



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 222-2013

SUPPLY AND DELIVERY OF BREAKAWAY BASE COMPONENTS

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY AND DELIVERY OF BREAKAWAY BASE COMPONENTS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, April 4, 2013.

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. ADDENDA

B4.1 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.

B4.2 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.

B4.2.1 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>

B4.2.2 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.

B4.3 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.

B5. SUBSTITUTES

- B5.1 The Work is based on the materials, equipment, methods and products specified in the Bid Opportunity.
- B5.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B5.3 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.
- B5.4 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.
- B5.5 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.
- B5.6 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.
- B5.6.1 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/she wishes to inform.
- B5.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B5.8 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 B13.
- B5.9 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.
- B5.10 Notwithstanding B5.2 to B5.9, and in accordance with B6.7, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B13.1(a).

B6. BID SUBMISSION

- B6.1 The Bid shall consist of the following components:

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

- B6.2 Further to B6.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B5.
- B6.3 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.
- B6.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B6.5 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
- B6.5.1 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.
- B6.6 Bidders are advised not to include any information/literature except as requested in accordance with B6.1.
- B6.7 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B13.1(a).
- B6.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204- 949-1178.
- B6.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B6.9 Bids submitted by internet electronic mail (e-mail) will not be accepted.

B7. BID

- B7.1 The Bidder shall complete Form A: Bid, making all required entries.
- B7.2 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.
- B7.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B7.2.
- B7.3 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.

- B7.4 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.
- B7.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B7.5 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.

B8. PRICES

- B8.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B8.1.1 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 governmental 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.
- B8.2 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.
- B8.3 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. QUALIFICATION

- B9.1 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; 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.
- B9.2 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>

- B9.3 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); and
 - (d) have demonstrated the ability to supply and deliver work(s) with quality control and assurance standards according to past contracted delivery requirements and timelines; and
 - (e) have demonstrated the resources, facilities, and capabilities to quickly and efficiently effect repairs or remediation to the satisfaction of the Contract Administrators, or other customers, on issues with Work(s) on previous contract(s) to meet the specifications and requirements of the supplied Work, regardless of time of year, or environmental conditions; and
 - (f) have a minimum of 10 years' experience in the manufacture of breakaway base devices, and
 - (g) employ or retain a professional engineer registered or licensed to practice in the Province of Manitoba who is responsible for the design of breakaway base components.
- B9.4 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.
- B9.5 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.

B10. OPENING OF BIDS AND RELEASE OF INFORMATION

- B10.1 Bids will not be opened publicly.
- B10.2 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>
- B10.3 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>
- B10.4 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.

B11. IRREVOCABLE BID

- B11.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.

B11.2 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.

B12. WITHDRAWAL OF BIDS

B12.1 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.

B12.1.1 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.

B12.1.2 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.

B12.1.3 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 B12.1.3(b), declare the Bid withdrawn.

B12.2 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 B11.2 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.

B13. EVALUATION OF BIDS

B13.1 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 B9 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B5.

B13.2 Further to B13.1(a), 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.

B13.3 Further to B13.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.

B13.4 Further to B13.1(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.

B13.5 This Contract will be awarded as a whole.

B14. AWARD OF CONTRACT

B14.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

- B14.2 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.
- B14.2.1 Without limiting the generality of B14.2, 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.
- B14.3 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 B13.
- B14.3.1 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.
- B14.4 Notwithstanding C4 and Paragraph 6 of Form A:Bid, the City will issue a purchase order to the successful Bidder in lieu of the execution of a Contract.
- B14.5 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 the supply and delivery of breakaway base components from the date of award until March 31, 2014 with the option of four (4) mutually agreed upon one (1) year extensions.

D2.1.1 The City may negotiate the extension option with the Contractor within sixty (60) Calendar Days prior to the expiry date of the Contract. The City shall incur no liability to the Contractor as a result of such negotiations.

D2.1.2 Changes resulting from such negotiations shall become effective on April 1st of the respective year. Changes to the Contract shall not be implemented by the Contractor without written approval by the Contract Administrator.

D2.2 The Work shall be done on an "as required" basis during the term of the Contract.

D2.2.1 The type and quantity of Work to be performed under this Contract shall be as authorized from time to time by the Contract Administrator and/or Users.

D2.2.2 Notwithstanding C7, the City shall have no obligation under the Contract to purchase any quantity of any item in excess of its actual operational requirements.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) **AASHTO** means American Association of State Highway Transportation Officials
- (b) **Anchor Bolts** means bolts which have been cast into the concrete foundation.
- (c) **ASTM** means American Society for Testing and Materials
- (d) **Breakaway Base Assembly** means an assembly of Reaction Plate, Frangible Couplers, Studs, Transition Plate (if required), miscellaneous fasteners, Shroud, and other miscellaneous components all of which when connected to Anchor Bolts cast into a concrete foundation together with a signal pole structure, meet the requirements of this Specification.
- (e) **CSA** means Canadian Standards Association
- (f) **CWB** means Canadian Welding Bureau
- (g) **Fastener Covers** means slip-on type plastic caps that envelop the exposed fasteners visible on the top of the Transition Plate and/or Pole Base Plate.
- (h) **FHWA** means Federal Highway Administration
- (i) **Frangible Couplers** means devices that fracture in a predictable manner under impact loads. Where a transition plate is used, the couplers are connected to the Reaction Plate. Where a Transition Plate is not present, the couplers are connected directly to the Anchor Bolts.
- (j) **Levelling Nuts** means threaded nuts located on the Stud below the Transition Plate (if present) or Pole Base Plate, which allow the pole to be installed plumb.
- (k) **MASH** means Manual for Assessing Safety Hardware
- (l) **NCHRP** means National Cooperative Highway Research Program

- (m) **Pole Base Plate** means a plate welded directly to the bottom of the pole shaft.
- (n) **Reaction Plate** means a lower plate which is connected to the Anchor Bolts.
- (o) **Shroud** means an enclosure of the breakaway base assembly.
- (p) **Shroud Screws** means fasteners which affix the shroud to the assembly.
- (q) **Sleeve** means a hollow steel cylinder supplied with the assembly to provide a good fit for multiple Anchor Bolt diameters. The purpose of the sleeve is to fill in the annular space in a bolt hole and the bolt such that it provides a good fit between the bolt and plate.
- (r) **Stud** means a threaded rod that connects the Frangible Coupler to the Transition Plate (if present) or the Pole Base Plate if a Transition Plate is not present.
- (s) **Transition Plate** means a plate is used when the bolt center diameter of the couplers is greater than those of the Anchor Bolts. It is connected to the frangible couplers via the Stud.
- (t) **Transition Plate Bolts** - bolts connecting the Transition Plate to the Pole Base Plate

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is:

Jonathan Foord, EIT
Signals Asset Engineer

Telephone No.: 204-986-6619

Facsimile No.: 204-772-6306

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 at the following facsimile number:

The City of Winnipeg
Chief Financial Officer

Facsimile No.: 204- 949-1174

D7. RETURNED GOODS

- D7.1 Further to C.7 and C.11, The Contract Administrator or his/her designate shall inform the Contractor of the item(s) being returned and the reason for the return. The Contractor shall provide the Contract Administrator with Return Material Authorization (RMA) including shipping instructions, within five (5) Calendar Days of the request.
- D7.2 The Contractor shall be responsible for all transportation charges on returned goods and further to C.8 the goods will be held at the Contractor's risk pending instruction.
- D7.3 Further to D6.2 (above) the RMA shall include the following information, as a minimum:
- (a) Company name, if different than Contractor, and ship to addresses;
 - (b) Written authorization for the return and for a collect shipment;
 - (c) Preference of carrier / shipping method, a contact person with either a local Winnipeg telephone number or a toll-free telephone number;
 - (d) A contact person, responsible for the returned goods, with a toll-free telephone number.
- D7.4 The Contract Administrator shall provide, as a minimum:
- (a) The City department returning the goods, including an address and contact information for pick up;
 - (b) The City account number; if applicable;
 - (c) The City of Winnipeg's Department and address;
 - (d) Two (2) copies of the written authorization / RMA, one (1) copy on the outside and (1) one within the package;
 - (e) Total number of packages, weight and dimensions.

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

- D8.1 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.

SCHEDULE OF WORK

D9. COMMENCEMENT

- D9.1 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.
- D9.2 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 D8;
 - (ii) if the breakaway base contains welded components, the Contractor shall submit evidence that the plant carrying out the welding has been approved by the CWB to the requirements of CSA W47.1 Division 2.1.;
 - (iii) a letter of acceptance issued by the FHWA, reproduced in full, certifying that the breakaway hardware to be supplied meets the requirements for use on the National Highway System;

- (iv) a letter certifying that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as the hardware submitted for acceptance by the FHWA, and that the hardware supplied meet the crashworthiness requirements of the AASTHO MASH and previous standards and reports where permitted by the AASHTO MASH;
 - (v) detailed installation procedures sufficient to ensure proper performance of the breakaway bases. The installation procedures shall include procedures for the installation of new breakaway bases, as well as procedures on the removal and replacement of breakaway bases involved in impact events;
 - (vi) design calculations, signed by a professional engineer registered in the province of Manitoba, demonstrating that the breakaway bases supplied meet the design requirements described herein.
 - (vii) shop drawings of each type of breakaway base assembly supplied.
- (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting;
 - (c) a purchase order has been received from The City of Winnipeg Public Works Stores personnel noting quantity of material required.

D10. DELIVERY

D10.1 Goods shall be delivered on an "as required" basis during the term of the Contract, f.o.b. destination, freight prepaid, to:

Public Works Stores
1277 Pacific Avenue
Winnipeg, MB

D10.1.1 Goods shall be delivered within sixty (60) Calendar Day(s) of the placing of an order, unless otherwise allowed by the User at the time of ordering.

D10.2 The Contractor shall confirm each delivery with the Contract Administrator or his/her designate, at least two (2) Business Days before delivery.

D10.3 Goods shall be delivered between 8:30 a.m. and 2:30 p.m. on Business Days.

D10.4 Components shall be inspected by the Contract Administrator or designated representative upon receipt.

D10.5 A bill of lading shall be prepared by the Contractor and clearly identify all components being delivered.

D10.6 The breakaway base device components shall be separately grouped by purchase item and each group clearly marked.

D10.7 The Contractor shall off-load goods as directed at the delivery location.

D11. LIQUIDATED DAMAGES

D11.1 If the Contractor fails to achieve delivery of the goods within the time specified in D10. Delivery the Contractor shall pay the City two hundred and forty dollars (\$240.00) per Calendar Day for each and every Calendar Day until the goods have been delivered.

D11.2 The amount specified for liquidated damages in D11.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve delivery by the day fixed herein for same.

D11.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D12. ORDERS

- D12.1 The Contractor shall provide a local Winnipeg telephone number or a toll-free telephone number at which orders for delivery may be placed.
- D12.2 It is anticipated the City will place order for no less than \$5,000.00 per order placed, applicable taxed to be extra.

D13. RECORDS

- D13.1 The Contractor shall keep detailed records of the goods supplied under the Contract.
- D13.2 The Contractor shall record, as a minimum, for each item listed on Form B: Prices:
- (a) user name(s) and addresses;
 - (b) order date(s);
 - (c) delivery date(s); and
 - (d) description and quantity of goods supplied.
- D13.3 The Contractor shall provide the Contract Administrator with a copy of the records for each quarter year within fifteen (15) Calendar Days of the end of that quarter.

MEASUREMENT AND PAYMENT

D14. INVOICES

- D14.1 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
- D14.2 Invoices must clearly indicate, as a minimum:
- (a) the City's purchase order number;
 - (b) date of delivery;
 - (c) delivery address;
 - (d) type and quantity of goods delivered;
 - (e) the amount payable with GST and MRST shown as separate amounts; and
 - (f) the Contractor's GST registration number.
- D14.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.
- D14.4 Bids Submissions must be submitted to the address in B6.5

D15. PAYMENT

- D15.1 Further to C10, payment shall be in Canadian funds net thirty (30) Calendar Days after receipt and approval of the Contractor's invoice.
- D15.2 Further to C10, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D16. WARRANTY

D16.1 Warranty is as stated in C11.

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 These Specifications shall apply to the Work.

E1.2 The following are applicable to the Work:

<u>Specification No.</u>	<u>Specification Title</u>
CW 3620	City of Winnipeg Standard Specification

AASHTO Manual for Assessing Safety Hardware (MASH)

AASHTO Standard Specification for Structural Supports for Highways Signs, Luminaries and Traffic Signals (Standard Specifications)

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
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	<i>City of Winnipeg Breakaway Base Assembly Drawings</i>
A	222-2013_Drawing_Breakaway_Base_Assemblies_Type_A-R1
B	222-2013_Drawing_Breakaway_Base_Assemblies_Type_B-R1
A-T	222-2013_Drawing_Breakaway_Base_Assemblies_Type_A-T-R1
B-T	222-2013_Drawing_Breakaway_Base_Assemblies_Type_B-T-R1
G-T	222-2013_Drawing_Breakaway_Base_Assemblies_Type_G-T-R1
D-T	222-2013_Drawing_Breakaway_Base_Assemblies_Type_D-T-R1

	<i>City of Winnipeg Standard Signal Pole Base Drawings</i>
SD-310	222-2013_Drawing_Standard_Signal_Pole_Base_Type_A-R2
SD-312	222-2013_Drawing_Standard_Signal_Pole_Base_Type_G-R2
SD-313	222-2013_Drawing_Standard_Signal_Pole_Base_Type_D-R2

	<i>City of Winnipeg Standard Drawings For Traffic Signal Structures</i>
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht1-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht2-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht3-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht4-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht5-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht6-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht7-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht8-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht9-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht10-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht11-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht12-R1
	222-2013_Drawing_Standard_Traffic_Signal_Structures_Sht13-R1

	<i>City of Winnipeg Standard Anchor Bolt Detail Drawing</i>
	222-2013_Drawing_Anchor_Bolt_Details-R1

E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B5.

E2. GOODS

E2.1 The Contractor shall supply traffic signal breakaway base components in accordance with the requirements hereinafter specified.

- E2.2 Item No. 1 - Reaction Plate – Type A shall consist of the Type A Reaction Plate.
- E2.3 Item No. 2 - Reaction Plate – Type B shall consist of the Type B Reaction Plate.
- E2.4 Item No. 3 - Reaction and Transition Component Set – Type A-T shall consist of:
- (a) one (1) Type A-T Reaction Plate,
 - (b) four (4) 1" – 8 UNC Hex HD Bolt X 2" LG,
 - (c) one (1) Type A-T Transition Plate,
 - (d) four (4) 1"- 8 UNC Hex HD Bolt X 4 ½" LG,
 - (e) eight (8) 1" – 8 UNC Heavy Hex Nut,
 - (f) twelve (12) 1" Flat Washers.
- E2.5 Item No. 4 - Reaction and Transition Component Set – Type B-T shall consist of:
- (a) one (1) Type B-T Reaction Plate,
 - (b) four (4) 1" – 8 UNC Hex HD Bolt X 2" LG,
 - (c) one (1) Type B-T Transition Plate,
 - (d) four (4) 1"- 8 UNC Hex HD Bolt X 4 ½" LG,
 - (e) eight (8) 1" – 8 UNC Heavy Hex Nut,
 - (f) twelve (12) 1" Flat Washers.
- E2.6 Item No. 5 - Reaction and Transition Component Set – Type G-T shall consist of:
- (a) one (1) Type G-T Reaction Plate,
 - (b) four (4) 1 1/4" – 7 UNC Hex HD Bolt X 2" LG,
 - (c) one (1) Type G-T Transition Plate,
 - (d) four (4) 1 1/4"- 7 UNC Hex HD Bolt X 5" LG,
 - (e) eight (8) 1 1/4" – 7 UNC Heavy Hex Nut,
 - (f) twelve (12) 1 1/4" Flat Washers,
- E2.7 Item No. 6 - Reaction and Transition Component Set – Type D-T shall consist of:
- (a) one (1) Type D-T Reaction Plate,
 - (b) four (4) 1 1/4" – 7 UNC Hex HD Bolt X 2" LG,
 - (c) one (1) Type D-T transition plate,
 - (d) four (4) 1 1/4"- 7 UNC Hex HD Bolt X 5" LG,
 - (e) eight (8) 1 1/4" – 7 UNC Heavy Hex Nut,
 - (f) twelve (12) 1 1/4" Flat Washers,
- E2.8 Item No. 7 - Shroud – Type A shall consist of one (1) Type A Shroud.
- E2.9 Item No. 8 - Shroud – Type B shall consist of one (1) Type B Shroud.
- E2.10 Item No. 9 - Shroud – Type A-T, B-T, G-T shall consist of one (1) shroud compatible with all Type A-T, B-T, and G-T breakaway bases.
- E2.11 Item No. 10 - Shroud – Type D-T shall consist one (1) Type D-T Shroud.
- E2.12 Item No. 11 - 1" Coupler Set – 1" UNC 8 to 1" UNC 8 – Type A, B, A-T,B-T shall consist of:
- (a) four (4) Frangible Couplings 1" UNC 8,
 - (b) four (4) 1" – 8 UNC Studs,
 - (c) twelve (12) 1" – 8 UNC Heavy Hex Nuts,

- (d) four (4) Spacers,
- (e) eight (8) 1" Flat Washers,
- (f) four (4) 1" Clipped Washers,
- (g) four (4) Sleeves,
- (h) four (4) Fastener Covers.

E2.13 Item No. 12 - 1" ¼" Coupler Set – 1 ¼" UNC 7 to 1" UNC 8 – Type G-T, D-T shall consist of:

- (a) four (4) Frangible Couplings 1 ¼" - UNC 7
- (b) four (4) 1" – 8 UNC Studs
- (c) twelve (12) 1" – 8 UNC Heavy Hex Nut
- (d) four (4) Spacers,
- (e) eight (8) 1" Flat Washers,
- (f) four (4) Fastener Covers.

E2.14 Materials

E2.14.1 General

- (a) All materials supplied under this Specification shall be of a type approved by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.
- (b) The Contractor shall be responsible for the supply, safe storage, handling and delivery of all materials as set forth in this Specification. All materials shall be handled in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.
- (c) The Contractor shall ensure that all connected materials do not suffer corrosion caused by contact between dissimilar metals.
- (d) Dimensions and fabrication details that control the field matching of parts shall receive careful attention.
- (e) All portions of the Work shall be neatly finished. Shearing, cutting, clipping, and machining shall be done neatly and accurately. Finished parts 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.

E2.14.2 Description of Connected Materials not Supplied under this Contract

- (a) The existing Anchor Bolts connecting the breakaway base to the foundation are steel, meeting the requirements of CSA G40.21, 300W or ASTM F1554, Grade 55 ksi (380 MPa). The Anchor Bolts are hot-dip galvanized in accordance with ASTM F2329 (latest edition) to a net-retention of 610 g/m² or greater. Anchor Bolt Details are provided in ST-114. The Anchor Bolts are cast into concrete foundations in accordance with CW 3620, as shown in the applicable standard signal pole base drawings.
- (b) The existing structural supports connected to the breakaway base are steel, meeting the requirements of CSA G40.21, 350W (shafts) and 300W (base plates). The poles are hot-dip galvanized in accordance with ASTM A123 (latest edition) to a net-retention of 610 g/m² or greater. Drawings of the structural supports are included for reference.

E2.14.3 Breakaway Base Assembly

- (a) All proposed breakaway base assembly materials shall have a demonstrated durability field-performance of a minimum five (5) years, within such time:
 - (i) components visible from the exterior shall be free of corrosion
 - (ii) components not visible from the exterior, corrosion shall be limited to minor surface corrosion with no apparent loss of section.

E2.14.4 Structural Components and Plates

- (a) Where carbon steel plates are used, the components shall be protected from the effects of corrosion by hot-dip galvanizing in accordance with ASTM A123 (latest edition) to a net retention of 610 g/m².
- (b) Alternate materials or coatings may be used but must have a demonstrated service life equal to or exceeding that of hot-dip galvanized carbon steel, without additional maintenance as compared to galvanizing.

E2.14.5 Fasteners, Nuts, Washers and Miscellaneous Components

- (a) Structural bolts shall be in accordance with ASTM A325 (latest edition) or equivalent as prescribed by the base designer, hot-dip galvanized, or stainless steel in accordance with ASTM F593 (latest edition) Type 316.
- (b) Where carbon steel fastening hardware is used, all components shall be hot-dip galvanized in accordance with ASTM F2329 (latest edition).
- (c) Shroud Screws shall be stainless steel.
- (d) The use of electroplated or epoxy coated fasteners will not be permitted.

E2.14.6 Shroud

- (a) The Shroud shall be constructed of a material that is resistant to corrosion and degradation due to direct exposure to the elements.
- (b) The following materials are approved for fabrication of the Shroud:
 - (i) Aluminum meeting the requirements of ASTM B209 (latest edition), 5052-H32 alloy.
- (c) Alternative material for construction of the Shroud may be proposed, however it shall have demonstrated service applications in highly corrosive and marine environments.

E2.14.7 Fastener Covers

- (a) Fastener Covers shall be of sufficient quality to have demonstrated adequate field performance under exposure to ultraviolet sunlight, salt spray, freeze thaw cycles and temperatures ranging from -50°C to 50°C.
- (b) The material and geometric design of the Fastener Covers shall not promote chemical or physical corrosion of the fasteners covered or adjacent structural materials.

E2.14.8 Frangible Couplers

- (a) Frangible Couplers shall be Cast Iron, conforming to ASTM A48 Class 30.

E2.15 Performance

E2.15.1 General

- (a) The breakaway base assembly shall be situated between the top of the concrete foundation and the bottom of the attached structural support.
- (b) The breakaway base assembly shall be of a frangible coupling type design.
- (c) The Couplers shall have a flat faces to accommodate installation and tightening with hand tools.
- (d) Each Coupler shall have a Levelling Nut located on the Coupler's Stud to permit the plumb installation of traffic signal poles.
- (e) The breakaway base assembly shall have a Reaction Plate.
- (f) Breakaway base assemblies shall be either Type A, Type B, Type A-T, Type B-T, Type G-T, or Type D-T as described in Section E2.15.2(e) of this Specification.
- (g) The overall height of the installed breakaway base, measured from the top of the concrete pile to the underside of the Pole Base Plate shall not exceed 250 mm.

- (h) The breakaway base device supplied shall include all necessary nuts, washers, fasteners and miscellaneous components to connect the breakaway base assembly to the existing Anchor Bolts and to the Pole Base Plate.
- (i) Clipped washers shall be supplied where required to clear interferences with miscellaneous components. The Contractor is advised that clipped washers may be required under nuts fastened to the top of light duty poles installed on Type B foundations.
- (j) Sleeves may be supplied with the breakaway base assembly to allow the breakaway base assembly to fit on various foundation types as described in Table 3.
- (k) The Shroud shall meet the following requirements:
 - (i) The Shroud shall be easily installed, however must require the use of basic hand tools for their installation to hinder tampering by the public.
 - (ii) The Shroud shall not interfere with the normal operation of the breakaway base assembly.
 - (iii) The Shroud shall prevent the public from accessing or tampering with the breakaway device and electrical components housed therein.
 - (iv) The shroud shall protect the breakaway device and electrical components from the build-up of debris, direct exposure to the elements, and nesting animals.
 - (v) The shroud shall provide an attractive metallic appearance to the breakaway base assembly that is to be approved by the Contract Administrator.
- (l) The Fastener Covers shall meet the following requirements:
 - (i) Fastener Covers shall be uniform in style and appearance.
 - (ii) Fastener Covers shall be plastic, be of a uniform grey color in appearance approximately matching that of hot-dip galvanized steel.
 - (iii) The Contractor shall furnish an appropriate number and type of Fastener Covers to cover the tops of the Stud, as well as the structural bolts connecting the Transition Plate (if present) to the Pole Base Plate.
 - (iv) Fastener Covers shall be slip-on type, and shall cover the exposed threads of the Stud and top nut above the top of the Transition Plate (if present) or Pole Base Plate.
 - (v) Fastener Covers shall be tight fitting.

E2.15.2 Geometric Compatibility with Foundations and Pole Base Plate

- (a) Table 1 provides a description of concrete foundations and associated Anchor Bolts.

Table 1: Description of Existing Concrete Foundations

Foundation Type	Bolt Circle Diameter (BCD) (mm)	Anchor Bolt Diameter (mm)	Concrete Pile Diameter (mm)
B	241	25	Varies
A	292	25	508
G	292	32	508
D	458	32	610

- (b) The Anchor Bolt projection of foundations with Breakaway Base Assemblies are as follows:
 - (i) Type B Foundations: legacy item no longer in use, anchor bolt projection may vary.
 - (ii) Type A Foundations: 76 mm.
 - (iii) Type G Foundations: 89 mm.
 - (iv) Type D Foundations: 89 mm.
- (c) Table 2 provides a description of Pole Base Plates.

Table 2: Description of Pole Base Plates

Pole Type	Bolt Center Diameter* (mm)	Bolt Hole Dimensions(mm)	Base Plate Thickness (mm)	Opening** in Base Plate (mm)
10', 15' and 18' Straight Poles	241 - 292	35 x 60	25	178 A/F
Light Duty Shaft	292	35	25	172 A/F
Medium Duty Shaft and Double Medium Duty Shaft	292	35	32	207 A/F

* Two numbers separated by a dash indicated a radially slotted hole is provided

**A/F indicates the "across-the-flats" dimension of an octagonal opening.

- (d) Breakaway Base Assemblies shall allow a minimum of 178 mm diameter circular opening or a 178 mm wide octagonal opening through the center of the device to allow the installation of electrical conduit vertically through the device.
- (e) The following is a description of each Type of Breakaway Base Assembly:
 - (i) Type A: are used to affix a straight pole to a Type A Foundation, with no transition plate present.
 - (ii) Type B: are used to affix a straight pole to a Type B Foundation, with no transition plate present.
 - (iii) Type A-T: are used to affix a light duty cantilever pole to a Type A Foundation. A Transition Plate on a 458 mm (18") bolt center diameter shall be provided.
 - (iv) Type B-T: are used to affix a light duty cantilever pole to a Type B Foundation. A Transition Plate on a 458 mm (18") bolt center diameter shall be provided.
 - (v) Type G-T: are used to affix a light or medium duty cantilever pole with 8', 12' or 16' arm configurations to a Type G Foundation. A Transition Plate on a 458 mm (18") bolt center diameter shall be provided.
 - (vi) Type D-T: are used to affix a medium duty cantilever pole with 21' or 26' reach arm configurations to a Type D Foundation. A Transition Plate on a 711 mm (28") bolt centre diameter shall be provided.
- (f) Table 3 presents the Structural Signal Support/Foundation type pairings that are utilized by the City of Winnipeg. The Contractor shall be responsible for the design and detailing of each breakaway base type such that it will be compatible with Signal Pole/Foundation type pairings shown in Table 3.

Table 3: Breakaway Base Type for Signal Pole/Foundation Pairings

Structural Signal Support	Foundation Type			
	Type A	Type G	Type B	Type D
Straight Poles	Type A	Type G-T	Type B	N/A
Light Duty	Type A-T	Type G-T	Type B-T	N/A
Medium Duty	N/A	Type G-T	N/A	Type D-T

- (g) For Breakaway Bases with Transition Plates, the assembly shall be detailed to allow the Reaction Plate to sit flush with the concrete on the foundation and the Transition Plate to sit flush with the bottom of the Pole Base Plate.
- (h) Breakaway Base Assemblies shall be supplied with Sleeves of an appropriate size where required to fill the annular space between the reaction plate and the bolt shank.
- (i) The supplied devices shall allow for a minimum +/- 3 mm lateral tolerance in the location of the Anchor Bolt group installed in the concrete pile.

- (j) The supplied devices shall allow for a minimum +/- 3 mm vertical tolerance in the bolt projecting from the foundations.
- (k) The Reaction Plate shall have eight (8) equally spaced holes provided on a bolt centre diameter appropriate for the Foundation Type. The holes shall permit orienting the Reaction Plate to the Anchor Bolts in increments of 45 degrees.

E2.15.3 Structural Performance

- (a) The breakaway base device shall be designed and constructed in accordance with the AASHTO Standard Specifications as to meet the minimum static loading applied as described herein with a minimum factor of safety of 1.5, based on a combined loading/stress analysis.
- (b) Design drawings and calculations showing the devices meet the minimum loading requirements shall be stamped by a professional engineer registered in the province of Manitoba and shall be submitted to the Contract Administrator prior to the fabrication and delivery of the breakaway base assemblies.
- (c) Alternatively, the Contractor may subject the breakaway base assemblies to physical testing performed in accordance with Section 12.4 of the AASHTO Standard Specifications. A report summarizing the testing apparatus, procedures and results shall be prepared, stamped by a professional engineer registered in the province of Manitoba, and submitted to the Contract Administrator. The report shall clearly demonstrate that the allowable load determined by physical testing exceed the applied loads outlined in Section E2.15.4.
- (d) Welded components if present shall be designed and fabricated in accordance CSA W59 (latest edition).
- (e) Welded components if present shall be designed to resist fatigue in accordance with the AASHTO Standard Specifications, Fatigue Category III.

E2.15.4 Static Loads Applied to the Breakaway Base Assemblies

- (a) Applied static forces and moments are defined using a set of orthogonal axes, defined as follows:
 - (i) The x axis runs horizontally, parallel to the pole arm and attachments, in the same plane as the front of the pole structure (perpendicular to the direction of traffic).
 - (ii) The y axis runs horizontally, perpendicular to the pole shaft (parallel to the direction of traffic).
 - (iii) The z axis runs vertically, parallel to the pole shaft.
- (b) P_x , P_y and P_z indicate forces acting in the x, y and z directions, respectively, in kilonewtons (kN).
- (c) M_x , M_y and M_z indicate moments acting about the x, y and z directions, respectively, in kilonewton-meters (kN.m).
- (d) The static loads to be resisted by each Type of breakaway base assembly are described in the table "Static Base Loads" on Sheet 1 of the Drawings "Standard Drawings for Traffic Signal Structures"

E2.15.5 Serviceability Performance

- (a) The degree of tilt of the device under the applied loads shall be limited to 1.5 degrees of about any horizontal line passing through the center of the base.
- (b) The degree of twist of the device under the applied loads shall be limited to 1.5 degrees about a vertical line passing through the center of the base.
- (c) Analysis demonstrating that the devices meet the minimum serviceability requirements shall be stamped by a Professional Engineer registered in the Province of Manitoba and shall be submitted to the Contract Administrator prior to the fabrication and delivery of the breakaway devices.

E2.15.6 Dynamic Performance

- (a) The supplied device must be a crashworthy device and meet the criteria of and testing requirements for a Test Level III device for Support Structures as outlined the AASTHO MASH (latest edition).
- (b) The dynamic performance of the breakaway base assembly shall be deemed acceptable if:
 - (i) a FHWA acceptance letter has been issued stating the device has met the applicable requirements set forth in (a), and
 - (ii) the Contractor has submitted a copy of the FHWA acceptance letter to the Contract Administrator.
- (c) The breakaway base assembly shall readily activate in a predictable manner by breaking away, fracturing, or yielding, when struck by a vehicle travelling from any direction.
- (d) Upon activation of the device, the device shall meet the following criteria:
 - (i) Detached elements, fragments, or other debris from the breakaway base assembly shall not penetrate or show potential for penetrating the occupant compartment, or present an undue hazard to other traffic, pedestrian, or personnel in a work zone. Deformation of, or intrusions into, the occupant compartment that could cause serious injuries shall not be permitted.
 - (ii) The vehicle shall remain upright during and after collision. Moderate rolling, pitching, and yawing are acceptable.
 - (iii) The longitudinal component of occupant velocity at impact with the interior surface of the passenger compartment, due to vehicle striking a breakaway support, shall not exceed 5 m/s, and preferably should not exceed 3 m/s at vehicle impact speeds of 35 to 100 km/h.
 - (iv) The longitudinal and lateral component of occupant ride down acceleration shall be limited to a maximum of 20 g, with 15 g preferred.
 - (v) The maximum height of the device above the top of the cast-in-place Anchor Bolts after activation of the breakaway device shall not exceed 25 mm.
- (e) The breakaway base assembly shall be designed in a manner which mitigates the risk of damage occurring to the Anchor Bolts and concrete foundation in the event of a vehicular impact.

E2.16 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 City of Winnipeg, including all operation 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 operation incidental thereto notwithstanding any inspection approval that may have been previously given. The City of Winnipeg 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 all materials to be supplied. All material shall be free of surface imperfections and other defects.

E2.17 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.

E2.17.1 *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>

E2.17.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.

E2.17.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over The City of Winnipeg Standard Construction Specifications.

- E2.18 If the breakaway components proposed by the bidder have not been approved for use by the City of Winnipeg, a sample of the breakaway components may be requested by the Contract Administrator to confirm compliance with the terms of this specification. Any request for samples will occur after the bid submission and prior to award of contract: no sample is to be sent with the bid. Any requested sample shall be sent to the Contract Administrator and shall arrive within 10 business days of a written request (which will note the delivery address in Winnipeg), unless otherwise agreed to by the Contract Administrator. The Contract Administrator may deem the bid unresponsive if the requested sample fails to be delivered within that time. The bidder is responsible for all costs to have the sample shipped to, and returned from the Contractor Administrator.