



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 1104-2017

SUPPLY OF PRECAST CONCRETE TRAFFIC BARRIERS

TABLE OF CONTENTS

PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	3

PART B - BIDDING PROCEDURES

B1. Contract Title	1
B2. Submission Deadline	1
B3. Enquiries	1
B4. Confidentiality	1
B5. Addenda	1
B6. Substitutes	2
B7. Bid Submission	3
B8. Bid	3
B9. Prices	4
B10. Disclosure	4
B11. Qualification	5
B12. Opening of Bids and Release of Information	5
B13. Irrevocable Bid	6
B14. Withdrawal of Bids	6
B15. Evaluation of Bids	6
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. Definitions	1
D4. Contract Administrator	1
D5. Ownership of Information, Confidentiality and Non Disclosure	1
D6. Notices	2
D7. Procurement	2
D8. Work by Others	2
D9. Verification of Goods	2

Submissions

D10. Authority to Carry on Business	3
D11. Insurance	3

Schedule of Work

D12. Commencement	3
D13. Liquidated Damages	3
D14. Total Performance	4

Measurement and Payment

D15. Invoices	4
D16. Payment	4

Warranty

D17. Warranty	5
---------------	---

PART E - SPECIFICATIONS

General

E1. Applicable Specifications and Drawings	1
E2. Goods	1
E3. Shop Drawings	1

E4. Fabrication

3

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY OF PRECAST CONCRETE TRAFFIC BARRIERS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, January 15, 2018.

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. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

B3.2 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 promptly notify the Contract Administrator of the error, discrepancy or omission at least five (5) Business Days prior to the Submission Deadline.

B3.3 If the Bidder is unsure of the meaning or intent of any provision therein, the Bidder should request clarification as to the meaning or intent prior to the Submission Deadline.

B3.4 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.

B3.5 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.

B3.6 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

B4. CONFIDENTIALITY

B4.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

- a) was known to the Bidder before receipt hereof; or
- b) becomes publicly known other than through the Bidder; or
- c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

B4.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Bid Opportunity to the media or any member of the public without the prior written authorization of the Contract Administrator.

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/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6. SUBSTITUTES

- B6.1 The Work is based on the materials, equipment, methods and products 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 seven (7) 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 material, equipment, method or product 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 Contract;
 - 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 Contract.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B6.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- 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/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.
- B6.9 No later claim by the Contractor for an addition to the price(s) because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B7. BID SUBMISSION

- B7.1 The Bid shall consist of the following components:
- a) Form A: Bid;
 - b) Form B: Prices;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B7.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B7.5 If the Bid Submission is submitted by mail, courier or personal delivery, it shall be enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address, and shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1
- B7.5.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B7.6 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204-949-1178.
- B7.6.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B7.7 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.8 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 B15.1a).
- B7.9 Bids submitted by internet electronic mail (e-mail) will not be accepted.

B8. BID

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;

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

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

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

B8.4 Paragraph 10 of Form A: Bid shall be signed in accordance with the following requirements:

- a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
- b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers 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/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

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 Prices on Form B: Prices shall include:

- (a) duty;
- (b) freight and cartage;
- (c) Provincial and Federal taxes [except the Goods and Services Tax (GST) and Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable] and all charges government or otherwise paid;
- (d) profit and all compensation which shall be due to the Contractor for the Work and all risks and contingencies connected therewith.

B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B10. DISCLOSURE

B10.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full

disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B10.2 The Persons are:

- a) N/A

B11. QUALIFICATION

B11.1 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, or if the Bidder does not carry on business in Manitoba, in the jurisdiction where the Bidder does carry on business;
- 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.

B11.2 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>

B11.3 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);

B11.4 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B11.5 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

B12.1 Bids will not be opened publicly.

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 or evaluated prices) 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>

B12.3 After award of Contract, the name(s) of the successful Bidder(s), their address(es) 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>

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

B13. IRREVOCABLE BID

B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 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 for the time period specified in Paragraph 9 of Form A: Bid.

B14. WITHDRAWAL OF BIDS

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

B14.1.1 Notwithstanding C21, 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 10 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 10 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/her Bid after the Submission Deadline but before his/her 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.

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 therefrom (pass/fail);
- b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B11 (pass/fail);
- c) Total Bid Price;
- d) economic analysis of any approved alternative pursuant to B6;

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

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

- B15.4 Further to B15.1c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B15.4.1 Further to B15.1a), in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
- B15.5 This Contract will be awarded as a whole.
- 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/her Bid upon written request to the Contract Administrator.
- B16.4 Notwithstanding C4 and Paragraph 6 of Form A: Bid, the City may issue a purchase order to the successful Bidder in lieu of the execution of a Contract.
- B16.5 The Contract Documents, as defined in C1.1(n) (ii), in their entirety shall be deemed to be incorporated in and to form a part of the purchase order notwithstanding that they are not necessarily attached to or accompany said purchase order.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for the Supply of Goods* (Revision 2008 05 26) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for the Supply of Goods* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Supply of Goods*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

D1.1 In addition to the *General Conditions for the Supply of Goods*, 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 supply of precast concrete traffic barriers.
- D2.2 In the event that operational changes result in substantial changes to the requirements for Work, the City reserves the right to alter the quantity of work performed under this Contract, or to terminate the Contract, upon sixty (60) Calendar Days written notice by the Contract Administrator. In such event, no claim may be made for damages on the ground of loss of anticipated profit on Work.

D3. DEFINITIONS

- D3.1 When used in this Bid Opportunity:
- a) "CSA" means Canadian Standards Association;
 - b) "ASTM" means American Society for Testing and Materials;
 - c) "Goods" mean precast concrete traffic barriers;
 - d) "CPCI" means Canadian Precast/Prestressed Concrete Institute.

D4. CONTRACT ADMINISTRATOR

- D4.1 The Contract Administrator is WSP Canada Group Limited, represented by:
Justin Magne, P.Eng.
Project Engineer
Telephone No.: 204-470-3388
Email Address: Justin.Magne@wsp.com

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

- D5.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractors own use, or for the use of any third party.
- D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.
- D5.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;
- a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
 - b) the Contract, all deliverables produced or developed; and
 - c) any statement of fact or opinion regarding any aspect of the Contract.
- D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

D6. NOTICES

D6.1 Notwithstanding C21.3, all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer.

D7. PROCUREMENT

D7.1 The Contractor shall store the Goods at a yard within the boundaries of The City of Winnipeg.

D7.2 Goods shall be procured on an “as scheduled” basis during the term of the Contract. Procurement of Goods under this Contract may be directly by the City, or their designate via an Installation Contractor engaged by the City. The Contractor shall be responsible for the safe storage and handling of Good until the Goods have been procured by the City or their designate.

D7.2.1 Goods shall be procured within twenty eight (28) Calendar Days following the scheduled supply dates:

- (a) Sixty (60) Portable Precast Traffic Barriers with Anchorage Blockouts will be required for March 19, 2018.
- (b) One hundred thirty (130) Portable Precast Traffic Barriers will be required for March 19, 2018.
- (c) Additional seventy (70) Portable Precast Traffic Barriers will be required for May 14, 2018.

D7.3 Goods shall be available for pick up between the hours of 7:00 and 16:30 on Business Days.

D7.4 The City or their designate shall notify the Contractor at least seventy two (72) hours prior to pick up.

D7.5 The Contractor shall be responsible for loading the Goods onto the truck making the pick-up in a timely fashion.

D7.6 Notwithstanding D7.2.1, in the event that operational changes result in substantial changes to the requirement for Goods, the City reserves the right to a one-time change of the scheduled pick-up date. The City shall incur no cost or liability to the Contractor as a result of such event.

D8. WORK BY OTHERS

D8.1 Work by others on or near the site will include but not necessarily be limited to:

- (a) The City of Winnipeg / Installation Contractor – The City of Winnipeg or their designate via an Installation Contractor engaged by the City will be picking up the Goods from the Contractor’s designated yard. The Contractor is expected to cooperate with the City or their designate to facilitate pick-up in a timely fashion.

D9. VERIFICATION OF GOODS

D9.1 All goods, formwork, and procedures shall be subject to inspection and verification by the Contract Administrator.

D9.2 The Contractor shall provide written notice to the Contract Administrator forty eight (48) hours in advance of the first concrete pour. No charge shall be made to the City for any delays or loss of production caused by such inspection and verification.

SUBMISSIONS

D10. AUTHORITY TO CARRY ON BUSINESS

D10.1 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.

D11. INSURANCE

D11.1 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; such liability policy to also contain a cross-liability clause, non-owned automobile liability and products and completed operations cover, to remain in place at all times during the performance of the Work;
- b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.

D11.2 Deductibles shall be borne by the Contractor.

D11.3 The Contractor shall provide the Contract Administrator with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4 for the return of the executed Contract.

D11.4 The Contractor shall not cancel, materially alter, or cause the policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

SCHEDULE OF WORK

D12. COMMENCEMENT

D12.1 The Contractor shall not commence any Work until he/she is in receipt of a notice of award from the City authorizing the commencement of the Work.

D12.2 The Contractor shall not commence any Work until:

- a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D10;
 - (ii) evidence of the workers compensation coverage specified in C6.16;
 - (iii) evidence of the insurance specified in D11;
- b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

D13. LIQUIDATED DAMAGES

D13.1 If the Contractor fails to achieve supply of the Goods within the time specified in D7.2.1 the Contractor shall pay the City one thousand dollars (\$1,000) per Calendar Day for each and every Calendar Day until the Goods have been supplied.

- D13.2 The amount specified for liquidated damages in D13.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve supply of the Goods by the day fixed herein for same.
- D13.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D14. TOTAL PERFORMANCE

- D14.1 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D14.2 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.

MEASUREMENT AND PAYMENT

D15. INVOICES

- D15.1 Further to C10, the Contractor shall submit an invoice for each order delivered to:
The City of Winnipeg
Corporate Finance – Accounts Payable
4th Floor, Administration Building, 510 Main Street
Winnipeg MB R3B 1B9
Facsimile No.: 204-949-0864
Email: CityWpgAP@winnipeg.ca
- D15.2 Invoices must clearly indicate, as a minimum:
- quantity of goods supplied;
 - date of pick-up;
 - the amount payable with GST, MRST, and any applicable environmental handling charges/fees identified and shown as separate amounts; and
 - the Contractor's GST registration number.
- D15.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.
- D15.4 **Bid Submissions must not be submitted to the above facsimile number. Bids must be submitted in accordance with B7.**

D16. PAYMENT

- D16.1 Further to C10, payments shall be in Canadian funds net thirty (30) Calendar Days after receipt and approval of the Contractor's Invoice.
- D16.2 Further to C10, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D17. WARRANTY

- D17.1 Notwithstanding C11, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to C11.3, in which case it shall expire when provided for thereunder.

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
CW-315	Precast Concrete Portable Traffic Barrier

E1.2 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B6.

E2. GOODS

E2.1 The Contractor shall supply precast concrete traffic barriers in accordance with the requirements hereinafter specified.

E3. SHOP DRAWINGS

E3.1 Description

E3.1.1 This Specification shall revise, amend and supplement the requirements of CW1110.

- (a) The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, including site erection drawings which are to be provided by the Contractor to illustrate details of a portion of the work.
- (b) The Contractor shall submit specified shop drawings to the Contract Administrator for review and approval prior to the commencement of any scheduled Work.

E3.1.2 Shop Drawings

- (a) Original drawings are to be prepared by Contractor, Subcontractor, supplier, distributor, or manufacturer, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate sections.
- (b) Shop drawings for the following structural components shall bear the seal of a Professional Engineer registered to practice in the Province of Manitoba.
 - (a) Fabrication, layout for miscellaneous metal; and
 - (b) All form details;

E3.1.3 Contractor's Responsibilities

- (a) Review shop drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.
- (b) Coordinate each submission with requirements of Work and Contract Documents. Individual shop drawings will not be reviewed until all related drawings are available.
- (c) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents
- (d) Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission, unless the Contract Administrator gives written acceptance of specified deviations.
- (e) Responsibility for errors and omissions in submission is not relieved by the Contract Administrator's review of submittals.
- (f) The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings. The Contractor shall direct specific attention in writing on resubmitted Shop Drawings to

revisions other than the corrections requested by the Contract Administrator on the previous submission.

- (g) After Contract Administrator's review and return of copies, distribute copies to subtrades as required.
- (h) Maintain one (1) complete set of reviewed shop drawings, filed by Specification Section Number, at the site of the work for use and reference of the Contract Administrator and Subcontractors.

E3.1.4 Submission Requirements

- (a) Schedule submissions at least seven (7) Calendar days before dates reviewed submissions will be needed, and allow for a seven (7) Calendar day period for review by the Contract Administrator of each individual submission and re-submission, unless otherwise noted.
- (b) Accompany submissions with transmittal letter, containing:
 - (i) Date.
 - (ii) Project title and Bid Opportunity Number.
 - (iii) Contractor's name and address.
 - (iv) Number of each shop drawing, product data and sample submitted.
 - (v) Specification Section, Title, Number and Clause.
 - (vi) Drawing Number and Detail/ Section Number.
 - (vii) Other pertinent data.
- (c) Submission shall Include:
 - (i) Date and revision dates.
 - (ii) Project title and Bid Opportunity number.
 - (iii) Name of:
 - (i) Contractor
 - (ii) Subcontractor (if applicable)
 - (iii) Supplier
 - (iv) Manufacturer
 - (iv) Identification of product of material.
 - (v) Product data sheets for miscellaneous metals and inserts.
 - (vi) Relation to adjacent structure or materials.
 - (vii) Field dimensions, clearly identified as such.
 - (viii) Specification section name, number and clause number or drawing number and detail/section number.
 - (ix) Applicable standards, such as CSA or CGSB numbers.
 - (x) Contractor's stamp, initialled or signed, certifying review of submission, verification of field measurements and compliance with Contract Documents.

E3.1.5 Other Considerations

- (a) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent shop drawings and resubmit.
- (b) Incomplete shop drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.
- (c) No delay or cost claims will be allowed that arise because of delays in submission, re-submissions and review of shop drawings.

E4. FABRICATION

E4.1 General

E4.1.1 Concrete Traffic Barriers must be fabricated at a facility certified by the Canadian Precast/Prestressed Concrete Institute (CPCI) and according to the latest version of CSA A23.4, Precast Concrete – Materials and Construction.

E4.2 References

E4.2.1 All reference standards and related specifications shall be current issue or the latest version at the date of tender advertisement. References shall consist of:

- (a) CSA A23.1, Concrete Materials and Methods of Concrete Construction
- (b) CSA A23.2, Methods of Test and Standard Practices for Concrete
- (c) CSA G30.18, Billet-Steel Bars for Concrete Reinforcement
- (d) CAN/CSA G164, Hot Dip Galvanizing of Irregularly Shaped Articles
- (e) ASTM C 260, Standard Specification for Air Entraining Admixtures for Concrete
- (f) ASTM C 494, Standard Specification for Chemical Admixtures for Concrete
- (g) ASTM C 1017, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete

E4.3 Materials

E4.3.1 Concrete

- (a) Concrete shall meet the requirements of CSA A23.1, Exposure Class C-1, Air Content Category 1 for hardened concrete and shall have a minimum compressive strength of 40 MPA at 28 days.
- (b) The maximum nominal size of coarse aggregate shall be 20mm and meet the grading requirements of CSA A23.1, Table 11, and Group 1. Coarse aggregate shall be uniformly graded and not more than 1% shall pass a 75 µm sieve. Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongation, dust, shale, earth, vegetable matter or other injurious substances.
 - (i) Test of the coarse aggregate shall not exceed the limits for standard requirements prescribed in CSA A.23.1, Table 12, for concrete exposed to freezing and thawing.
- (c) Fine aggregate shall meet the grading requirements of CSA A23.1, Table 10, FA1. Fine aggregate shall be uniformly graded and not more than 3% shall pass a 75 µm sieve. Fine aggregate shall consist of sand, stone, screenings, other inert materials with similar characteristics or a combination thereof, having clean, hard, strong, uncoated grains free from injurious amounts of dust, lumps, shale, alkali, organic matter, loam or other deleterious substances.
 - (i) Tests of fine aggregates shall not exceed the limits for standard requirements prescribed in CSA A23.1, Table 12.
- (d) Air entraining admixtures shall conform to the requirements of ASTM C 260.
- (e) Chemical admixtures shall conform to the requirements of ASTM C 494 or C 1017 for flowing concrete.
- (f) Cementitious materials shall conform to the requirements of CSAA3001.
- (g) Should the Contractor choose to include silica fume in the concrete mix design, the substitution of silica fume shall not exceed 8% by mass of cement.
- (h) Should the Contractor choose to include fly ash in the concrete mix design, the fly ash shall be Class CI and the substitution shall not exceed 25% by mass of cement.

E4.3.2 Reinforcing Steel

- (a) The Contractor shall supply the reinforcing steel. The reinforcing steel shall conform to the requirements of CSA G30.18 Grade 400W.

E4.3.3 Miscellaneous Metals

- (a) Approved 25Ø end lift insert include Richmond LEL-WS End Lift Insert for 25Ø, product number 310-26-0025 as supplied by National Concrete Accessories, Winnipeg, Manitoba, ph. 204-233-4107, or approved equal in accordance with B6.
- (b) Approved 25Øx75 long eye bolt include Richmond LEB Eye Bolt 25Øxlong, product number 316-99-0116 as supplied by National Concrete Accessories, Winnipeg, Manitoba, ph. 204-233-4107, or approved equal in accordance with B6
- (c) The Contractor shall supply all miscellaneous metals. All materials shall be galvanized and shall conform to the requirements shown on the Drawings and are subject to the approval of the Contract Administrator.
- (d) All metal surfaces to be galvanized shall be cleaned thoroughly of rust scale, mill scale, dirt, point and other foreign material by commercial sand, grit or shop blasting or pickling prior to galvanizing. Heavy deposits of oil and grease shall be removed with solvents prior to blasting or pickling.

E4.3.4 Replacement of Damaged Materials

- (a) All material supplied by the Contractor that in the opinion of the Contract Administrator has been damaged or otherwise rendered unusable by improper storage or handling by the Contractor shall be replaced by the Contractor at his own expense.

E4.4 Submittals

E4.4.1 The Contractor shall submit to the Contract Administrator for review and approval, at least fourteen (14) Calendar Days prior to the commencement of any scheduled Work.

- (a) Mix Design Statement
 - (i) Provide a "Mix Design Statement" for concrete to be used certifying constituent materials and mixing proportions. Supply reasonable evidence to the Contract Administrator that the mix proportions selected will produce concrete meeting specified strength, workability and yield.
- (b) Concrete
 - (i) Provide a recent test information on sieve analysis of fine and coarse aggregates in accordance with CSA Standard Test Method A23.2-2A.
 - (ii) Provide a recent test information on tests for organic impurities in fine aggregates for concrete, in accordance with CSA Standard Test Method A23.2-7A.
 - (iii) Provide a recent test information on relative density and absorption of coarse aggregate, in accordance with CSA Standard Test Methods A23.2-12A.
 - (iv) Provide a recent test information on resistance to degradation of large-size coarse aggregate by abrasion and impact in the Los Angeles Machine, in accordance with CSA Standard Test Method A23.2-16A.
 - (v) Provide a recent test information on potential alkali reactivity of cement aggregate combinations (mortar bar method), in accordance with CSA Standard Test Method A23.2-27A.
 - (vi) Provide a report on chloride iron penetrability test, in accordance with ASTM C1202.
- (c) Miscellaneous Metals
 - (i) Provide a sample of one (1) Richmond LEL-WS End Lift Insert for 25Ø.
 - (ii) Provide a sample of one (1) Richmond Eye-Bolt 25Øx75 Long.
 - (iii) Provide a sample of one (1) 38Øx813 Steel Retaining Pin.
 - (iv) Provide a sample of one (1) 13Øx75 LG Bolt c/w Hex Nut & one (1) Lock Washer.

- (v) Provide a sample of one (1) 25Øx25 LG socket head screw.
- (vi) Provide a sample of one (1) post clamp insert.
- (vii) Provide a product data sheet for all materials listed under E4.4.1(c).

E4.4.2 Any change in the constituent materials of any approved mix design shall require submission of a new concrete mix design statement, and mix design test data. If, during the progress of the Work, the concrete supplied is found to be unsatisfactory for any reason, including poor workability, the Contract Administrator may require the Contractor to make any necessary adjustments and associated resubmissions.

E4.5 Construction Methods

E4.5.1 General

- (a) The Contractor shall ensure that the concrete is properly batched, mixed, placed and cured.
- (b) The precast concrete barriers shall be constructed as shown on the Drawings with the following exceptions:
 - (i) Optional anchorage blockout will only be required if specified; and
 - (ii) The 50mm diameter holes through the barriers shall have a 5 mm chamfer around the circumference of the hole on both sides of the barrier.

E4.5.2 Tolerances

- (a) Cross sectional dimensions throughout the entire length of the barrier shall not vary from those shown on the Drawings by more than 5 mm.
- (b) The locations of the reinforcing steel shall not vary from those shown on the Drawings by more than 5 mm.
- (c) For the horizontal alignment, the maximum deviation from a straight line parallel to the centreline of a barrier shall be 5 mm.
- (d) The bottom surface of barriers at the bearing areas shall be in a true level plane, which does not vary by more than 5 mm from a true straight edge placed in any direction across the bearing area.

E4.5.3 Forms

- (a) Steel forms shall be used. The faces of the forms shall be smooth so as to impart a good finish to the concrete. Particular care shall be taken to ensure the verticality and rigidity of the form ends that produce surfaces that will be in contact with each other after installation. Forms shall produce precast concrete barriers that conform to the shape, lines and dimensions as shown on the Drawings and within the tolerances described in E4.5.2.
- (b) Forms shall be designed for the rate and method of concrete placement.
- (c) The faces of the forms shall be treated with a release agent to ensure that stripping may be carried out without damage to the concrete. Care shall be taken to prevent the release agent from coming in contact with any reinforcing steel or embedded materials.
- (d) Forms shall include temporary openings to facilitate the removal of all foreign substances prior to placing the concrete.

E4.5.4 Installation of Embedded Materials

- (a) Embedded materials shall be placed in the positions as indicated on the Drawings and fixed securely to the forms to ensure that there is no displacement during placing or vibrating of the concrete.

E4.5.5 Reinforcing Steel

- (a) Reinforcing steel shall be placed accurately in the positions shown on the Drawings, and shall be retained in such positions by means of bar accessories and wires so that the bars shall not be moved out of alignment during or after the depositing of concrete. Bar accessories shall be galvanized or shall be made from non-rusting material.

- (b) Reinforcing steel shall be kept free of all foreign materials in order to ensure a positive bond between the concrete and steel. The Contractor shall remove any material that has been deposited on the reinforcing steel before concrete is placed.
- (c) Intersecting bars shall be tied positively at each intersection.

E4.5.6 Depositing of Concrete

- (a) The temperature of the mixed concrete shall not be less than 15°C and not more than 25°C at the time of placing in the forms. Aggregates may be heated to a temperature of not more than 65°C. The heating apparatus and housing for the aggregates shall be sufficient to heat the aggregates uniformly without the possibility of the occurrence of hot spots that may burn the materials. The water may be heated to a temperature of not more than 65°C.
- (b) Concrete shall be deposited carefully and vibrated so that it fills the forms completely and makes complete contact with all reinforcing bars and embedded materials.
- (c) The Contractor shall provide sufficient personnel to deposit and vibrate the concrete and shall ensure that each batch of concrete is vibrated properly into place as it is deposited.
- (d) Buckets, chutes and other equipment used to deposit concrete in the forms shall be positioned as close to the top of the forms as possible to minimize the free fall of the concrete.
- (e) Depositing of concrete shall be a single continuous complete operation so that each barrier shall be monolithic without joints.
- (f) Before any concrete may be deposited, the interior of the forms shall be cleaned of all chips, earth, shavings, sawdust, rubbish or other foreign substances.

E4.5.7 Vibrating Concrete

- (a) Vibrators shall be of sturdy construction, adequately powered and capable of transmitting to the concrete not less than 3,600 impulses per minutes when operating under load. The vibration shall be sufficiently intense to cause the concrete to flow or settle readily into place and to visibly affect the concrete over a radius of at least 450 mm from the vibrator when used in concrete having a 25 mm slump.
- (b) A sufficient number of vibrators shall be employed so that at the required rate of placement, vibration and complete compaction are obtained throughout the entire barrier. At least one extra vibrator shall be on hand for emergency use.
- (c) Internal vibrators shall be constantly moving vertically in the concrete and shall be applied at points uniformly spaced that are not farther apart than the radius over which the vibrator is visibly effective. Internal vibrators shall be applied close enough to the forms to vibrate the surface concrete effectively but care shall be taken to avoid displacing or damaging the forms.
- (d) The vibration shall be of sufficient duration and intensity to thoroughly consolidate the concrete but shall not be continued so as to cause segregation or draw a pool of grout from the surrounding area.

E4.5.8 Concrete Finish

- (a) Immediately after the removal of the forms, all defects in the concrete shall be repaired as directed by the Contract Administrator, provided the defects are not extensive enough to cause rejection of the barrier. Should the top surface exhibit excessive laitance or any other deleterious effects, the Contractor shall repair the concrete to the satisfaction of the Contract Administrator.
- (b) Honeycomb, if any, shall be repaired as soon as the forms are taken off. When approved by the Contract Administrator, repairs shall be accomplished by: removing all aggregate that is loose or that is not bonded thoroughly to the surrounding concrete; washing the sound concrete with clean water; using a wire brush to remove any loose particles; applying an approved epoxy resin to the dried areas; and applying a cementitious mortar. The cementitious mortar shall have the same quality and mix as that used for the

concrete. Patched areas shall be rubbed flush with the surrounding surface after the cementitious mortar has hardened.

- (c) All objectionable fins, projections, offsets, streaks, and other surface imperfections shall be removed totally to the Contract Administrator's satisfaction by approved means.
- (d) The concrete surface shall be wetted down thoroughly and all air pockets larger than 6 mm in diameter and other surface cavities shall be filled carefully with the approved cementitious mortar. When sufficiently dry, the surface shall be rubbed down to leave a smooth and uniform finish. Cement washes of any kind will not be allowed.
- (e) If, in the Contract Administrator's opinion, repairs to the concrete are not satisfactory or will be detrimental to the strength or long term durability of the barrier, the Contractor shall, at this own expense and as directed by the Contract Administrator replace the barrier.

E4.5.9 Curing

- (a) Concrete shall be either moist cured for a minimum of 72 hours from the time of casting or steam cured until the concrete has reached a strength of 25 MPa.
- (b) If steam curing is used, steam shall not be applied until after the initial set has taken place. Initial set will be considered to have taken place 4 hours after the completion of concrete placing.
- (c) During steam curing, the rise in the ambient air temperature shall not exceed 20°C per hour to a maximum temperature of 60°C.
- (d) Once curing has been completed, the temperature of the concrete shall not be allowed to fall at a rate exceeding 20°C per hour.
- (e) The barriers shall not be subjected to freezing temperatures before reaching the design strength of 40 MPa. The barriers, including any patched areas, shall be properly cured within the plant a minimum of three (3) days before being subjected to freezing conditions. The Contractor shall monitor the rate of cooling and avoid thermal shock from prematurely subjecting the barrier to freezing temperatures.

E4.5.10 Handling and Storage

- (a) The Contractor shall be responsible for storage of the barriers from the completion of their fabrication until they are procured by the City of an Installation Contractor engaged by the City. The Contractor may have to store, free of charge, all or portions of the fabricated materials past the procurement date specified in the contract documents, for a period of up to twenty eight (28) Calendar Days.
- (b) During handling and storage, the barriers shall be maintained in an upright position and shall be supported at the bearings areas. The barriers may be stacked two (2) barriers in height. Care shall be exercised during the handling and storage of the precast concrete barriers to avoid twisting, cracking or other distortion that may result in damage to the barriers.

E4.5.11 Loading, Transporting, Unloading and Stockpiling

- (a) During loading, transporting, unloading and stockpiling of the barriers, the Contractor shall be responsible for protecting the barriers at the restraint points. Any damaged corners or surfaces of the barriers are to be regarded as honeycomb and repaired in accordance with E4.5.8.
- (b) Care shall be exercised during the loading, transporting, unloading and stockpiling of the precast concrete barriers to avoid twisting, cracking or other distortion that may result in damage to the barrier. The Contractor shall visually inspect the barriers once they have been loaded onto the truck making the pick-up. Extensive cracking of the barriers during these operations will be basis for rejection by the Contract Administrator.
- (c) Timber blocking (150 mm x 150 mm) shall be placed under the barriers at two (2) locations along the length as directed by the Contract Administrator.
- (d) It is the Contractor's responsibility to ascertain the actual weight of the barriers prior to transporting.

E4.6 Quality Management

E4.6.1 Qualified Testing Personnel

- (a) The Contractor shall be responsible for quality control testing and all testing shall be completed by qualified personnel who are certified at the time of testing as ACI CSA-based Concrete Field Testing Technicians Grade 1.

E4.6.2 Test Cylinders

- (a) The Contractor shall cast a sufficient number of cylinders for every 10 m³ of concrete placed in a barrier in order to establish that the concrete has achieved the minimum compressive strength of 40 MPa. The minimum compressive strength will be deemed to have been obtained when the average compressive strength of three (3) cylinders from an individual batch equals or exceeds 40 MPa.
- (b) The compressive strength of the concrete shall be determined from standard 100 mm diameter x 200 mm test cylinders or 150 mm diameter x 300 mm test cylinders that have been moulded, cured and tested in accordance with CSA A23.2.

E4.6.3 Concrete Batches

- (a) In addition to moulding of test cylinders, the Contractor shall perform and record the results of the following tests for every 10 m³ of concrete placed in a barrier:
 - (i) Slump;
 - (ii) Air; and
 - (iii) Temperature.
- (b) The Contractor shall be responsible for maintaining an up-to-date record of all test results of Concrete Strength as approved by the Contract Administrator. A separate record of Concrete Strengths form shall be prepared for each barrier and the strengths of the test cylinders as well as the pertinent data shall be listed in the same order as the batches of concrete were placed in the forms. A complete set of test results shall be submitted to the Contract Administrator within fourteen (14) Business Days after the date that the final cylinder from the last barrier was tested.

E4.6.4 Quality Assurance

- (a) The Contract Administrator, at his discretion and the City's expense, may complete other tests deemed necessary on: the concrete; the concrete constituent materials; or any finished or partially finished barrier. The Contractor shall allow the Contract Administrator unhindered access to the concrete, concrete constituent materials and barriers and shall assist the Contract Administrator in carrying out any test.
- (b) During fabrication of the precast concrete barriers, the Contractor shall weigh completed barriers to verify the mass when requested by the Contract Administrator.

E4.7 Methods of Measurement

E4.7.1 Fabrication of Portable Precast Traffic Barriers will be measured on a Contract unit basis and the number to be paid for will be the total number of barriers fabricated as accepted by the Contract Administrator.

E4.7.2 Fabrication of Portable Precast Traffic Barriers with Anchorage Blockouts will be measured on a Contract unit basis and the number to be paid for will be the total number of barriers fabricated as accepted by the Contract Administrator.

E4.7.3 The supply and placement of embedded materials is considered incidental to the work and no separate measurement will be made for this work.

E4.7.4 The supply of steel retaining pin is considered incidental to the work and no separate measurement will be made for this work.

E4.8 Basis of Payment

E4.8.1 Fabrication of Portable Precast Traffic Barriers with Anchorage Blockouts will be paid for at the Contract Unit Price per barrier for Supply of Portable Precast Traffic Barriers with Anchorage

Blockouts, measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the Work.

- E4.8.2 Fabrication of Portable Precast Traffic Barriers will be paid for at the Contract Unit Price per barrier for Supply of Portable Precast Traffic Barriers, measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the Work.
- E4.8.3 The supply of one (1) steel retaining pin is considered incidental to and no separate measurement will be made for this work.
- E4.8.4 The supply of one (1) steel retaining pin shall be considered incidental to Work and shall be included in the unit price for "Portable Precast Traffic Barrier" and no separate payment will be made for this item.
- E4.8.5 The supply of one (1) steel retaining pin shall be considered incidental to the Work and shall be included in the unit price for "Portable Precast Traffic Barrier with Anchorage Blockouts" and no separate payment will be made for this item.