



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 400-2010**

**DOWNTOWN TRANSCONA STREETScape SITE ELEMENTS**

## TABLE OF CONTENTS

### PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	4
Form G1: Bid Bond and Agreement to Bond	6
Form G2: Irrevocable Standby Letter of Credit and Undertaking	8

### 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. Bid Security	5
B12. Opening of Bids and Release of Information	6
B13. Irrevocable Bid	6
B14. Withdrawal of Bids	6
B15. Evaluation of Bids	7
B16. Award of Contract	7

### PART C - GENERAL CONDITIONS

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

### PART D - SUPPLEMENTAL CONDITIONS

#### General

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

#### Submissions

D7. Authority to Carry on Business	3
D8. Safe Work Plan	3
D9. Insurance	3
D10. Performance Security	3
D11. Subcontractor List	4
D12. Detailed Work Schedule	4

#### Schedule of Work

D13. Commencement	4
D14. Working Days	4
D15. Substantial Performance	5
D16. Total Performance	5
D17. Liquidated Damages	5
D18. Scheduled Maintenance	6

#### Control of Work

D19. Job Meetings	6
D20. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	6

#### Measurement and Payment

D21. Payment	6
--------------	---

**Warranty**

D22. Warranty	6
Form H1: Performance Bond	8
Form H2: Irrevocable Standby Letter of Credit	10
Form J: Subcontractor List	12
Form L: Detailed Work Schedule	13

**PART E - SPECIFICATIONS**

**General**

E1. Applicable Specifications and Drawings	1
--	---

**General Requirements**

E2. Site Condition	1
E3. Layout of Works	1
E4. Protection Of The Survey Infrastructure	2
E5. Pedestrian Safety And Traffic Management	2
E6. Construction facilities and staging	2
E7. All-Weather Dump Site	3
E8. Surface Restorations	3
E9. Temporary Relocation of Affected Structures	3
E10. Truck Weight Limits	3
E11. Access	3
E12. Existing Underground Services	3
E13. Exposing Existing Underground Services and Utilities	4
E14. Existing Curb Stop Boxes	4
E15. Matching Existing Grades	4
E16. Damage to Existing Structures, Trees and Property	4
E17. Permits, Notices, Licences, Certifications, Laws, and Rules	5
E18. Site Enclosures	5
E19. Site Restoration	5
E20. Removals	6
E21. Supply and Installation of Steel Archway	7
E22. Powder Coating	15
E23. Infill Framing	17
E24. Exterior Insulated Finish System	19
E25. Concrete and Brick Masonry	23
E26. Light and Flag Poles	28
E27. Supply and Installation of Breakaway Bases	30
E28. Flags	31
E29. Extended Maintenance	32
E30. Signage	33
E31. Tree Guards	36
E32. Concrete tree covers	37
E33. Wood Fencing	38
E34. Line Painting	39
E35. Electrical Works	41

## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 DOWNTOWN TRANSCONA STREETSCAPE SITE ELEMENTS

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, June 10, 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 D3.1.

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

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

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

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

### **B5. ADDENDA**

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

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

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

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

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

## **B6. SUBSTITUTES**

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
  - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
  - (c) identify any anticipated cost or time savings that may be associated with the substitute;
  - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
  - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.
- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.6 deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B15.1(a).

## **B7. BID COMPONENTS**

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

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

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

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

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

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

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

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

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

B7.8 Bids shall be submitted to:  
The City of Winnipeg  
Corporate Finance Department  
Materials Management Division  
185 King Street, Main Floor  
Winnipeg MB R3B 1J1

## **B8. BID**

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

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

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

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

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

B8.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;
- (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

## **B9. PRICES**

B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.1.1 Notwithstanding C12.2.3(c), prices on Form B: Prices shall not include the Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable.

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

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

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

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

## **B11. BID SECURITY**

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

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

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

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

B11.1.3 The Bidder shall sign the Bid Bond.

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

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

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

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



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

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

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

B12.1.1 Bidders or their representatives may attend.

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

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

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

## **B13. IRREVOCABLE BID**

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

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

## **B14. WITHDRAWAL OF BIDS**

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

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

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

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

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

B14.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B13.2 shall be liable for such damages as are

imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

## **B15. EVALUATION OF BIDS**

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

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

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

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

B15.4 Further to B15.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices 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 progressively deducting item(s) 1 and 18 in the order listed, until a Total Bid Price within the budgetary provision is achieved.

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

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

## **B16. AWARD OF CONTRACT**

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

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

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

- (a) the prices exceed the available City funds for the Work;
- (b) the prices are materially in excess of the prices received for similar work in the past;

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

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

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

## **PART C - GENERAL CONDITIONS**

### **C0. GENERAL CONDITIONS**

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at [http://www.winnipeg.ca/matmgt/gen\\_cond.stm](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 selected streetscape elements; supply and installation of new streetscape elements, refurbishment and reinstallation of selected streetscape elements; electrical work and parking lot line painting.

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

- (a) Remove Existing 4-way banner poles (including concrete foundation and surface repair)
- (b) Removal of existing banner poles
- (c) Remove and dispose of existing parking lot fence
- (d) Supply and install ornamental archway
  - (i) Supply and install steel archway (including lighting channel)
  - (ii) Supply and install Steel Stud Infill Framing (including plywood sheathing, tyvek and flashing)
  - (iii) Acrylic Stucco (including Scratch coat)
  - (iv) Masonry Cladding
  - (v) Precast concrete cap stone
  - (vi) Archway signage on 3mm aluminum backing
  - (vii) Electrical work - Micro LED Light Cable (including channel track), wiring and connections
- (e) Supply and install galvanized flag pole c/w 2 L.E.D. light channels
- (f) Supply and install galvanized flag pole c/w 2 L.E.D. light channels and Air Breeze wind turbine
- (g) Supply and install galvanized light pole c/w banner bracket, 2 hanging basket brackets, 2 luminaries with solar panel, L.E.D. lighting channel with electrical connection and holiday light mount
- (h) Supply and Install Flags
- (i) 2 year maintenance on light/banner poles
- (j) Supply and Install street sign toppers
- (k) Supply and Install Tree Guard
- (l) Supply and install precast concrete tree cover
- (m) Supply and Install wood fence
- (n) Parking lot line painting
- (o) Electrical work - supply and install conduit, wiring, panel and connections

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

D3.1 The Contract Administrator is McGowan Russell Group, represented by:  
Aaron Hirota, MALA, CSLA  
Landscape Architect

200-120 Fort Street  
Winnipeg, MB, R3C 2C7

Telephone No. (204) 956-0396  
Facsimile No. (204) 956-1265

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

**D4. CONTRACTOR'S SUPERVISOR**

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

**D5. NOTICES**

- D5.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3, D5.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1.
- D5.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following 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

- D5.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:

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

**D6. FURNISHING OF DOCUMENTS**

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

## **SUBMISSIONS**

### **D7. AUTHORITY TO CARRY ON BUSINESS**

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

### **D8. SAFE WORK PLAN**

D8.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D8.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/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;
- (c) all risks course of construction insurance in the amount of one hundred percent (100%) of the total Contract Price, written in the name of the Contractor and The City of Winnipeg, at all times during the performance of the Work and until the date of Total Performance.

### **D10. PERFORMANCE SECURITY**

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

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

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

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

#### **D11. SUBCONTRACTOR LIST**

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

#### **D12. DETAILED WORK SCHEDULE**

D12.1 The Contractor shall provide the Contract Administrator with a detailed work schedule (Form L: Detailed Work Schedule) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D12.2 All dates and time periods in the detailed work schedule shall be consistent with Form F: Work Schedule provided in the Contractor's Bid except that:

- (a) if the actual date that the letter of intent is issued is later than the assumed date indicated in B11, the Contractor may adjust fixed dates proposed on Form F: Work Schedule, by not more than the difference between the aforementioned assumed and actual dates;

#### **SCHEDULE OF WORK**

#### **D13. COMMENCEMENT**

D13.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

D13.2 The Contractor shall not commence any Work on the Site until:

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

D13.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D13.3.1 If the actual date of award is later than the intended date, the dates specified for Commencement, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

#### **D14. WORKING DAYS**

D14.1 Further to C1.1(gg), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another



type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.

- D14.2 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.
- D14.3 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.
- D14.4 The Contract Administrator will furnish the Contractor with a daily record for each major type of work showing various information concerning the equipment, the time it worked, could have worked and Working Days charged. This report is to be signed each day by an authorized representative of the Contractor.

#### **D15. SUBSTANTIAL PERFORMANCE**

- D15.1 The Contractor shall achieve Substantial Performance within forty five (45) consecutive Working Days of the commencement of the Work as specified in D13.
- D15.2 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.
- D15.3 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.

#### **D16. TOTAL PERFORMANCE**

- D16.1 The Contractor shall achieve Total Performance within fifty (50) consecutive Working Days of the commencement of the Work as specified in D13.
- D16.2 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.
- D16.3 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.

#### **D17. LIQUIDATED DAMAGES**

- D17.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City five hundred dollars (\$500) per Working Day for each and every Working Day following the day fixed herein for Substantial Performance during which such failure continues.
- D17.2 The amount specified for liquidated damages in D17.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.
- D17.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

## **D18. SCHEDULED MAINTENANCE**

- D18.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) 2 year maintenance on light poles as specified in E29;
  - (b) 2 year maintenance on flag poles as specified in E29;
- D18.2 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**

### **D19. JOB MEETINGS**

- D19.1 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.
- D19.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

### **D20. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

- D20.1 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**

### **D21. PAYMENT**

- D21.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

## **WARRANTY**

### **D22. WARRANTY**

- D22.1 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.
- D22.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.
- D22.2 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.

D22.2.1 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. 400-2010

DOWNTOWN TRANSCONA STREETSCAPE SITE ELEMENTS

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

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

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

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

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

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

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

SIGNED AND SEALED  
in the presence of:

\_\_\_\_\_  
(Witness as to Principal if no seal)

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

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

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

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

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

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

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

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 400-2010  
DOWNTOWN TRANSCONA STREETScape SITE ELEMENTS

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

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

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

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

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

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

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

Partial drawings are permitted.

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

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

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

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

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

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

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

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

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

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

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

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





**FORM L: DETAILED WORK SCHEDULE**  
 (See D12)

**DOWNTOWN TRANSCONA STREETScape SITE ELEMENTS**

For each item of Work, indicate the cumulative percentage proposed to be completed by the end of each time period until 100% completion is achieved.						
Items of Work	Time Period in Working Days					
	0	10	20	30	40	50
<b>Removals</b>						
Remove Existing 4-way banner poles (including concrete foundation and surface repair)						
Removal of existing banner poles						
Remove and dispose of existing parking lot fence						
<b>Archway</b>						
Supply and install steel archway						
Supply and Install Infill Framing (including Plywood Sheathing, Tyvek and Flashing)						
Supply and Install Acrylic Stucco (including Scratch coat)						
Masonry Cladding						
Precast concrete cap stone						
Archway signage on 3mm aluminum backing						
Electrical work - Micro LED Light Cable (including channel track), wiring and 2 outlets and connections						
<b>Light Poles / Flag Poles</b>						
Supply and install galvanized flag pole c/w 2 L.E.D. light channels						
Supply and install galvanized flag pole c/w, 2 L.E.D. light channels, and Air Breeze wind turbine						
Supply and install galvanized light pole c/w banner bracket, 2 hanging basket brackets, 2 luminaries with solar panel, L.E.D. lighting channel with electrical connection and holiday light mount						
Supply and Install Flags						
2 year maintenance on light poles						
2 year maintenance on flag poles						
<b>Signage</b>						
Supply and Install street sign toppers						
<b>Site Furniture</b>						

**FORM L: DETAILED WORK SCHEDULE**  
 (See D12)

**DOWNTOWN TRANSCONA STREETScape SITE ELEMENTS**

For each item of Work, indicate the cumulative percentage proposed to be completed by the end of each time period until 100% completion is achieved.						
Items of Work	Time Period in Working Days					
	0	10	20	30	40	50
Supply and Install Tree Guard						
Supply and Install Precast Concrete Tree Cover						
<b>Fencing</b>						
Supply and Install wood fence						
<b>Parking Lot</b>						
Parking lot line painting						

## PART E - SPECIFICATIONS

### GENERAL

#### E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
L1.1	Layout Plan
L1.2	Layout Plan
L1.3	Layout Plan
L2.1	Archway Details
L2.2	Archway Details
L3	Details
S1.1	Archway Structural Details
S1.2	Archway Structural Details
E1.1	Electrical Plan
E1.2	Electrical Plan
E1.3	Electrical Plan

### GENERAL REQUIREMENTS

#### E2. SITE CONDITION

- E2.1 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.
- E2.2 Surface and sub-surface conditions shown on the Drawings and included herein are provided for general information and variations there from shall not affect the terms of the Contract.
- E2.3 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.

#### E3. LAYOUT OF WORKS

- E3.1 The Contractor will Work from layout information provided in the construction drawings and will be responsible to provide a full time experienced survey crew to layout and continuously check the locations and elevations of all components and paving patterns of the Work included in this Contract.
- E3.2 The Contractor must provide all necessary survey equipment in good operating conditions.

- E3.3 The Contractor shall supply all materials (painting, stakes, ribbon, markers, etc) and labour necessary for the accurate location and setting out of the Work.
- E3.4 From time to time the Contract Administrator may have a survey crew on the Site, but they will check the Work done by the Contractor's survey personnel only. The checking of the Work by the City's surveyors will not relieve the Contractor of any responsibility of the correctness of the Work. Should any structure or paving or any part thereof be installed in any location other than that shown on the Drawings, then the error shall be rectified by the Contractor all at his own expense and at the satisfaction of, and in a manner specified by the Contract Administrator.
- E3.5 All costs associated with this item of Work shall be included in the unit prices bid for the supply and installation of the various items in the contract.

#### **E4. PROTECTION OF THE SURVEY INFRASTRUCTURE**

- E4.1 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.
- E4.2 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.
- E4.3 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.
- E4.4 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.
- E4.5 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.

#### **E5. PEDESTRIAN SAFETY AND TRAFFIC MANAGEMENT**

- E5.1 Further to CW 1130-R1, the Contractor shall take such measures as are necessary to ensure safe and convenient pedestrian ingress and egress is maintained to private properties while he is Working near them. Any damage caused by the negligence of the Contractor or his Sub-Contractors to the adjacent Works or properties, shall be promptly repaired by him at his own expense, to the satisfaction of the Contract Administrator.
- E5.2 Ambulance/ Emergency vehicle access must be maintained at all times.

#### **E6. CONSTRUCTION FACILITIES AND STAGING**

- E6.1 The Contractor shall be responsible for providing his own storage area for storage and handling of all his construction operations. The use of public right-of-ways will not be allowed.

**E7. ALL-WEATHER DUMP SITE**

E7.1 The Contractor shall have access to an all-weather dump site throughout the duration of the project. Prior to the start of construction, the Contractor shall provide the Contract Administrator with details in regards to the location of the all-weather dump site.

**E8. SURFACE RESTORATIONS**

E8.1 The Contractor shall temporarily repair any Work commenced and not completed in the 2008 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.

**E9. TEMPORARY RELOCATION OF AFFECTED STRUCTURES**

E9.1 The Contractor shall temporarily relocate any portable structure such as benches, waste receptacles, picnic benches, etc., which will interfere with the construction of the Work and are not identified as items to be relocated. The Contractor Administrator will identify the temporary locations for the portable structures. Following the completion of the applicable Work the Contractor shall replace the structures to the locations designated by the Contract Administrator. These relocations shall be considered incidental to the associated Works and no separate measurement for payment will be made.

**E10. TRUCK WEIGHT LIMITS**

E10.1 The City shall not pay for any portion of Material which results in the vehicle exceeding the maximum gross vehicle weight allowed under *The City of Winnipeg Traffic By-Law*, unless such vehicle is operating under special permit.

**E11. ACCESS**

E11.1 All access is to be on the designated routes through the Site. These routes will be determined at the Pre-Construction Meeting.

E11.2 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.

E11.3 The Contractor's operations shall be limited to the minimum area necessary for undertaking the Work and he shall be responsible for all damage resulting from his Work on private property. The Contractor shall take such measures as are necessary to ensure safe and convenient pedestrian ingress and egress in maintained to private properties while he is working near them. Any damage caused by the negligence of the Contractor or his Sub-Contractors to the adjacent Works or properties, shall be promptly repaired by him at his own expense, to the satisfaction of the Contract Administrator.

E11.4 All necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing trees, shrubs, sod, pavements, streets, roads, boulevards, poles, hydrants, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing facilities and equipment at the Site of the Work. For all damage incurred in the performance of the Work (either directly or indirectly), the Contractor shall either replace and repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to, the Contract Administrator and the cost of which shall be borne entirely by the Contractor.

**E12. EXISTING UNDERGROUND SERVICES**

E12.1 The Contractor's attention is drawn to the existing underground lines or services that may be located in the area of the Work.

- E12.2 The Contractor shall take all necessary precautions when performing the Work to ensure that no damage is done to these existing services.
- E12.3 No responsibility will be assumed by the City for correctness or completeness of the Drawings, when provided, with respect to the existing utilities, pipes or other objects either underground or on the surface, shall not be liable for the incorrectness and inadequacy thereof. It shall be the responsibility of the Contractor to determine the location of all such utilities, pipes and other objects and to make good any damage done to them.
- E12.4 All costs in connection with this item including location of the existing service, repairs to any existing services damaged by the construction operation, etc. shall be included in the unit prices bid for supply and installation of the items included under this Contract.
- E12.5 The Contractor will be required to make his own arrangements in connection with the temporary use of lighting, power, gas, sewer, water or other utilities, and pay all costs in connection therewith.
- E12.6 All necessary permits, fees and other like expenses as well as the cost of temporary connections to existing facilities shall be arranged and paid for by the Contractor.

### **E13. EXPOSING EXISTING UNDERGROUND SERVICES AND UTILITIES**

- E13.1 The exact location and depth of some of the existing underground services and utilities within the project limits are unknown.
- E13.2 Therefore, the Contractor shall supply all labour, equipment and materials required to expose all underground services and/or utilities sufficiently far enough in advance of the proposed Works to permit the Contract Administrator where necessary, to adjust the alignment and grade to avoid existing lines and ducts.
- E13.3 All costs in connection with this item of Work shall be included in the unit price bid for the various bid items.

### **E14. EXISTING CURB STOP BOXES**

- E14.1 During the removal and installation of the concrete pavement, asphalt pathway and unit paving, the Contractor shall take all necessary precautions when Working in the vicinity of any existing curb stop boxes.
- E14.2 All existing curb stop boxes not in use as determined by the Contract Administrator shall be abandoned by removing existing curb stop boxes. All costs associated with the abandoning of curb stop boxes are incidental
- E14.3 Any existing curb boxes requiring final adjustments (horizontal and/or vertical) are incidental.
- E14.4 Any curb stop boxes damaged as a result of the Contractor's operation shall be replaced at his own cost.

### **E15. MATCHING EXISTING GRADES**

- E15.1 Wherever the proposed paving, or sod meets existing pathway/pavement, curb edge, or property line, the Contractor shall construct the proposed element to an acceptable grade, as directed by the Contract Administrator, to ensure that proper drainage and accessibility are maintained.

### **E16. DAMAGE TO EXISTING STRUCTURES, TREES AND PROPERTY**

- E16.1 All necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing trees, shrubs, sod, pavements, streets, roads, boulevards, poles, hydrants, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing

facilities and equipment at the Site of the Work. For all damage incurred in the performance of the Work (either directly or indirectly), the Contractor shall either replace and repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to City of Winnipeg Contract Administrator, and the cost of which shall be borne entirely by the Contractor. The Contractor shall also indemnify and save harmless the City from all claims made directly or indirectly against it in respect to any such damage.

- E16.2 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing park trees within the limits of the construction area:
- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment within 2 metres of trees.
  - (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25x100x2400 wood planks, or suitable protected as approved by the Contract Administrator.
  - (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.
  - (d) Operation of equipment within the drip line of the trees shall be kept to a minimum required to perform the Work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the drip lines of trees. The drip line of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
- E16.3 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his/her designate.
- E16.4 No separate measurement or payment will be made for the protection of trees.

## **E17. PERMITS, NOTICES, LICENCES, CERTIFICATIONS, LAWS, AND RULES**

- E17.1 The Contractor shall give all necessary notices, obtain all necessary permits and pay all fees in order that the Work may be carried out. The Contractor shall submit all plans required by any inspection authority and obtain approval of same before proceeding with the Work, and pay any cost attached to the inspection of such plans.
- E17.2 The Site Development Permits (including lot grading and damage deposits) will be obtained and paid for by the City of Winnipeg Planning, Property and Development Department prior to commencement of construction. A copy of this permit will be provided to the Contractor upon award of Contract.
- E17.3 The Contractor shall comply with all laws, ordinances, rules, and regulations that would relate to the Works.

## **E18. SITE ENCLOSURES**

- E18.1 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.
- E18.2 Site enclosures shall be considered incidental to the Contract Work.

## **E19. SITE RESTORATION**

- E19.1 Total Performance of the Work shall not be attained until the Contractor has cleaned up the Site and has removed all tools, equipment, waste, debris and surplus foundation earth to the

satisfaction of the Contract Administrator. Unless otherwise specified, the Contractor shall restore all areas of the Site beyond the established limit of Work, which have been disturbed by the Contractor's operations to as good as or better than the original condition to the satisfaction of the Contract Administrator. The Contractor shall pay all costs associated with this Work.

## **E20. REMOVALS**

- E20.1 Further to City of Winnipeg Specification CW 3110 and due to the extent and nature of underground services in the street right-of-way, the Contractor shall be permitted to use only backhoe type equipment when excavating sub-grade material.
- E20.2 Further to City of Winnipeg Specifications CW 3230 and CW 3235, the Contractor shall sawcut and remove existing concrete sidewalk, back lane pavement, parking lot pavement as shown on the Drawings and as directed by the Contract Administrator. The removal shall include all existing concrete and base courses where applicable.
- E20.3 Description
- E20.3.1 This Specification shall cover the removal of existing:
- (a) 4 - way banner poles;
  - (b) Banner poles;
  - (c) Parking lot fence,
- E20.3.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.
- E20.4 Equipment
- E20.4.1 All equipment shall be of a type approved by the Contract Administrator and shall be kept in good Working order.
- E20.5 Construction Methods
- E20.5.1 The Contractor shall restrict his activities strictly to within the limits of the Works, unless receiving prior written approval from the Contract Administrator.
- E20.5.2 Remove and dispose of wood fence as shown on the drawings. Fill holes from posts with clean granular base course and compact to 98% SPD.
- E20.5.3 Remove and dispose of 4 -way banner pole as shown on the drawings. The Contractor shall break out concrete base to min 900mm depth. Fill holes with clean earth fill suitable for plant growth compact to 98% SPD, topsoil and repair sod.
- E20.5.4 Valmont West Coast Engineering shall remove the existing banner poles as shown on the drawings for refurbishment. Work must be completed prior to sidewalk renewal work by City of Winnipeg Public Works. The Contractor is responsible to coordinate these removals with City of Winnipeg Public Works. Contact Gary Campbell (Public Works) at 794-4379 and Gary Goertzen (Valmont) at 987-3110.
- E20.5.5 The Contractor shall load and haul all removed material from the Site and dispose of these materials legally at a dump located by the Contractor and approved by the Contract Administrator. Any materials dropped or spilled on any streets during the hauling operations shall be promptly cleaned up at the expense of the Contractor, to the satisfaction of the Contract Administrator.
- E20.5.6 The Contractor shall ensure that upon completion of the removal operations, the Site shall be left free of any hazardous depressions and in a neat condition.



- E20.5.7 If required and at locations directed by the Contract Administrator, the Contractor shall excavate, remove and dispose of unsuitable subgrade material and replace it with compacted granular material in accordance with Specification CW3110.
- E20.5.8 The Contractor shall dispose of all unsuitable and excess materials in accordance with City of Winnipeg Specifications. Disposal is incidental to the unit prices bid.
- E20.6 Method of Measurement
- E20.6.1 The following items will be measured on a per item basis for Work completed in accordance with this Specification as determined by the Contract Administrator:
- (a) Remove Existing 4-way banner poles (including concrete foundation and surface repair)
  - (b) Removal of existing banner poles (by Valmont)
- E20.6.2 The following items will be measured on a per lineal meter basis for Work completed in accordance with this Specification as determined by the Contract Administrator:
- (a) Remove and dispose of existing parking lot fence
- E20.6.3 No measurement will be made for filling holes/low areas left by excavation and removals operations as this item shall be incidental to this specification.
- E20.6.4 No measurement will be made for the excavation or compaction of the subgrade as this shall be incidental to this specification.
- E20.6.5 No measurement will be made for disposing of surplus fill and unsuitable material as this shall be incidental to this specification.
- E20.7 Basis of Payment
- E20.7.1 The following items will be paid for at the contract unit price per unit for
- (a) Remove Existing 4-way banner poles (including concrete foundation and surface repair)
  - (b) Removal of existing banner poles (by Valmont)
- as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification.
- E20.7.2 The following items will be paid for at the contract unit price per lineal meter for
- (a) Remove and dispose of existing parking lot fence
- as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification.
- E20.7.3 No payment will be made for stockpiling suitable topsoil, clean earth fill and granular base course as these items are incidental to this specification.
- E20.7.4 No payment will be made for filling holes/low areas left by excavation and removals operations as this item shall be incidental to this specification.
- E20.7.5 No payment will be made for the excavation or compaction of the subgrade as this shall be incidental to this specification.
- E20.7.6 No payment will be made for disposing of surplus fill and unsuitable material as this shall be incidental to this specification.

## **E21. SUPPLY AND INSTALLATION OF STEEL ARCHWAY**

- E21.1 Description
- (a) The Work covered under this item shall include all operations related to the supply, fabrication, delivery, and erection of new steel archway.

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

## E21.2 Materials

### E21.2.1 General

- (a) The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.
- (b) All materials used for fabrication of archway shall be new, previously unused material.

### E21.2.2 Handling and Storage of Materials

- (a) All materials shall be handled in a careful and workmanship-like manner, to the satisfaction of the Contract Administrator. Storage of materials shall be in accordance with the requirements of CSA Standard CAN3 A23.1.8-M77, Storage of Materials, except as otherwise specified herein.

### E21.2.3 Shop Drawings

- (a) Submit shop drawings for all items which are to be custom fabricated.
- (b) Contractor shall submit shop drawings, stamped and signed by structural engineer licensed to practice in the Province of Manitoba to Contract Administrator for approval prior to fabrication.

### E21.2.4 Structural Steel

- (a) Structural steel for all components of the steel archway shall be in accordance with CSA Standard G40.21 M, Grade 350 W. For purposes of hot-dip galvanizing, the silicon content in the steel shall be controlled within 0 to 0.03%.
- (b) The Contractor is advised that copies of mill test certificates showing the chemical and physical properties of all structural steel to be supplied under this Specification must be supplied to the Contract Administrator and be found acceptable prior to commencement of fabrication.
- (c) Steel shall not be acceptable unless the mill test certificate states the grade to be 350 MPa (50 ksi) minimum yield for the items specified above. Lower grade steel shall not be acceptable (despite favourable published mill test results). Items fabricated without steel certification shall be rejected.

### E21.2.5 Flange Bolts, Nuts, and Washers

- (a) Flange bolts, nuts, and washers shall be in accordance with ASTM A325 hot-dip galvanized.

### E21.2.6 Hardware for Handhole Covers

- (a) Hardware for handhole covers shall be in accordance with ASTM A276 Type 316 stainless steel.

### E21.2.7 Hot-Dip Galvanizing

- (a) All hot-dip galvanizing shall be in accordance with CSA G164 for a minimum net retention of 600 g/m<sup>2</sup>.

#### E21.2.8 Galvanizing Touch-up and Field-Applied Galvanizing

- (a) Only approved products listed below shall be used for field-applied galvanizing, to touch-up damaged hot-dip galvanizing on-site and to galvanize field welds.
- (b) Approved products for self-fluxing, low-temperature, zinc-based alloy rods in accordance with ASTM A780-80 for "Repair of Damaged Hot-Dip Galvanized Coatings" are as follows:
  - (i) Galvalloy as manufactured by Metalloy Products Company, P.O. Box No. 3093, Terminal Annex, Los Angeles, California, available from Welder Supplies Limited, 25 McPhillips Street, Winnipeg, and
  - (ii) Welco Gal-Viz Galvanizing Alloy, as manufactured by Thermocote Welco, Highway 161, York Road, Kings Mountain, North Carolina, available from Welder Supplies Limited, 25 McPhillips Street, Winnipeg.
- (c) Approved cold-applied galvanic anti-corrosion system is as follows:
  - (i) ZINGA, as manufactured by ZINGAMETALL, Ghent, Belgium, available from Pacific Evergreen Industries Ltd. Vancouver, BC, Ph. (604) 926-5564, and Centennial Mine & Industrial Supply, Saskatoon, Sask., Ph. (306) 975-1944.

#### E21.2.9 Anchor Bolts and Setting Template

- (a) Anchor bolts including nuts and washers, and setting template shall be in accordance with CSA G40.21 Grade 300 W, hot-dip galvanized. Anchor bolts, nuts, washers, and setting template shall be incidental to the unit price bid.

#### E21.2.10 Non-Shrink Grout

- (a) Grout as specified hereinafter shall be used for the construction of grout pads under sign structure base plates. Grout shall consist of a pre-mixed, non-metallic non-shrink grout. Approved products are:
  - (i) M-Bed Standard grout by Sternson Ltd.
  - (ii) CPD Non-shrink grout by Master Builders
  - (iii) Set Non-shrink grout by Master Builders
  - (iv) Sikadur VPC grout by Sika Canada Inc. for cold weather construction (0 C to - 20 C)
- (b) The grout shall be of a consistency suitable for the application intended, as approved by the Contract Administrator.

#### E21.2.11 Welding Consumables

- (a) Welding consumables for all processes shall be certified by the manufacturer to be complying with the requirements of CSA Standard W59-M1984 and the following Specifications:

- (i) Manual shielded metal arc welding (SMAW): All electrodes shall be basic-type electrodes conforming to CSA W48.1-M1991 or W48.3-M1982, classification E480XX, or imperial equivalent.
  - (ii) Gas metal arc welding (GMAW): All electrodes shall conform to CSA W48.4-M1980, classification ER480S-X, or imperial equivalent.
  - (iii) Flux cored arc welding (FCAW): All electrodes shall conform to CSA W48.5-M1982, classification E480XT-X or imperial equivalent. Electrodes shall be controlled by hydrogen (CH) designation.
  - (iv) Submerged arc welding (SAW): All electrodes shall conform to CSA W48.6-M1980, classification F480X-EXXX or imperial equivalent.
  - (v) Shielding gas shall be welding grade carbon-dioxide with a guaranteed dew point of -46°C.
  - (vi) All electrodes, wires, and fluxes used shall be of a classification requiring a minimum impact of 27 joules at -18°C.
- (b) The proposed welding procedures and welding consumable certificates shall be submitted to the Contract Administrator for his approval at least two (2) days prior to the scheduled commencement of any fabrication.

E21.2.12 Miscellaneous Materials

- (a) Miscellaneous material incidental to this Work shall be as approved by the Contract Administrator.

E21.2.13 Equipment

- (a) All equipment shall be of a type approved by the Contract Administrator and shall be kept in good working order.

E21.3 Construction Methods

E21.3.1 General Requirements

- (a) Holes in the base plates shall be oversized by 6 mm, and provisions made for field erection must be accurate within plus or minus 13 mm between supports, without affecting final installation and load capacity.
- (b) The base plates for the archway shall be constructed to be fully compatible and mountable on the anchor bolts, provided in the foundations by the Contractor.
- (c) Sufficient reinforced handholes and wiring holes shall be provided for lighting as shown on the Drawings. All wiring holes shall have threaded couplings. All unused coupling holes shall be capped with a threaded galvanized plug.
- (d) Adequate venting and drainage holes shall be provided in enclosed sections for hot-dip galvanizing. The galvanizing facilities shall be consulted regarding the size and location of these holes.
- (e) Prior to fabrication, the dimensional limitations on the size and shape imposed by the galvanizing facilities shall be determined for hot-dip galvanizing the steel archway

- (f) The anchor bolts and template are to be delivered to City of Winnipeg Public Works to be cast into concrete base. Concrete Work under separate contract. Contractor shall coordinate with Gary Campbell at 794-4379

#### E21.3.2 Fabrication

- (a) All fabrication shall be carried out in accordance with this Specification and the Contract Drawings, as well as AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals - 2001 - 4<sup>th</sup> Edition, plus all subsequent revisions.
- (b) The punching of identification marks on the members will not be allowed, except for the structure identification number.
- (c) Any damage to members during fabrication shall be drawn to the attention of the Contract Administrator in order that the Contract Administrator may approve remedial measures.
- (d) Dimensions and fabrication details that control the field matching of parts shall receive very careful attention in order to avoid field adjustment.
- (e) All portions of the Work shall be neatly finished. Shearing, cutting, clipping, and machining shall be done neatly and accurately. Finished members shall be true to line, free from twists, bends, sharp corners, and edges.
- (f) Cut edges shall be true and smooth and free from excessive burrs or ragged breaks. Re-entrant cuts shall be avoided wherever possible. If used, they shall be filleted by drilling prior to cutting.
- (g) All holes shall be provided by drilling not burning. All holes shall be free of burrs and rough edges.

#### E21.3.3 Welding

- (a) Welding of steel structures shall be in accordance with CSA W59, "Welded Steel Construction."
- (b) All seams shall be continuously welded and free from any slag and splatter. Longitudinal welds shall be a minimum of 60% penetration, except those within 200 mm of baseplates, flanges, and circumferential welds, which shall be 100% penetration. All circumferential groove welds shall be 100% penetration, and where circumferential welds are used at a butt joint, an internal backup strip shall be provided.
- (c) Longitudinal seam welds in horizontal supports shall be located at the top of the horizontal members.
- (d) All welds shall be ground smooth and flush with the adjacent surface prior to hot-dip galvanizing.

#### E21.3.4 Surface Preparation and Cleaning

- (a) Surface preparation and cleaning of materials prior to hot-dip galvanizing shall be in accordance with CSA G164 and SSPC Specification SP:10, "Near White Metal Blast Cleaning," unless otherwise specified herein. The Contractor shall ensure that all

exterior and interior surfaces of vertical support members of sign structures are blast cleaned prior to pickling to achieve the minimum zinc coating mass of 600 g/m<sup>2</sup>. All welding and provision of holes is to be completed prior to surface preparation and cleaning, except where shown on the Drawings.

- (b) The sandblasting and cleaning of sign structures shall be done in the shop.

#### E21.3.5 Hot-Dip Galvanizing

- (a) The hot-dip galvanizing plant shall be a Regular Member of the American Galvanizers Association, Inc. and certified to CSA G164.
- (b) All outside surfaces of the overhead sign support structures, as well as the interior surfaces of all vertical support members of the overhead sign support structures, shall be hot-dip galvanized in accordance with the requirements of this Specification.
- (c) Adequate venting and drainage holes shall be provided in enclosed sections for hot-dip galvanizing. The galvanizing facility shall be consulted regarding the size and location of these holes. Holes shall be provided by drilling not burning.
- (d) The galvanizing coating on outside surfaces of archway shall be generally smooth and free of blisters, lumpiness and runs. In particular, the outside surfaces of the bottom 2.5 m of the vertical support members shall have a smooth finish equal to the finish on hot-dipped galvanized handrails.
- (e) In addition to the provision of corrosion protection by the galvanized coating, the aesthetic appearance of the structure after hot-dip galvanizing will also be a criteria in the acceptance or rejection of the galvanized coating. The galvanized coating on the entire structure shall have a uniform "silver" colour and lustre. Galvanizing with parts of the structure having dull grey coating or streaks or mottled appearance will not be acceptable. If the galvanizing is rejected for aesthetic reasons, the Contractor shall rectify the appearance by applying spray-on molten zinc metallizing with 85/15 zinc/aluminum alloy. The metallizing shall be carried out in the shop before the structure is installed.
- (f) Minor defects in the galvanizing coating shall be repaired as specified here below for "Field-Applied Touch-Up Galvanizing". The Contract Administrator shall be consulted before repairs are made. Use of cold applied spray-on galvanizing will not be permitted and will be cause for rejection.
- (g) Other defects and contaminants in the galvanizing coating, such as heavy dross protrusions, flux inclusions and ash inclusions shall be grounds for rejection of the galvanizing coating system.
- (h) The Contractor shall verify the thickness of galvanized coatings as part of their own quality control testing and make their results available to the Contract Administrator.
- (i) All threaded couplings shall be rethreaded after the sign structures have been hot-dip galvanized.
- (j) The sign structures shall be stored on timber blocking after hot-dip galvanizing.

#### E21.3.6 Delivery and Erection

- (a) The Contractor shall notify the Contract Administrator at least two (2) Working Days in advance of the anticipated delivery to the Site and erection of the steel archway.
- (b) The steel archway shall be lifted and secured with nylon ropes or other approved methods. Use of steel chains and steel hooks against hot-dip galvanized surfaces will not be permitted. The structure components (shaft and arm etc.) shall be placed on timber blocking and secured with nylon ropes during their transportation to the Site.
- (c) Each anchor bolt shall be galvanized. The anchor bolts shall have a minimum projection of 25 mm above the anchoring nuts. There shall be provision for maximum 50 mm thick grout pad under the base plate.
- (d) The Contractor shall ensure that the anchoring nuts of the anchor bolts are tightened according to the "turn-of-nut" method of the AASHTO Code.

#### E21.3.7 Grout Pads

- (a) New grout pads shall be constructed under sign structure bases after erection has been completed to the satisfaction of the Contract Administrator incidental to the Work of this item.

#### E21.3.8 Field-Applied Touch-up Galvanizing

- (a) Any areas of damaged galvanizing on the sign structures shall receive field-applied touch-up galvanizing.
- (b) Surfaces to receive touch-up galvanizing shall be cleaned using a wire brush, a light grinding action, or mild blasting to remove loose scale, rust, paint, grease, dirt, or other contaminants.
- (c) For self fluxing, low temperature, zinc based alloy rods, preheat the surface to 315°C and wire brush the surface during preheating. Rub the cleaned preheated area with the repair stick to deposit an evenly distributed layer of zinc alloy. Spread the alloy with a wire brush, spatula, or similar tool. Field-applied galvanizing shall be blended into existing galvanizing of surrounding surfaces and shall be buffed and polished if required to match the surrounding surfaces. Care shall be taken to not overheat surfaces beyond 400°C and to not apply direct flame to the alloy rods.
- (d) For pure zinc paint on systems, the approved product Zinga shall be applied by either a brush or roller. The Zinga shall be applied in 3 coats, with each coat having a dry film thickness of 60 µm (2.36 mils). Each coat shall be left to dry for a minimum of one (1) hour before the application of the next coat.

#### E21.4 Quality Control

##### E21.4.1 General

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

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

#### E21.4.2 Welding Qualifications

- (a) The Contractor shall produce evidence that the plant has recently been fully approved by the C.W.B. to the requirements of CSA W47.1 Division 2.1 for welding of steel structures.
- (b) Approved welding procedures shall be submitted to the Contract Administrator prior to fabrication of any steel items.

#### E21.4.3 Testing

- (a) In addition to the Contractor's own quality control testing of all materials, welding procedures and steel fabrication including hot-dip galvanizing will be inspected and tested by the Contract Administrator to ascertain compliance with the Specifications and Drawings.
- (b) The Contract Administrator will hire a testing agency certified by the Canadian Welding Bureau to carry out shop fabrication inspection and testing before the overhead sign support structures are approved ready for installation of coating system. The inspector shall have access to all of the fabricator's normal quality control records for this Contract, specified herein. Inspection and testing will include:
  - (i) Visual inspection of 100 percent of welds.
  - (ii) Ultrasonic testing of 100 percent of full penetration sections of longitudinal seam welds and circumferential butt welds.
  - (iii) Magnetic particle testing of a random 10 percent of partial penetration sections of longitudinal seam welds.
  - (iv) Ultrasonic testing of 25 percent of base plate and flange plate welds.
  - (v) Inspection of hot-dip galvanizing and coating thickness.
- (c) Welds that are found by any of the inspection and testing methods to be inadequate and unsatisfactory shall be repaired in accordance with CSA W59 and then retested. The cost of the repairs and the cost of the retest shall be paid for by the Contractor.
- (d) No repair shall be made until agreed to by the Contract Administrator.
- (e) Defects in hot-dip galvanizing shall be rectified as directed by the Contract Administrator.

#### E21.4.4 Unacceptable Work

- (a) Any Work found to be unacceptable shall be corrected in accordance with CSA W59.
- (b) No repair shall be made until agreed to by the Contract Administrator.

#### E21.5 Measurement and Payment



E21.5.1 Supply and installation of steel archway will be measured and paid for at the Contract Lump Sum Price per structure per Site for the "Supply and install steel archway" listed here below for items supplied in accordance with this Specification and accepted by the Contract Administrator.

## **E22. POWDER COATING**

### **E22.1 Description**

- (a) The Work covered under this item shall include all operations related to the powder coating of steel archway, light poles and flag poles, in accordance with this Specification and as shown on the Drawings.
- (b) The Work to be done by the Contractor under this Specification shall include the supply of all materials, and the furnishing of all superintendence, overhead, labour, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

### **E22.2 Materials**

#### **E22.2.1 General**

- (a) The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.

#### **E22.2.2 Handling and Storage of Materials**

- (a) All materials shall be handled in a careful and workmanship-like manner, to the satisfaction of the Contract Administrator. Storage of materials shall be in accordance with the requirements of CSA Standard CAN3 A23.1.8-M77, Storage of Materials, except as otherwise specified herein.

### **E22.3 Equipment**

- (a) All equipment shall be of a type approved by the Contract Administrator and shall be kept in good working order.

### **E22.4 Construction Methods**

#### **E22.4.1 Powder Coating**

- (a) Surface Preparation and Cleaning
  - (i) Powder coating shall only be applied after fabrication and galvanizing is complete. No welding, bending or field-applied touch-up galvanizing shall be permitted after the powder is applied.
  - (ii) Surface preparation and cleaning of structures prior to powder coating shall be in accordance with SSPC Specification SP:7 "Brush-Off Blast Cleaning".
  - (iii) The structures shall be thoroughly cleaned and dried with an air gun. All hand marks and grease spots shall be cleaned with a mild solvent.
  - (iv) The structures shall be pre-baked to 260°C to prevent emission of gases during the curing cycle.

(b) Powder Application

- (i) All powder coating shall be silver in colour.
- (ii) The structures shall receive a base powder coat, applied electrostatically, during the cool down process after pre-baking to allow the powder to melt and fuse to the surface. A minimum base coat dry film thickness of 75 µm (3 mils) shall be applied.
- (iii) Once the base coat has been applied and has set, the top coat shall be applied electrostatically to a dry film thickness of 75-125 µm (3-5 mils).
- (iv) The structures shall then be heated to 230°C for a minimum of 25 minutes. Thicker material may require longer bake cycles to fully cure. Upon removal from the oven, the structures shall be left to rest until cool enough to handle.

E22.4.2 Field-Applied Touch-Up Powder Coating

- (a) Any areas of damaged powder coating on the sign structures shall receive field-applied touch up powder coating.
- (b) Surfaces to receive touch-up powder coating shall be cleaned with sandpaper to “feather” the surface.
- (c) A mild solvent shall be used to remove any hand marks or grease spots. The structure shall be allowed to dry completely.
- (d) The structures shall receive a uniform application of Aliphatic Urethane Acrylic Semi-glass High Build applied at a dry film thickness of 50-100 µm (2-4 mils) over the entire damaged and sanded areas.
- (e) Touch-up powder coating shall only be applied if ambient conditions are dry and over 10°C

E22.4.3 Quality Control

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

E22.5 Measurement and Payment

- E22.5.1 No measurement or payment will be made for the supply powdercoating as this item is incidental to this specification.

## **E23. INFILL FRAMING**

### **E23.1 General**

#### **E23.1.1 Related Work**

#### **E23.1.2 Source Quality**

- (a) Lumber identification: By grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- (b) Plywood identification: By grade mark in accordance with applicable CSA standards.

#### **E23.1.3 Description of System**

- (a) The Contract shall include the furnishing of labour, material, equipment and services necessary for and reasonably incidental to the completion of the Carpentry and general work as shown on the drawings and specified herein.
- (b) All removal, reinstallation, relocation, repair, and replacement etc., except that specified elsewhere.
- (c) Patching, repairs and making good, except that included in other sections.
- (d) All work related to and similar to all of the above.
- (e) All other required work not included in any other Section.

#### **E23.1.4 Qualifications**

- (a) This work shall be executed by trained workmen, skilled in applying, constructing, installing, fitting and placing the various items specified herein.

#### **E23.1.5 Shop Drawings**

- (a) Submit shop drawings for all items which are to be custom fabricated.
- (b) Contractor shall submit shop drawings, stamped and signed by structural engineer licensed to practice in the Province of Manitoba to Contract Administrator for approval prior to fabrication.

#### **E23.1.6 Delivery and Storage**

- (a) Protect materials while in transit to the job site. Store and handle in such a way as to prevent damage, deterioration and loss of essential properties.

#### **E23.1.7 Hoarding**

- (a) Provide hoarding for any phase of work requiring public safety, protection of goods and chattels and security.
- (b) Provide hoarding with cover for areas requiring heat or dust barriers.
- (c) Any hoarding as may be necessary for the continuing progress of the work shall be built to resist all loads imposed, including windloads.

### **E23.2 Products**

#### **E23.2.1 Lumber Material**

- (a) Lumber: Unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
  - (i) CAN/CSA 0141-91
  - (ii) NLGA Standard Grading Rules for Canadian Lumber.
- (b) Furring, blocking, and curbs.
  - (i) Board sizes: "Standard" or better grade.
  - (ii) Dimension sizes: "Standard" light framing or better grade.

#### **E23.2.2 Panel Materials**

- (a) Panel standards: type, grade and thickness as indicated, in accordance with following standards:
  - (i) Douglas fir plywood (DFP): to CSA O121-M1978, standard construction.
  - (ii) Canadian softwood plywood (CSP): to CSA O151-M1978, standard construction.
  - (iii) Interior mat-formed wood particle board: to CAN3-O188.1-M78.
  - (iv) Waferboard (WFB): to CAN3 O437.0-93.

#### E23.2.3 Fasteners

- (a) Nails, spikes and staples: To CSA B111-1974.
- (b) Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
- (c) Proprietary fasteners: Toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacturer.
- (d) Galvanizing: To CSA G164-M92, use galvanized fasteners for exterior work and interior highly humid areas.
- (e) H-clips: Sized as required.

#### E23.2.4 Wood Preservative

- (a) Treat lumber and blocking to CSA 080.2-M using CCA preservative to obtain minimum net retention required by the standard.
- (b) Treat plywood to CSA 080.9-M using CCA preservative to obtain minimum net retention required by the standard.
- (c) Following water-borne preservative treatment, dry material to maximum moisture content of 20%.
- (d) Surface-applied wood preservative: copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.

### E23.3 Execution

#### E23.3.1 Construction

- (a) Comply with requirements of MBC 1992 Part 9 supplemented by following paragraphs.

#### E23.3.2 Defacement Marks

- (a) Install lumber and panel materials, as indicated so that grade-marks and other defacing marks are not visible on surfaces specified to be left unfinished with translucent or transparent type coating.
- (b) Surface cutting or sanding to remove defacement marks is acceptable only in locations where defacement will not be evident after finishing.

#### E23.3.3 Furring and Blocking

- (a) Install furring and blocking as required to space-out and support casework, cabinets, base, wall and ceiling finishes, facings, fascia, soffit, siding, parapets, roof curbs and other work as required.
- (b) Align and plumb faces of furring and blocking to tolerance of 1:600.

#### E23.3.4 Nailing Strips, Grounds and Rough Bucks

- (a) Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

#### E23.3.5 Curbs, Fascia Backing

- (a) Install fascia backing, nailers, curbs and other wood supports as required and secure using galvanized fasteners.

- (b) Install wood backing, dressed, tapered and recessed 25 mm below top surface of roof insulation for roof drain sump.
- (c) Install wood blocking in metal roof curbs to fill curb solid.

E23.3.6 Sleepers

- (a) Install sleepers as indicated

E23.3.7 Fasteners

- (a) Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- (b) Countersink bolts where necessary to provide clearance for other work.

E23.3.8 Surface-Applied Wood Preservative

- (a) Use treated material as follows:
  - (i) Fascia backing, curbs, nailers, sleepers, etc. on roof deck.
  - (ii) Wood blocking for openings in exterior walls.
  - (iii) In locations indicated on drawings.
- (b) Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

E23.3.9 Electrical Equipment Backboards

- (a) Provide backboards for mounting electrical equipment. Use 19 mm thick plywood on 19 x 38 furring around perimeter and at maximum 300 mm intermediate spacing.

E23.4 Measurement and Payment

- E23.4.1 Supply and installation of Infill Framing including Plywood Sheathing, Tyvek wrap and Flashing will be measured and paid for at the Contract Lump Sum Price for the "Supply and Install Infill Framing (including Plywood Sheathing, Tyvek and Flashing)" listed here below for items supplied in accordance with this Specification and accepted by the Contract Administrator.

**E24. EXTERIOR INSULATED FINISH SYSTEM**

E24.1 General: Standard Face Seal System

E24.1.1 General

- (a) Akrlon Exterior Insulation and Finish Systems (EIFS) are to be designed and installed so as to provide a weather barrier, face-seal cladding, with appropriate attention to the integrated use of overhangs, flashing, drip edges, expansion joints and caulk sealant such that water will not enter the wall around windows, doors or other penetrations.
- (b) For proper design detailing around specific windows and other penetrations please consult with Akrlon Representative
- (c) Provisions are made within this specification for the application of:
  - (i) Mechanical fastening system.
  - (ii) Non-Combustible system. (See Sections 1.2.5 and 2.4)

E24.1.2 System Description

- (a) Exterior Insulated Finish System (EIFS) is a lightweight, breathable wall cladding system that provides durability, weather-fastness, and aesthetic value. The system is available in several textures and a wide range of colors. The system affords creative architectural design, with the use of reveals, battens and cornice detail.
- (b) Appropriate substrates include, exterior grade drywall, plywood sheathing, cement board, Dens-Glass sheathing, pre-cast concrete, concrete block, or poured in place concrete. Trowel-on air/vapour barrier membranes may be used to clad substrate in

certain wall systems. For fastening of EPS board to the selected substrate see Materials 2.1, 2.3 and System Description 1.2.4.

- (c) The EIFS insulating component is normally Type I, certified Expanded Polystyrene Board (EPS) in 610mm x 1220mm (2 ft x 4 ft) panels (See Section 2.2). The minimum thickness is 25mm (1") and maximum is 127mm (5") to provide required R-values and architectural detail [See Wall Sections].
- (d) Higher density EPS can be used in open wall cavity construction, subject to manufacturer's written approval. Extruded polystyrene board can be used as a vapour barrier, i.e. block wall construction. Extruded polystyrene board must be pre-planed to completely remove surface skin to allow for adequate adhesion and must be mechanically fastened to the substrate in all cases-See EIFS-Supreme.
- (e) The exposed surface of the EPS Board including edges around openings, such as doors and windows are coated with Akrylon Styro-Glue mixed with Portland cement and reinforced with glass fabric mesh (Preformed accessories with appropriate perforations and drainage channels may be acceptable alternative for the protection of the edges of EPS boards, subject to Akrylon approval). Glass fabric reinforcing mesh is embedded in wet basecoat material, which is then leveled to ensure that the mesh is not visible.
- (f) The degree of impact resistance required will determine which mesh is most suited to the application. See Specifications Section "Fibreglass Mesh". The need for non-combustible cladding protection as per section 3.2.3.7 of the Building Code requires the use of Akrylon Styro-Wall N.C. as the basecoat for embedding mesh [Required for this project].
- (g) Colored Finish Coat can be trowel or spray applied. One of the Akrylon Acrylic Plasters is chosen to achieve the desired texture (See Section 2.8). Akrylon pre-colored Plaster Primer applied over basecoat is recommended especially when using light colors. The plaster Primer must be used in all applications of 3mm Coarse Sandfloat finish and in all spray applications.
- (h) Joints are to be packed with closed pore backer rod and sealed with a low modulus caulk. Caulk should adhere to basecoat materials (See figures 2-5, 7) and not to Akryl-Adhesive or to finish plaster.

#### E24.1.3 Quality Assurance

- (a) Applicators of Akrylon EIFS shall be approved by Akrylon Industries Inc. (the manufacturer) and shall have a minimum of two years experience in applying acrylic plaster systems.

#### E24.1.4 Architectural Samples

- (a) Akrylon or its distributor to provide a minimum 8"x8" sample for color and texture approval.
- (b) The approved sample shall form a standard for this project and no work of inferior quality will be allowed. Do not start any final work until the Consultant gives approval of sample(s).

#### E24.1.5 Mock-up

- (a) Construct a mock-up panel on site as part of the actual wall at a location as directed by the Consultant. The mock-up panel shall match sample panel submitted to the Consultant as described in paragraph 1.4.1 of this Section.

#### E24.1.6 Delivery and Storage

- (a) Deliver materials to the job site in their original unopened packages, clearly marked with the manufacturer's name, and description of contents. Store in a clean, dry, well-ventilated area. Protect materials from sunlight, and keep away from excessive heat. Keep wet materials at a temperature not less than 5°C/40°F.

#### E24.1.7 Job Conditions

- (a) Protection from rain and/or low temperature will be required depending on location and season. Acrylic adhesive, basecoat and finish coats must be applied at temperatures of 5<sup>0</sup>C/40<sup>0</sup>F or greater and must be maintained at 5<sup>0</sup>C/40<sup>0</sup>F or greater for at least 24 hours after application. Extended protection will be required in low temperature and/or high humidity conditions.

## E24.2 Materials

- E24.2.1 Expanded Polystyrene Board (EPS): Certified to conform to CAN/ULC-S701-01, Type I. See Specifications "Insulation Boards".
- E24.2.2 Mechanical Fasteners: Disc-type plastic washers as recommended by manufacturer. Acceptable products include Wind-lock ULP 302 plate, Wind-lock Wind Devil plate. Galvanized screws or approved-coated screws with tips designed to fasten to steel stud, wood stud or concrete and masonry substrates. All other types of fasteners must have "pre-assembly" designed characteristics and be approved by Akrilon Industries Inc.
- E24.2.3 Basecoat: Akrilon Styro-Glue basecoat mixed with an approximately equal volume of Type 10 Portland cement (Weight ratio = 30kg (66 lbs.) Styro-Glue to 15kg (33 lbs.) Portland cement). Conforms to CAN/ULC S101 "Fifteen Minute Stay in Place Test".
- E24.2.4 Akrilon Styro-Wall N.C. basecoat mixes with Type 10 Portland cement (Same weight and volume ratios as Styro-Glue). Conforms to CAN ULC S114 (non-combustible material) and CAN/ULC S101 (Fifteen Minute Stay-in Place Test).
- E24.2.5 Glass-Fibre Reinforcing Mesh: As per specifications see "Fibreglass Mesh". High-impact mesh is required for bottom 60" throughout all new construction [see Part 3, item 3.13].
- E24.2.6 Backer Rod: Closed pore type.
- E24.2.7 Joint Sealant: Low modulus caulks with long service lives are required. Acceptable products include DOW 790 and 795, Sonneborn Sonolastic 150 VLM and SIKA Sikaflex 15LM. Two part polyurethane caulks are not acceptable unless specifically approved by Akrilon.
- E24.2.8 Acrylic Finish: Breathable, acrylic-based plaster with a float finish or spray finish. Very dark and accent colors specify "Accent base" (Caution: Upcharges will be applied for tinting dark and accent colors).
- (a) Finish Textures to:  
Akrilon 1mm Plaster - Fine Sandfloat.
- \*When finishes are spray-applied, Akrilon pre-colored Plaster Primer must be first applied over cured basecoat.
- E24.2.9 Anti-graffiti coating to be Devthane 379 Urethane Converter by Devoe High Performance Coatings as supplied by ICI Paints. Contact Greg Helm: 793-7472

## E24.3 Installation

- E24.3.1 Plastering contractor must inspect cladding penetration and through-wall design features, including windows, doors, balcony supports and railings. Plastering contractor must examine condition of the substrate including sheathing, blocking, flashing and report to the General Contractor any deficiency that might impair proper installation of the system in its performance and appearance. Consider "appearance" of equal importance to "performance". All surfaces to be clad with Akrilon EIFS must be clean, dry, structurally sound and uniform. "Performance" must be assessed with respect to exclusion of water from the interior of walls and avoidance of drainage down the surface of EIFS panels
- E24.3.2 No additives may be added to any of the Akrilon products, except for the Akrilon tint bottle to finish material, and Portland cement to Styro-Glue/Styro-Wall N.C./Akril-Guard. Anti-freeze, accelerators, rapid-binders are forbidden. Small amounts of water may be added to the base and finish material.

- E24.3.3 Ensure conduit pipes, cables, and outlets are properly covered before commencing. Adjacent finish work such as brick, siding, concrete must be covered or masked as required.
- E24.3.4 A starter strip of Akrilon Reinforcing Mesh shall be applied to the wall at the base line using Akrilon Styro-Glue prior to the installation of the EPS Board. The starter strip of mesh is used to seal/protect the bottom of the first course of EPS board. It shall be wide enough to adhere 102mm (4") of mesh onto the substrate, be able to wrap around the board edge and cover 102mm (4") of the outside surface of the EPS Board (Approved pre-formed accessories are possible alternatives to the backwrapping of edges).
- E24.3.5 This backwrap procedure shall be followed to laminate all exposed EPS Board edges as per details (Example: Window and door heads, jambs and soffit lines, see Diagrams section, Figures 1-5, 7 and 9).
- E24.3.6 Apply Akrilon Styro-Glue adhesive or Akril-Adhesive as vertical ribbons to the complete back of the EPS board using a 3/8" x 1/2" x 1-1/2" U-notched trowel. See Adhesive/Basecoat Section to determine suitability of each product for the substrate used.
- E24.3.7 The EPS Boards are placed horizontally on the walls starting from a level base line. Apply firm pressure over entire surface of the board to ensure uniform contact (tamping is not recommended). Stagger vertical joints and interlock EPS Boards at all inside and outside corners. EPS Boards shall be butted tightly together to eliminate any thermal breaks (See Figure 6, Diagrams). Care must be taken to keep any adhesive from getting between the joints of the EPS Boards. Gaps between boards should be packed with slivers of EPS foam.
- E24.3.8 When completing projects utilizing the mechanical fastening system, insure that the correct fastener type is used to comply with the substrate and/or framing member (See Materials 2.3).
- E24.3.9 Fasteners to be applied at a minimum of "one" per square foot of wall area (See Figure 10,11). Disc Type fasteners shall be countersunk slightly (approx. 1mm (1/32")) into the surface of the EPS Board, and covered with one layer of Akrilon Styro-Glue which is allowed to dry prior to installation of basecoat and mesh. Styro-Glue adhesive or Akril-Adhesive may be used in conjunction with the mechanical fastening system as a leveling agent to insure a plumb surface for the EPS Board application.
- E24.3.10 EPS Boards shall be surface rasped to achieve a smooth even surface and remove possible ultra-violet ray damage.
- E24.3.11 All areas where the Akrilon EIFS meets a dissimilar material or terminates, shall have the EPS Board cut back from the adjoining material a minimum of 6mm (1/4") to form a caulk joint and sealed (caulk and backer rod) so that no water can penetrate through or behind the system. Prior to sealing (caulk & backer rod) all EPS Board edges shall be coated with Akrilon Styro-Glue and Reinforcing mesh and allowed to dry.
- E24.3.12 Aesthetic V-grooves and Reveals may be designed into the system to accommodate workability on Multi-level buildings, and drip edges to soffit areas. V-grooves and reveal work should be completed using Akrilon recommended "hot wire" planers. This will insure tight, clean lines are maintained. The inset areas must also be meshed and basecoated. Specially designed trowels are readily available for this detail work.
- E24.3.13 A minimum thickness of 19mm (3/4") of EPS, between the substrate and base of any reveal, must be maintained. See building elevations for reveal [CV] locations.
- E24.3.14 Akrilon Styro-Glue Basecoat is applied over the EPS Board surface using a stainless steel trowel to a uniform thickness of approximately 3mm (1/8"). Work horizontally or vertically in strips of 1016mm (40"), and immediately embed the Akrilon Reinforcing mesh into the wet basecoat. The mesh shall be double lapped not less than 203mm (8") at all corners and overlapped not less than 50mm (2") at mesh joints. Avoid wrinkles in the mesh. The finish thickness of the basecoat shall be such that the reinforcing mesh is fully embedded and not visible. Allow basecoat to fully dry before applying finish.



- E24.3.15 High Impact mesh is advised in high traffic areas. High-Impact mesh is not overlapped but butted together (vertical application is preferred). Embed mesh into basecoat and allow to dry, a second layer of basecoat and standard weight reinforcing mesh is then applied over the first coat. High-Impact Corner mesh designed to fold around corners should be used on exposed exterior corners.
- E24.3.16 EPS Batten detail can be applied over the cured basecoat. Apply Styro-Glue adhesive (not Akril-Adhesive) to the backside of the EPS Batten, press the EPS detail tight to the basecoat and allow to set. Once the EPS detail is set in place trowel Akrilon Styro-Glue basecoat over all exposed surfaces. While wet, embed reinforcing detail mesh to the complete surface and carry the mesh 102mm (4") above and below the detail to insure it is sealed. All details extended more than 50mm (2") beyond the basecoat must be sloped a minimum of 22° degrees. Cap flashing is recommended for parapets (See Figure 9). All parapets with less than 6-12 pitch must be flashed.
- E24.3.17 Expansion Joints and Fire Control Breaks: The Akrilon EIFS does not require expansion joints except when the substrate has a) an existing control joint, expansion joint or live building crack; or b) where the system is applied to dissimilar substrate. These joints, or fire-breaks, shall extend through the full thermal system and shall be caulked with an Akrilon approved expansion joint sealant against a backer rod (See Figure 3). On expansion joints, the Akrilon fibreglass mesh and basecoat shall completely wrap the edges of the EPS board so that the expansion board caulk shall not come in direct contact with the EPS board (See Figures 3, and 7).
- E24.3.18 The Akrilon Finish, a ready mixed acrylic based wall coating, is applied directly over the Akrilon basecoat Styro-Glue or over the primed Styro-Glue and cement basecoat only after the basecoat has thoroughly cured. Akrilon finish may be applied by spraying, or trowelling, depending upon finish specified. General rules for application of the Akrilon finishes are as follows:
- (a) Using a clean, rust free mixer, thoroughly stir the Akrilon finish to a uniform consistency. The Akrilon Color Bottle System may be used or it may be a factory pre-mixed color. A small amount of clean water may be added to aid workability in higher temperature or windy conditions.
  - (b) Avoid application in direct sunlight.
  - (c) Finish shall be applied in a continuous application always working to a wet edge.
  - (d) Weather conditions will be a factor in the application of the finish as well as the drying time (See Section 1.7 Job Conditions).
- E24.3.19 Adjust and clean: Remove waste and excess material off site at completion of plaster work, repair and make good any defects to this application or any defects to any other work caused by this application, all to the approval of the consultant.
- E24.4 Measurement and Payment
- E24.4.1 Supply and installation of Acrylic Stucco (including Scratch Coat) will be measured and paid for at the Contract Lump Sum Price for the "Supply and Install Acrylic Stucco (including Scratch Coat)" listed here below for items supplied in accordance with this Specification and accepted by the Contract Administrator.
- E24.4.2 No measurement or payment will be made for the supply and installation of hardware, adhesives, lathe, scratch coat, and anti-graffitiant as these items are incidental to this specification.

## **E25. CONCRETE AND BRICK MASONRY**

### **E25.1 General**

- E25.1.1 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 or and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E25.1.2 Do masonry Work in accordance with CSA A371-94 except where specified otherwise.

E25.1.3 Product Delivery, Storage and Handling

(a) Deliver materials to job site in dry condition.

(b) Keep materials dry until use, except where wetting of masonry is specified.

(c) Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

E25.2 Cold Weather Requirements

E25.2.1 When air temperature is below 5°C take the following precautions in preparing and using mortar.

E25.2.2 Heat sand slowly and evenly. Do not use scorched sand, having a reddish cast, in mortar.

E25.2.3 Heat water to 70 degrees C maximum; and 20 degrees C minimum.

E25.2.4 After combining heated ingredients maintain temperature of mortar between 5 degrees C and 50 degrees C until used.

E25.2.5 Protect mortar from rain and snow.

E25.3 Hot Weather Requirements

E25.3.1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

E25.4 Protection

E25.4.1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry Work is completed and protected by flashings or other permanent construction.

E25.4.2 Protect masonry and other Work from marking and other damage. Protect completed Work from mortar droppings. Use non-staining coverings.

E25.4.3 Provide temporary bracing of masonry Work during and after erection until permanent lateral support is in place.

E25.5 Materials

E25.6 Brick to be as follows:

(a) #153 Rosewood Smooth color, Closure size brick, tumbled finish as supplied by:  
I-XL Masonry Supplies Ltd.  
717 Lagimodiere Blvd.  
Winnipeg, MB  
R2J 3X2  
Contact: Murray Alston  
Tel.: (204) 284-1773

(b) #219 Charcoal Graitex color, Nominal size brick, tumbled finish, as supplied by:  
I-XL Masonry Supplies Ltd.  
717 Lagimodiere Blvd.  
Winnipeg, MB  
R2J 3X2  
Contact: Murray Alston  
Tel.: (204) 284-1773

E25.7 Precast concrete cap stone to be as follows:

- (a) 914 x 1040mm corner slab with center channel cut, natural color, as per the Drawings, as supplied by:
  - Barkman Concrete Ltd.
  - 909 Gateway Road
  - Winnipeg, Manitoba, R3K 3L1
  - Contact: Wayne Wiebe
  - T (204) 667-3310
- (b) 914 x 1040mm center slab, natural color, as per the Drawings, as supplied by:
  - Barkman Concrete Ltd.
  - 909 Gateway Road
  - Winnipeg, Manitoba, R3K 3L1
  - Contact: Wayne Wiebe
  - T (204) 667-3310

E25.8 Anti-graffiti coating to be Professional Products of Kansas Water Sealant Anti-Graffitiant suitable for masonry applications as supplied by Alsip's Building Products and Services. Contact Jason Alsip: 667-3330

E25.9 Reinforcement: to CSA A370

E25.10 All metal components to have hot dipped galvanized finish.

E25.11 Bar type reinforcement: to CAN3-S304-M78.

E25.12 Bolts and anchors: to CAN3-S304-M78

E25.13 Mortar and Grout: CSA A179-94

- (a) Colour: to be selected for exterior grouts. Sample to be provided to Contract Administrator for approval prior to installation..
- (b) Use aggregate passing 1.18mm sieve where 6mm thick joints are indicated.
- (c) Use same brands of materials and source of aggregate for entire project to ensure uniformity of colouration and other mix characteristics.
- (d) Mortar for exterior masonry above grade:
  - (i) Loadbearing: Type S based on Property specifications.
  - (ii) Non-loadbearing: Type S based on Property Proportion specifications.
  - (iii) Mortar for foundation walls, manholes, sewers, pavements, walks, patios and other exterior masonry at or below grade: Type M based on Property specifications.
  - (iv) Mortar for pointing: Type N based on Proportion specifications.
  - (v) Grout masonry components where shown.
  - (vi) Grout to be minimum 200mm slump

E25.14 Construction Methods

E25.15 Laying Brick Units

- (a) Build masonry plumb, level, and true to line, with vertical joints in proper alignment.
- (b) Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.
- (c) Lay brick in pattern as shown on the Drawings.
- (d) Coursing height: 100 mm for one block and one joint for standard concrete masonry units.
- (e) All joints to be concave.
- (f) All corners to be laid with full masonry bond. Refer to Drawings.
- (g) Refer also to manufacturer's specification.

#### E25.16 Field Mortar Mixing

- (a) All cementitious materials and aggregate shall be mixed between 3 and 5 min. in a mechanical batch mixer with the maximum amount of water to produce a Workable consistency.
- (b) Control batching procedure to ensure proper proportions by measuring materials by volume. Sand measurement by shovel count shall not be permitted.
- (c) If water is lost by evaporation within 2-1/2 hours after initial mixing, retemper with water.
- (d) Discard all mortar which is more than 2-1/2 hours old.
- (e) Use clean mixer for coloured mortar.

#### E25.17 Field Grout Mixing

E25.17.1 Control batching procedure to ensure proper proportions by measuring materials by volume.

#### E25.18 Repointing Mortar

E25.18.1 Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 h or more than 2 h, then remix with sufficient water to produce mortar of proper consistency for pointing.

E25.19 Allow mortar droppings on unglazed units to partially dry then remove by means of a trowel, followed by rubbing lightly with small piece of block and finally by brushing.

#### E25.19.1 Tolerances

- (a) A371-94 applies.

#### E25.19.2 Exposed Masonry

- (a) Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

#### E25.19.3 Jointing

- (a) Allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, compressed, uniformly concave joints.
- (b) Allow joints to set just enough to remove excess water, then rake joints uniformly to 6 mm depth and compress with square tool to provide smooth, compressed, raked joints of uniform depth where raked joints are indicated.
- (c) Strike flush all joints concealed in walls and joints in walls to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating.

#### E25.19.4 Joining of Work

- (a) Where necessary to temporarily stop horizontal runs of masonry, and in building corners;
  - (i) Step-back masonry diagonally to lowest course previously laid.
  - (ii) Do not "tooth" new masonry.
  - (iii) Fill in adjacent courses before heights of stepped masonry reach 1.2m.

#### E25.19.5 Cutting

(a) Cut out neatly for electrical connections, lights, fencing connectors, outlet boxes, and other recessed or built-in objects.

(b) Make cuts straight, clean, and free from uneven edges.

E25.19.6 Building-In

(a) Build in items required to be built into masonry including hardware for fence panel installation.

(b) Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as Work progresses.

E25.19.7 Embed bolts and anchors solidly in mortar or grout to develop maximum resistance to design forces.

E25.19.8 Wetting of Bricks

(a) Except in cold weather, wet clay bricks having an initial rate of absorption exceeding 1 g/min/1000 mm: wet to uniform degree of saturation, 3 to 24 h before laying, and do not lay until surface dry.

(b) Wet tops of walls built of bricks qualifying for wetting, when recommencing Work on such walls.

E25.19.9 Support of Loads

(a) Except where drawing requirements are more stringent, comply with A.371.94.

(b) Where concrete fill is used in lieu of solid units, use 20 MPa concrete fill. Place and thoroughly rod to remove any air pockets.

(c) Install building paper below voids to be filled with concrete ; keep paper 25 mm back from faces of units.

E25.19.10 Provision for Movement

(a) Leave 6 mm space below shelf angles.

(b) Leave 3 mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.

E25.19.11 Control Joints

(a) Provide continuous control joints at maximum 20' o.c. and at approved locations.

(b) Install backer rod and sealant as specified in Section 07900

(c) Stop reinforcing 25 mm short of each side of control joints unless otherwise indicated.

E25.19.12 Lateral Support and Anchorage

(a) Provide lateral support and anchorage in accordance with CAN3-S304.1-94 and as indicated.

E25.19.13 Top of walls and pillars to be clean and level for installation of precast concrete caps. Caps to be mortared in place.

E25.20 Measurement and Payment

- E25.20.1 Supply and installation of Masonry Cladding will be measured and paid for at the Contract Lump Sum Price for the "Supply and Install Masonry Cladding" listed here below for items supplied in accordance with this Specification and accepted by the Contract Administrator.
- E25.20.2 Supply and installation of precast cap stone will be measured and paid for at the Contract Lump Sum Price for the "Precast Cap Stone" listed here below for items supplied in accordance with this Specification and accepted by the Contract Administrator.
- E25.20.3 No measurement or payment will be made for the supply and installation of hardware, adhesives, lathe, scratch coat, grout, and anti-graffitiant as these items are incidental to this specification.

## **E26. LIGHT AND FLAG POLES**

### **E26.1 General**

#### **E26.1.1 Description**

- (a) The following list generally describes the scope of this section:

- (i) Supply and install flag poles
- (ii) Supply and install light poles  
including all mounting/installation hardware

#### **E26.1.2 Delivery and Storage**

- (a) Store units in a protected location, immediately upon arrival on the Site.
- (b) Remove from Site any units which have been damaged during transportation and replace.

#### **E26.1.3 Codes**

- (a) The following codes to be met:

- (i) CAN/CSA-G164-M92 (R2003) Hot Dip Galvanizing
- (ii) CAN3-Z299.3-85 (R2003) Quality Assurance Program

### **E26.2 Products**

- E26.2.1 Galvanized light pole c/w banner bracket, 2 hanging basket brackets, 2 luminaries with solar panel, L.E.D. lighting channel with electrical connection and holiday light mount (model # 9065-12-03) as supplied by:

West Coast Engineering Group Ltd.  
1450 Saskatchewan Avenue  
Winnipeg, MB R3E 0G3  
Contact: Gary Goertzen  
T (204) 987-3110  
F:(204) 775-9066

- E26.2.2 Galvanized flag pole with 2 LED light cannels and air breeze wind turbine (model # 9065-12-07) as supplied by:

West Coast Engineering Group Ltd.  
1450 Saskatchewan Avenue  
Winnipeg, MB R3E 0G3  
Contact: Gary Goertzen  
T (204) 987-3110  
F:(204) 775-9066

- E26.2.3 Galvanized flag pole c/w 2 L.E.D. light channels (model # 9065-12-09) as supplied by:

West Coast Engineering Group Ltd.  
1450 Saskatchewan Avenue  
Winnipeg, MB R3E 0G3  
Contact: Gary Goertzen  
T (204) 987-3110

F:(204) 775-9066

- E26.2.4 Anchor bolts and templates to be supplied and delivered to the City of Winnipeg Public Works department for installation in concrete bases. Concrete Work by Others under separate Contract. Contact Gary Campbell at 794-4379
- E26.2.5 Shop Drawings
- (a) Submit shop drawings for all items which are to be custom fabricated.
  - (b) Contractor shall submit shop drawings, stamped and signed by structural engineer licensed to practice in the Province of Manitoba to Contract Administrator for approval prior to fabrication.
- E26.3 Installation
- E26.3.1 Contractor to notify Contract Administrator when all off Site metal work is complete for review and approval of components prior to delivery to Site. Any works delivered to Site that have not been approved by the Contract Administrator may be rejected and will be redone at Contractor's own costs.
- E26.3.2 Flag poles shall be installed by Valmont - West Coast Engineering on concrete base supplied and installed by Others under separate Contract as indicated on the Construction Drawings.
- E26.3.3 Light poles shall be installed by Valmont - West Coast Engineering on concrete base supplied and installed by Others under separate Contract as indicated on the Construction Drawings.
- E26.3.4 Protection after Completion
- (a) Protect and maintain light poles and flag poles, until acceptance of project Work.
  - (b) Immediately remove from Site, damaged flag poles, light poles and hardware. Replace, repair, re-finish, or otherwise make good to satisfaction of the Contract Administrator.
- E26.4 Method of Measurement
- E26.4.1 Supply and install Galvanized light pole c/w banner bracket, 2 hanging basket brackets, 2 luminaries with solar panel, L.E.D. lighting channel with electrical connection and holiday light mount will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E26.4.2 Supply and install Galvanized flag pole with 2 LED light cannels and air breeze wind turbine will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E26.4.3 Supply and install Galvanized flag pole c/w 2 L.E.D. light channels will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E26.4.4 Galvanized light pole with banner bracket, 2 hanging basket brackets, 2 luminaries with solar panel, L.E.D. lighting channel with electrical connection and holiday light mount (model # 9065-12-03) as supplied by:
- E26.4.5 Galvanized flag pole with 2 LED light cannels and air breeze wind turbine (model # 9065-12-07) as supplied by:
- E26.4.6 Galvanized flag pole with 2 L.E.D. light channels (model # 9065-12-09) as supplied by:
- E26.5 Basis of Payment

- E26.5.1 Galvanized light pole with banner bracket, 2 hanging basket brackets, 2 luminaries with solar panel, L.E.D. lighting channel with electrical connection and holiday light mount will be paid for at the Contract Unit Price for each item, which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification.
- E26.5.2 Galvanized flag pole with 2 LED light cannels and air breeze wind turbine will be paid for at the Contract Unit Price for each item, which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification.
- E26.5.3 Galvanized flag pole with 2 LED light cannels will be paid for at the Contract Unit Price for each item, which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification.
- E26.5.4 No measurement or payment will be made for the supply and installation of hardware, anchor bolts and bolt template as these items are incidental to this specification.

## **E27. SUPPLY AND INSTALLATION OF BREAKAWAY BASES**

### E27.1 Description

- (a) The Work covered under this item shall include all operations related to the supply and installation of breakaway bases at the designated locations, in accordance with this Specification and as shown on the Drawings.
- (b) The Work to be done by the Contractor under this Specification shall include the supply of all materials, and the furnishing of all superintendence, overhead, labour, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

### E27.2 Materials

#### E27.2.1 General

- (a) The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.
- (b) All breakaway bases to be installed for the light
- (c) Breakaway bases shall be as manufactured and available by Safety Base Ltd., 1036 Waverley Street, Winnipeg

#### E27.2.2 Handling and Storage of Materials

- (a) All materials shall be handled in a careful and workmanship-like manner, to the satisfaction of the Contract Administrator. Storage of materials shall be in accordance with the requirements of CSA Standard CAN3 A23.1.8-M77, Storage of Materials, except as otherwise specified herein.

### E27.3 Equipment

- (a) All equipment shall be of a type approved by the Contract Administrator and shall be kept in good working order.

### E27.4 Construction Methods



E27.4.1 Installation of Breakaway Bases

- (a) Breakaway bases shall be installed in accordance with the manufacturer's instructions.

E27.4.2 Quality Control

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

E27.5 Measurement and Payment

- E27.5.1 No measurement or payment will be made for the supply and installation of breakaway bases as these items are incidental to this specification.

**E28. FLAGS**

E28.1 Description

E28.1.1 The following list generally describes the scope of this Section. Supply and installation of:

- (a) 457x914mm size, 200 or 210 denier high tenacity nylon flag including reinforced corner tether hole (1 side only).
- (b) The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary or and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E28.2 General

E28.2.1 Delivery and Storage

- (a) Store units in protected location, immediately upon arrival on the site.
- (b) Remove from site any units, which have been damaged during transportation and replace.

E28.3 Installation

E28.3.1 Flags shall be installed by the contractor in locations and in the manner indicated on the Construction Drawings.

E28.4 Protection after Completion

E28.4.1 Protect and maintain flags until acceptance of project work.

E28.4.2 Immediately remove from site, damaged flags. Replace, repair, or otherwise make good to approval of Contract Administrator.

E28.5 Method of Measurement

E28.5.1 Supply and Installation of Flags as specified in the Schedule of Prices and as shown on the Drawings will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.

E28.6 Basis of Payment

E28.6.1 Supply and Installation of Flags will be paid for at the Contract Unit Price for each item, which price shall be payment in full for supply of all material and performing all operations herein described and for all other items incidental to the work included in this Specification.

## **E29. EXTENDED MAINTENANCE**

E29.1 Description

E29.1.1 This Specification shall deal with the maintenance of the following:

- (i) LED lighting, Solar panel, and battery on light poles for Two (2) calendar years after the date of the Total Performance.
- (ii) LED lighting, Air Breeze wind turbine and battery on flag poles for Two (2) calendar years after the date of the Total Performance.
- (iii) LED lighting, and battery on flag poles for Two (2) calendar years after the date of the Total Performance.

E29.2 Materials and Personnel

E29.2.1 The Contractor shall provide all necessary equipment and any other items necessary for the maintenance as indicated in this Specification.

E29.2.2 The Contractor shall provide all necessary qualified personnel for the ongoing maintenance operations.

E29.3 Execution

E29.3.1 Solar Panel

- (a) After one month and every six months thereafter the Contractor shall:
  - (i) Clean solar panel to improve panel efficiency
  - (ii) Check the voltage output of the solar panel. The voltage shall be checked with a voltmeter connected between the two leads of the solar panel. There must be solar radiation incident on the panel and a load connected to the solar panel.

E29.3.2 Wind Turbine

- (a) After one month and every six months thereafter the Contractor shall:
  - (i) Check blades for chips or nicks. Replace blades if damaged.
  - (ii) Check the blade bolts and the hub nut for tightness.
  - (iii) Check nosecone for cracks and proper fit.
  - (iv) Wash off any built-up dirt or debris from the blades.
  - (v) Check all electrical connections to make sure they are tight and free from corrosion.
  - (vi) Check the battery water levels and add distilled water in accordance with manufacturer's recommendation.

E29.3.3 L.E.D. Lighting

- (a) After one month and every six months thereafter the Contractor shall:
  - (i) Clean L.E.D. cover to ensure operation at maximum optical efficiency
  - (ii) Refer to fixture installation instructions for maintenance and cleaning guidelines
  - (iii) Test L.E.D. light for appropriate light levels.

E29.3.4 Battery

- (a) After one month and every six months thereafter the Contractor shall:
- (i) Provide a general inspection of batteries, and enclosures.
  - (ii) Check charger voltage and current operation.
  - (iii) Measure float charge voltage at battery terminals.
  - (iv) Measure float charge current.
  - (v) Check battery environment and ambient temperatures.
  - (vi) Spot check individual battery temperatures.
  - (vii) Measure individual battery float voltages.
  - (viii) Inspect all connections for cleanliness and corrosion.
  - (ix) Measure micro OHM meter value of all terminal connections.
  - (x) Restore all connections as required.
  - (xi) Retorque all connections to recommended values.
  - (xii) Perform general system maintenance, clean batteries, enclosures.

E29.3.5 The Contractor shall agree and guarantee to replace any part found defective or in poor condition at the completion of the maintenance period. "Poor Condition" shall be interpreted as meaning equipment not performing in a satisfactory manner. All replacements shall be of same equipment, as specified.

E29.3.6 Upon the end of the required maintenance period, a Site inspection shall be held. If at this time, all material and Works is satisfactory the Contract for maintenance and warranty shall be terminated.

E29.4 Method of Measurement

E29.5 Extended Maintenance will be measured on a yearly basis and paid for in accordance with this Specification and accepted by the Contract Administrator.

E29.6 Basis of Payment

E29.7 Extended Maintenance will be paid at the Contract per year Price for "Extended Maintenance"; which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification.

E29.8 Extended Maintenance will be paid at the Contract per year Price for "Extended Maintenance"; which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification.

### **E30. SIGNAGE**

E30.1 General

E30.1.1 The following list generally describes the scope of this Section:

Supply and installation of:

- (a) Archway Aluminium Signs including all mounting hardware.
- (b) Aluminium Ornamental Street Signs including all mounting hardware.

E30.2 Delivery and Storage

E30.2.1 Store units in a protected location, immediately upon arrival on the Site.

E30.2.2 Remove from Site any units which have been damaged during transportation and replace.

E30.3 Materials

E30.3.1 Archway signs to be manufactured from H32 3mm(.125") Aluminium. Metals shall be free from defects impairing strength, durability or appearance.

- (a) Finish: The surfaces of the aluminium signs shall be free of visible oil, grease, dirt, mill scale, rust scale, oxides and other foreign matter leaving only shadows and/or streaks caused by rust stain and mill scale oxide.
- (b) Surfaces contaminated with grease, oil or chemicals, or mill scale, must be cleaned prior to painting.
- (c) Clean aluminium with zylol or an equivalent reducer/dry carefully while removing any residue or foreign material.
- (d) Apply an acid wash to the items and dry carefully again. The acid wash should be applied within 2 hours of washing with reducers.
- (e) Apply Sikken's (or approved equal) 2-part primer to the item after the acid wash has set. (Approximately 20 minutes). If the primer cannot be applied within 6 hours of the acid wash, the item must be acid washed again.
- (f) Apply a top coat of paint as per manufacturer's specifications 30 minutes after applying primer and no later than 5 hours after applying the primer. If this cannot be done, the item must be scuff sanded and reprimed again.
- (g) The topcoat for signs shall be one coat of powder coated white colour.

E30.3.2 Ornamental Street Signs to be manufactured from new, regular grade 5052, H36 or H38 sheet aluminium. Metals shall be free from defaults impairing strength, durability or appearance.

- (a) Aluminum metal shall be .125 inches (3.175 mm) thick sign grade aluminum for Street Name Topper Signs
- (b) Reflective sheeting shall be minimum engineer grade reflective material screened with compatible transparent inks, Standard of Acceptance is 3M engineer grade reflective sheeting.
- (c) All aluminum sign blanks shall be complete in all respects including metal preparation, shearing,
- (d) All aluminum blanks shall have all burrs and sharp edges removed and shall be degreased by a suitable solvent or steam cleaning process, and etched both sides to accept applications of covering sheeting and dried

E30.3.3 In accordance with D22 all signs shall be under warranty for a period of one year.

E30.3.4 Contract Administrator to supply digital sign design to manufacturer upon contract award.

E30.3.5 Any damage to paint incurred prior to or during installation shall be repaired within three (3) days of installation.

E30.3.6 Silkscreen Inks

- (a) Silkscreen artwork with matched UV stable, waterproof transparent inks, 3M Scotchlite 700
- (b) Series enamel-based ink system. Inks shall be compatible to comply with reflective sheeting

E30.3.7 All signs shall be screen printed or digitally printed with a minimum five (5) year outdoor durability warranty.

E30.3.8 Street signs are to be printed on both sides.

E30.3.9 The Contractor shall provide a sample decal in full colour for approval by the City of Winnipeg, prior to beginning on the entire project. Once the sample has been approved by the Contract Administrator, the Contractor shall produce the entire order.

E30.4 Pre-Manufacturer's Approvals

E30.4.1 After Contract Award and prior to manufacture, Contractor to submit to Contract Administrator one full proof of sign for layout/font approval by Contract Administrator and City of Winnipeg representative.

### E30.5 Fabrication

- E30.5.1 Fabrication shall be carried out in accordance with these Specifications and Drawings which form a part of this Contract.
- E30.5.2 The workmanship shall meet established practice in modern shops.
- E30.5.3 The manufacturer's identification marks on signs will not be allowed unless authorized in writing by the Contract Administrator.
- E30.5.4 If damage occurs to the aluminium during fabrication, the Contract Administrator shall be notified to facilitate the implementation of remedial measures. Remedial repair measures will be subject to the approval of the Contract Administrator.
- E30.5.5 Dimensions and fabrication which control the field matching of parts shall receive careful attention in order to avoid field adjustments. Contractor to co-ordinate with Traffic Services regarding method of installation for Area Identification Signs.

### E30.6 Quality Control

- E30.6.1 All workmanship and all material furnished and supplied under this Special Provision are subject to a close and systematic inspection and testing by the Contract Administrator including all operations from the selection and production of materials, the sizing images, etc. through to final acceptance of the Work. The Contractor shall be wholly responsible for the control of all operations, incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any materials or Works which are not in accordance with the requirements of this Special Provision.

### E30.7 Installation

- E30.7.1 Archway aluminium signs shall be installed onto archway in each side in the manner indicated by the Manufacturer and approval by the Contract Administrator.
- E30.7.2 Ornamental aluminium street signs shall be installed in the manner indicated as directed by City of Winnipeg Traffic Management Engineer and approval by the Contract Administrator.
- E30.7.3 Protect and maintain signage, including accessories, until acceptance of project Work.
- E30.7.4 Immediately remove from Site, damaged signage and accessories. Replace, repair, re-finish, or otherwise make good to approval of Contract Administrator.

### E30.8 Method of Measurement

- E30.8.1 Supply and Installation of Archway signage on 3mm aluminum backing as specified in the Schedule of Prices and as shown on the Drawings will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E30.8.2 Supply and Installation of street sign topper as specified in the Schedule of Prices and as shown on the Drawings will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.

### E30.9 Basis of Payment

- E30.9.1 Supply and Installation of Archway signage on 3mm aluminum backing will be paid for at the Contract Unit Price for each item for " Archway signage on 3mm aluminum backing ", which price shall be payment in full for supply of all material and performing all operations herein described and for all other items incidental to the work included in this Specification.
- E30.9.2 Supply and Installation of street sign topper will be paid for at the Contract Unit Price for each item for " Supply and install street sign topper", which price shall be payment in full

for supply of all material and performing all operations herein described and for all other items incidental to the work included in this Specification.

## **E31. TREE GUARDS**

### **E31.1 Description**

#### **E31.1.1 General**

- (a) This Specification covers the supply and installation of tree guards.
- (b) The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary or and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

### **E31.2 Materials**

#### **E31.2.1 General**

- (a) Submit shop drawings for tree guards, in accordance with Specification CW 1110. Indicate dimensions, assembly, materials, finishes, anchorage and installation details.

#### **E31.2.2 Tree Guards**

- (a) Two-piece steel guards with continuous splash/silt guard at base. Refer to Drawings.
- (b) Welding in accordance with all applicable specifications and standards.
- (c) Finish to be one layer corrosion resistant, meeting SAE J2334 Scribe specifications. Autophoretic coating system (by Urban Park Site Furnishings, Steinbach, Manitoba, phone 1-800-775-0018, or approved alternate) and two layers of power coating meeting all applicable specifications and standards. Prior to application of autophoretic coating, metal must be cleaned using the eight (8) stage ICS cleaning process (<http://www.icscoating.com>). Finish must be applied to ensure that there is no rusting at holes, edges and welds.

#### **E31.2.3 Gasket**

- (a) Where guard are dissimilar metals, provide neoprene gasket or approved alternate to prevent galvanic corrosion.

### **E31.3 Construction Methods**

#### **E31.3.1 General**

- (a) Install grates and frames true and plumb, in accordance with manufacturer's written instructions.

#### **E31.3.2 Installing Tree Guard**

- (a) Install tree guard using approved hardware. Where mounting points are not provided on the grate, obtain approval from the Contract Administrator of proposed fastening method.

#### **E31.3.3 Protection**

- (a) Protect installed tree guards from damage from subsequent construction operations. Time operations to minimize risk of damage.
- (b) Remove protection materials upon Substantial Performance of Work, or when risk of damage is no longer present.

### **E31.4 Method of Measurement**

- E31.4.1 Supply and Installation of Tree Guards as specified in the Schedule of Prices and as shown on the Drawings will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.

### E31.5 Basis of Payment

- E31.5.1 Supply and Installation of Tree Guard will be paid for at the Contract Unit Price for each item for "Supply and Install Tree Guard", which price shall be payment in full for supply of all material and performing all operations herein described and for all other items incidental to the work included in this Specification.

## **E32. CONCRETE TREE COVERS**

### E32.1 Description

- E32.1.1 The following list generally describes the scope of this Section. Supply and installation of:

- (a) Barkman Precast Concrete Tree Cover – 1370 mm square, plain concrete finish to match sidewalk finish. Two pieces with inset galvanized hardware to attach collar and to facilitate lifting. Hardware to be covered with flush durable cover coloured to match concrete. Collar to be separate piece with inset galvanized hardware for attachment to cover, sand blasted finish.
- (b) The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary or and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

### E32.2 General

#### E32.2.1 Delivery and Storage

- (a) Store units in protected location, immediately upon arrival on the site.
- (b) Remove from site any units, which have been damaged during transportation and replace.

### E32.3 Source

- E32.3.1 Concrete Tree Covers, sizes and finish as stated above as supplied by:  
Barkman Concrete Ltd.  
909 Gateway Road  
Winnipeg, Manitoba, R3K 3L1  
Contact: Wayne Wiebe  
T (204) 667-3310

### E32.4 Installation

- E32.4.1 Concrete Tree Covers shall be installed by the contractor in locations and in the manner indicated on the Construction Drawings.

### E32.5 Protection after Completion

- E32.5.1 Protect and maintain tree covers until acceptance of project work.
- E32.5.2 Immediately remove from site, damaged tree covers. Replace, repair, re-finish, or otherwise make good to approval of Contract Administrator.

### E32.6 Method of Measurement

- E32.6.1 Supply and Installation of Concrete Tree Covers as specified in the Schedule of Prices and as shown on the Drawings will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.

### E32.7 Basis of Payment

- E32.7.1 Supply and Installation of Concrete Tree Covers will be paid for at the Contract Unit Price for each item, which price shall be payment in full for supply of all material and performing

all operations herein described and for all other items incidental to the work included in this Specification.

### **E33. WOOD FENCING**

#### **E33.1 General**

##### **E33.1.1 Scope of Work**

- (a) This specification shall cover the supply and installation of wood fencing as shown on the drawings and as specified herein including ornamental metal panels, all hardware and fastening required and granular foundation.
- (b) The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary or and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

##### **E33.1.2 Source Quality**

- (a) Lumber identification by a grade stamp of an agent certified by the Canadian Lumber Accreditation Board.

##### **E33.1.3 Warranty**

- (a) Pressure treated wood is to be guaranteed for 10 years against rot, decay, insect attack, splitting, warping, or breaking. Fences are to be guaranteed against defects in materials and workmanship for a period of 12 months from the date of Substantial Performance of the Contract. The contractor is not responsible for acceptable wear through usage or acts of vandalism.

#### **E33.2 Products**

##### **E33.2.1 Materials**

- (a) Wood: All wood for fences shall be cedar tone pressure treated; no wane, bark, checking, or splitting permitted.
  - (i) All posts shall be D4S c/w chamfer top 4 sides, sound square edges
  - (ii) All rails and pickets shall be D4S c/w sound square edges
- (b) Hardware: all hardware is as follows:
  - (i) Nails, spikes, and screws: Hot dipped galvanized, size as required by Canadian Building Construction Standards.
  - (ii) Bolts: Galvanized; 12 mm in diameter unless otherwise specified, complete with nuts and washers.
  - (iii) Galvanizing: to CSA G164-M1981; use galvanized fasteners for exterior work.
  - (iv) Joist hangers: min. 1.0 mm thick sheet steel galvanized coating or as specified.
  - (v) Fasteners indicated on drawing or specified by the Owner (no substitutes).
  - (vi) Galvanized Steel H brackets, as shown on detailed drawing, for post seats.
  - (vii) Hinges to be heavy duty galvanized hinges, sized for weight of gate.
- (c) Aluminium ornamental panel to be as per the drawings. Finish to be powdercoated silver.
- (d) Base Course and Backfill: shall be 19mm diameter crushed limestone compacted in 150mm lifts.

##### **E33.2.2 Quality Control**

- (a) All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator including all operations from the selection and production of materials through to final acceptance of the specified work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval



that may have been previously given. The Contract Administrator reserves the right to reject any materials or works which are not in accordance with the requirements of this Specification.

- (b) Contractor to supply shop drawings for construction of garbage enclosure gates and roof. All work to meet Canadian Building Code requirements.
- (c) The Contractor shall, at his own expense, correct such work or replace such materials found to be defective under this Specification in an approved manner to the satisfaction of the Contract Administrator.
- (d) The Contract Administrator shall be afforded full access for the inspection and control testing of materials, both at the site and at any plant or borrow pit used for the supply of the materials to determine whether the material is being supplied in accordance with this Specification.

### E33.3 Execution

#### E33.3.1 Construction Methods

- (a) All lumber shall be neatly cut for a proper fit.
- (b) Fences to be constructed to the lines, grades, and specifications as shown in the drawings or as specified herein. Establish final grades and alignment for fences to be set by the Contractor and Contract Administrator.
- (c) The contractor shall stake out all post locations as located on the Drawings for review and approval by Contract Administrator and property owner prior to installation. Prior to drilling holes, all underground services shall be located and protected. Fence support posts shall be set true in line and elevation. Factory treated end of post shall always be placed down in excavated hole prior to backfilling, under no circumstance shall a cut end of a post be placed down into an excavated hole. Install posts plumb and level to the lines and grades required by the work.
- (d) Posts for 1.2m ht. wood screen fence to be set in ground, backfilled and compacted as per Structural Drawings.
- (e) Backfill hole excavations as per Structural drawings.
- (f) All wood shall be even and neat and shall provide a solid finished product suitable for the purposes intended.
- (g) Install spanning members with crown edge up.
- (h) Construct panels with plywood prior to installation on site. Panels to be reviewed and approved by Project Landscape Architect prior to installation.
- (i) Contractor shall connect the panels to pillars as shown on drawings using angle iron set into mortar joint.

#### E33.4 Method of Measurement

- E33.4.1 Supply and install wood fence will be measured on a lineal meter basis. The lineal meters to be paid for shall be for all Work and materials supplied in accordance with the specifications and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

#### E33.5 Basis of Payment

- E33.5.1 Supply and install wood fence will be paid for at the contract lineal meter price for "Supply and Install Wood Fence", measured as specified herein, which price shall be payment in full for supplying all materials as required and performing all operations herein described and all other items incidental to the Work included in this specification.

## E34. LINE PAINTING

### E34.1 General

- E34.1.1 This specification is to cover all labour, equipment and materials required to mark parking stall lines and handicap symbols on the asphalt/concrete surface. The painting of certain vehicular traffic hazards/obstructions are illustrated on the attached drawings.
- E34.2 Materials
- E34.2.1 Paint shall conform to City of Winnipeg specification for reflectorized traffic paint or suitable equivalent for application to asphalt and/or concrete surface.
- (a) CGSB 1-GP-74M + Amdt-May-81, alkyd traffic paint
  - (b) High Gloss Traffic Paint (IBIS Products Limited)
- E34.3 Paint colours shall be:
- E34.3.1 Yellow - all centre lines, parking stall lines and handicap symbols illustrated on plan. White – stop bars.
- (a) CGSB 1-GP-12C + Amdt-Dec-84, yellow 505-30, white 513-3018 (MTO Spec. 1710);(Yellow 40-3057, White 40-2478 -IBIS Products Limited)
  - (b) Federal Traffic Paint, Yellow 40-3597 Qual No 80087, White 40-3596 Qual No 80086 (IBIS Products Limited)
  - (c) High Gloss Traffic Paint, Yellow 40-1821 (IBIS Products Limited)
- E34.3.2 Thinner to CGSB 1-GP-5M
- E34.3.3 Glass Beads: Overlay Type: To CGSB 1-GP-74 ÷ Amdt-May-81
- E34.4 Construction Method
- E34.4.1 Line painting to be done upon completion of asphalt paving Work and curing time.
- E34.4.2 No markings shall be performed when the temperature is below 10<sup>0</sup> Celsius nor during rainfall or fog, or until the surface is perfectly dry. No markings shall be done if, in the opinion of the site supervisor, the conditions are not conducive to provide a top quality result.
- E34.4.3 Immediately before application of the paint, the existing surface shall be dry and entirely free from dirt, grease, oil acids, laitance, or other foreign matter which would reduce the bond between the coat of paint and the asphalt/concrete. The surface shall be thoroughly cleaned by sweeping and blowing as required to remove all dirt, laitance and loose materials.
- E34.4.4 Suitable chalkline layouts of proposed lines and arcs shall be spotted in advance of the paint application. Control points shall be spaced at such intervals as will ensure accurate location of all markings.
- E34.4.5 When discrepancies between the drawings and the field layout occur, these discrepancies are to be reported to the Contract Administrator for further action before proceeding with the application of paint.
- E34.4.6 The Contractor shall provide an experienced technician to supervise the location, alignment, layout, dimension, and application of the paint.
- E34.4.7 Markings shall be applied at the locations and to the dimensions and spacing indicated on the plans or as specified. Paint shall not be applied until the layouts, indicated alignment and the condition of the existing surface have been approved by the site engineer and/or site supervisor.
- E34.4.8 Paint shall be applied at a rate of 200 lineal feet per gallon (60m per 4.5L) and maintain a uniform lines unless otherwise indicated on specifications drawings.
- E34.4.9 Apply glass beads at a rate of 70g/L of paint.
- E34.4.10 The paint shall be mixed in accordance with the manufacturer's instructions before application. The paint shall be thoroughly mixed and applied to the surface of the concrete

with the marking machine. The surface shall receive two (2) coats, the first coat shall be thoroughly dry before the second coat is applied.

E34.4.11 The paint applicator to be an approved pressure type mobile distributor capable of applying paint in single or double and dashed lines, and that will ensure uniform application and having a positive shut-off.

E34.4.12 In the application of straight strips, any deviation in the edges exceeding 1/2 inch in 50 feet shall be obliterated and the marking corrected. The width of the markings shall be as designated within a tolerance of 5 percent. All paintings shall be performed to the satisfaction of the Contract Administrator by competent and experienced equipment operators, labourers, and artisans in a neat and Workmanlike manner.

E34.4.13 Thoroughly clean distribution tank before refilling with paint of different colour.

E34.4.14 After application of the paint, all markings shall be protected while the paint is drying. The fresh paint shall be protected from injury or damage of any kind. The Contractor shall be directly responsible and shall erect or place suitable warning signs, flags, or barricades, protective screens, or coverings as required. All surfaces shall be protected from disfiguration by spatter, splashes, spillage drippings, of paint or other materials.

#### E34.5 Method of Measurement

E34.5.1 Supply and install line painting will be measured on a lump sum basis. The lump sum to be paid for shall be for all Work and materials supplied in accordance with the specifications and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

#### E34.6 Basis of Payment

E34.6.1 Supply and install line painting will be paid for at the contract lump sum price for "Line Painting", measured as specified herein, which price shall be payment in full for supplying all materials as required and performing all operations herein described and all other items incidental to the Work included in this specification.

### **E35. ELECTRICAL WORKS**

#### E35.1 General Provisions

E35.1.1 Refer also to Drawings.

E35.1.2 Furnish all labour, materials, equipment and services for the complete installation of the electrical Work as shown on the plans and specified. Complete system to operate to total satisfaction of the Contract Administrator

E35.1.3 Conform with all Codes and pay all permits and Fees. Upon completion, present a "Certificate of Approval" for electrical Work from the Inspection Department.

E35.1.4 Examine the Site and local conditions affecting the Work under this contract.

E35.1.5 Refer to associated drawings and specifications for electrical Work in connection therewith.

E35.1.6 Install all Work promptly and in advance of concrete pouring and/or construction.

E35.1.7 The Contractor shall be responsible to make good all "Cutting and Patching" required by his section of the Contract. Include all trenching, backfilling and surface repair. Contractor to push wires where possible at all locations.

E35.1.8 All Work shall be executed in a first class and workmanlike manner. All supports, hangers, and securing devices shall be solid and substantial. All Work shall be laid out neatly in its mechanical appearance. It shall be logically arranged for simplicity of installation and accessibility.

E35.1.9 Provide corrected "as-built" drawings on completion of the project. All underground services shall be indicated on as-builts and dimensioned.

- E35.1.10 Identify circuits/equipment with lamacoid nameplates.
- E35.1.11 All electrical apparatus shall be properly grounded according to the latest edition of the "Canadian Electrical Code"
- E35.1.12 All equipment, wiring, conduit, grounding, seals, etc., shall be in compliance with the latest edition of the "Canadian Electrical" and local "Codes". Wiring in finished grade shall be in rigid PVC conduits, complete with ground conductor.
- E35.1.13 Supply and install electrical panel as directed on Site.
- E35.1.14 Supply and install conduit in locations as per the drawings and as directed on Site by Contract Administrator. Work also to be coordinated with City of Winnipeg Public Works contact Gary Campbell at 794-4379.
- E35.1.15 Co-ordinate installation with Manitoba Hydro. Installation to conform with all utility requirements.
- E35.1.16 Provide ground rod and grounding connections to suit Manitoba Hydro and City of Winnipeg Inspection Department.
- E35.1.17 The Contractor shall carefully examine all drawings relating to the Work, to be certain that the Work under this Contract can be carried out and, prior to the submission of his/her Bid in accordance with B4, report at once to the Contract Administrator any defect, discrepancy, omission or interference affecting the work of this section or the guarantee of same.
- E35.1.18 The Contractor shall be responsible for any damage caused the City or their Contractors by improperly carrying out this contract.
- E35.1.19 The Contractor shall guarantee the satisfactory operation of all work and apparatus included and installed under this section for a period of twelve (12) calendar months after the final acceptance of the project.
- E35.2 Method of Measurement / Basis of Payment
  - E35.2.1 Electrical Work for each location will be measured and paid on a lump sum basis which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.