warranty)
- 18) Shrubs and Perennials (c/w warranty)
- 19) One year Plant Maintenance

E29. TOPSOIL AND SOD

E29.1 Description

- E29.1.1 The specification shall amend and supplement City of Winnipeg specification CW 3510-R9
and CW 3540-R5.
- E29.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing
of all superintendence, overhead, labour, materials, equipment, tools, supplies and all
other things necessary for and incidental to the satisfactory performance and completion of
all Work as shown on the Drawings and as hereinafter specified, including, but not
necessarily confined to the following:
 - (a) Supply and Installation of imported topsoil, to a minimum 75mm compacted thickness,
for areas to be sodded.
 - (b) Supply and Installation of mineral sod as required.

E29.2 Materials and Construction Methods

- E29.2.1 The Contractor shall install topsoil and sod in any existing play areas where material is
removed and not re-established as play area, or where play surfacing is not proposed.
- E29.2.2 The Contractor shall install topsoil and sod around the perimeter of the newly constructed
area to clean up turf disturbed by the Work. Sod and topsoil shall be installed as shown on
Drawings a distance of a maximum of 1000mm from the concrete walkway as per Detail
Drawings.
- E29.2.3 The Contractor shall install topsoil and sod in any existing pathway area where material is
removed and not re-established as pathway.
- E29.2.4 Damaged areas: Restoration of damaged areas other than as outlined above shall be
incidental to the Work. No separate payment shall be made. Restoration shall be achieved
using sod and topsoil unless otherwise directed by the Contract Administrator.

E29.3 Method of Measurement

- E29.3.1 Supply, placement and maintenance of topsoil and sod will be measured on an area basis. The area to be paid for shall be the total number of square meters placed and maintained in accordance with this Specification and accepted by the Contract Administrator.
- E29.3.2 Quantities of units are based on the proposed design drawings as supplied by the Contract Administrator.

E29.4 Basis of Payment

- E29.4.1 Supply, placement and maintenance of topsoil and sod will be paid for at the Contract Unit Prices per square meter for Item 21): "Sod, as required, includes 75mm topsoil" on Form B: Price and measured as specified herein. This price shall be for full payment for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E30. SITE CLEAN UP

- E30.1 The Contractor shall upon the completion of Work each day, load and dispose of all excess asphalt cuttings, spoiled concrete, reinforcing steel, granular and other material associated with the Works from the Work Site. The Contractor shall secure or remove all of his machinery and equipment at the end of each day from the immediate work site. The Contractor will not be permitted to store machinery, equipment, or materials on public roads overnight. Any costs in connection with the above mentioned Works are incidental.
- E30.2 Unless otherwise specified the Contractor shall restore all areas which have been disturbed by his operations to as good as or better than original condition including removal of all construction debris, repair all vegetation, sod, concrete pavement, concrete curbs, concrete sidewalk and asphalt paving to remain etc. to the satisfaction of the Contract Administrator. Any costs incurred in connection with the above mentioned Work are incidental to unit prices bid under this contract.
- E30.3 Total Performance of the Work shall not be attained until the Contractor has cleaned up the Site and has removed all tools, equipment, waste, debris and surplus foundation earth to the satisfaction of the Contract Administrator. Unless otherwise specified, the Contractor shall restore all areas of the Site beyond the established limit of Work, which have been disturbed by the Contractor's operations to as good as or better than the original condition to the satisfaction of the Contract Administrator. The Contractor shall pay all costs associated with this Work.
- E30.4 Sod and Topsoil (repair to damaged areas). The Contractor shall install mineral sod and a minimum 75mm compacted thickness of topsoil, as required, and in accordance with CW 3510-R9 and CW 3540-R5.