



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 128-2010

SUPPLY AND DELIVERY OF TRAFFIC SIGNAL STREET LIGHTING

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY AND DELIVERY OF TRAFFIC SIGNAL STREET LIGHTING

B2. SUBMISSION DEADLINE

- B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, March 23, 2010.
- B2.2 Bids determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.
- B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. ENQUIRIES

- B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.
- 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 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 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 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 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 own name, his name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than his own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- 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 own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;
 - (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- 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).
- 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 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 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 Bid after the Submission Deadline but before his 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.
- (a) If required, the Bidder shall, within four (4) Business days of a request by the Contract Administrator provide, representative samples of the goods offered.
- B13.3 Further to B13.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he is responsible and qualified.
- 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 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 supply and delivery of traffic signal street lighting for the period from May 1, 2010 until April 30, 2011, with the option of three (3) 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 May 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. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is:

L Escobar P. Eng, PTOE
Manager of Transportation
101-1155 Pacific Avenue

Telephone No.: (204) 204-986-5895

Facsimile No.: (204) 204-986-7020

Email: lescobar@winnipeg.ca

D4. NOTICES

D4.1 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 address or facsimile number:

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

Facsimile No.: (204) 949-1174

D5. INSPECTION OF MATERIAL

D5.1 Further to C.7, The City reserves the right to inspect and test all materials at its own expense and to reject any materials that are not in accordance with the requirements of the

Specifications. The Contractor shall cooperate with the Contract Administrator in furnishing such specimens and samples of material as may be required for testing.

D6. RETURNED GOODS

- D6.1 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.
- D6.1.1 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.
- D6.2 Further to D6.1 (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.
- D6.3 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

D7. AUTHORITY TO CARRY ON BUSINESS

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

SCHEDULE OF WORK

D8. COMMENCEMENT

- D8.1 The Contractor shall not commence any Work until he is in receipt of a notice of award from the City authorizing the commencement of the Work.
- D8.2 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 D7.
 - (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

D9. DELIVERY

- D9.1 Goods shall be delivered on an "as required" basis during the term of the Contract, f.o.b. destination, freight prepaid, to: 1277 Pacific Avenue, Winnipeg Manitoba.
- D9.1.1 Goods shall be delivered within twenty-five (25) Calendar Day(s) of the placing of an order, unless otherwise allowed by the User at the time of ordering.
- D9.2 Goods shall be delivered between 8:30 a.m. and 3:30 p.m. on Business Days.
- D9.3 The Contractor shall off-load goods as directed at the delivery location.

D10. ORDERS

- D10.1 The Contractor shall provide a local Winnipeg telephone number or a toll-free telephone number at which orders for delivery may be placed.

D11. RECORDS

- D11.1 The Contractor shall keep detailed records of the goods supplied under the Contract.
- D11.2 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.
- D11.3 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

D12. INVOICES

- D12.1 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
- D12.2 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.
- D12.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.

D13. PAYMENT

D13.1 Further to C10, payment shall be in Canadian funds net thirty (30) Calendar Days after receipt and approval of the Contractor's invoice.

D13.2 Further to C10, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D14. WARRANTY

D14.1 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>Drawing No.</u>	<u>Drawing Name/Title</u>
ST-111	4 ¾" x 24" (120mm x 610mm) Access Panel (38 Circuit) for Traffic Signal Pole
ST-158 (1 of 3)	35 ft. Signals Street Lighting Joint Use Pole
ST-158 (2 of 3)	35 ft. Signals Street Lighting Joint Use Pole
ST-158 (3 of 3)	35 ft. Signals Street Lighting Joint Use Pole
ST-163	4 ¾" x 12" (120mm x 305mm) Lower Handhole and Cover for Traffic Signal Pole
ST-164	Cover for the 38 Circuit Wiring Access Panel

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 street lighting in accordance with the requirements hereinafter specified.

E3. CERTIFIED DETAILED DRAWINGS

E3.1 The engineer certified detailed drawings include a material list and all dimensions and tolerances applicable to all critical dimensions. On the drawings, details are included for every element of the 35 foot signals street lighting joint use poles, (the shaft and street light davit arm), including:

- a) base plate for the joint use street lighting pole,
- b) 4 ¾ inch x 12 inch lower handhole and cover,
- c) 4 ¾ inch x 24 inch (38 circuit) access panel detail,
- d) removable terminal strip bracket/mounting bracket assemblies,
- e) 4 ¾ inch x 24 inch access panel cover,
- f) tamper proof cup washer,
- g) overview of joint use shaft and street light davit arm components.

Note: Clamp on traffic signal arms are not part of this Bid Opportunity.

E4. CERTIFIED STRUCTURAL STRESS ANALYSIS

E4.1 The engineer certified structural stress analysis, of the 35 foot traffic signals street lighting joint use pole, includes calculations of stresses at the base of pole, lower handhole and access panel. Placement of all attachments to the joint use pole are as described in detail in **E5.4** "Pole Attachment Configurations". Loading is prescribed in **E5.2** "AASHTO Standards" and **E5.3** "Wind Loading".

E4.2 For the purposes of the stress analysis, the critical dimensions of the joint use pole are contained in Drawing No. ST-158, latest revision, including the critical details of the 10 foot street light davit arm. An outline is shown of the two types of compatible traffic signal clamp on arms (not part of this Contract). The traffic signal clamp on arms can be assumed to have an eighteen (18) degree rise section for both 8 foot clamp on arm and for 12 foot clamp on arm. There is a one (1) foot (nominal) straight level section at the end of the clamp on arm to provide for a tenon height of nineteen feet, three inches (19'3"; +1", -0") above the base of the pole for

either size (8 foot or 12 foot) clamp on arm. The clamp on arms attach to the 35 foot signals street lighting joint use pole shafts as detailed in 3.4 "Pole Attachment Configurations".

E5. DESIGN STANDARDS

E5.1 The following City of Winnipeg drawings are attached to and form part of this specification:

- (a) **ST-111, REV 2, April 26, 2004** – 4 3/4" X 24" Access Panel (38 Circuit) for Traffic Signal Pole;
- (b) **ST-158, REV 1 page 1 of 3, February 2, 2005** - 35' Signals Street Lighting Joint Use Pole;
- (c) **ST-163, REV 1, February 2, 2005** – 4 3/4" x 12" Lower Handhole and Cover for Traffic Signal Pole; and
- (d) **ST-164, REV 1, April 26, 2004** - Cover for the 38 Circuit Wiring Access Panel.

E5.2 **AASHTO Standards:** The 35 foot signals street lighting joint use pole for use with traffic signal clamp on arms is designed in accordance with the 2001 4th edition and latest revisions of The American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

E5.3 **Wind Loading:** The 35 foot signals street lighting joint use pole is designed to withstand design wind pressure $P_z = 0.00256 K_z G V^2 I_r C_d$ pounds per square foot, where $(0.00256 G V^2) = 25.6$ psf, K_z as per AASHTO table 3-5 except not less than 1.0, $I_r = 1.0$ for 50 year design life and C_d as per AASHTO table 3-6. This pressure is applied to the pole including clamp on arms, with specific signal head and sign attachments as herein described in 3.4 "Pole Attachment Configurations".

E5.4 **Pole Attachment Configurations:** The 35 foot signals street lighting joint use pole is designed to support a street light luminaries on the 10 foot street light davit arm, as well as traffic signal heads and/or pedestrian corridor fixtures and traffic signs attached to the pole shaft and to traffic signal clamp on arm (not part of this Contract) when loaded as specified without distress. The structural design calculations and stress analysis takes into account the following configurations of attachments to the 35 foot signals street lighting joint use pole (**Drawing ST-158, sheet 2**, latest revision):

- a) **Configuration 1.** For a clamp on traffic signal arm of 12 foot reach:
 - i) Attachment on the 10 foot street light davit arm:
One (1) 250 watt street lighting luminaries with effective projected wind load area of 2.15 sq. ft.
- weight 60 lbs. **and**
 - ii) Attachment on the joint use pole shaft:
One 12 foot reach traffic signal clamp on arm, attached to the joint use pole shaft.
Top of arm flange
14 feet, 11 inches above the bottom of the base, to provide a signal head tenon mounting height of 19 feet, 3 inches above the bottom of the base - weight 200 lbs.
and
 - iii) Attachment on the 12 foot traffic signal clamp on arm:
One (3 section x 12") signal head: dimensioned 14 inches wide x 42 inches high - weight 50 lbs.
(top of signal head mounted 8 inches below centreline of clamp on arm tenon) One traffic sign: dimensioned 24 inches wide x 36 inches high – weight 14 lbs. (mounted next to the signal head) **and**

the following additional attachments are mounted on the 35' signals street light joint use pole shaft:

- iv) One (3 section x 12") signal head: dimensioned 14 inches wide x 42 inches high - weight 50 lbs.
(mounted 12 feet above base to bottom of the signal head) **and**
 - v) Two pedestrian heads at 90 degrees: each dimensioned 13 ½ inches wide x 13 ½ inches high – total weight 50 lbs. (mounted 8 feet 7 inches above base to bottom of head and 16 inches out from edge of pole) **and**
 - vi) One traffic sign: dimensioned 36 inches wide x 12 inches high – weight 10 lbs.
(mounted 10 feet above base to bottom of sign) **and**
 - vii) One traffic sign: dimensioned 5 inches wide x 8 inches high - weight 5 lbs.
(mounted 4 feet above base to bottom of sign)
- b) **Configuration 2.** For a clamp on traffic signal arm of 12 foot reach:
- i) Attachment on the 10 foot street light davit arm:
One (1) 250 watt street lighting luminaries with effective projected wind load area of 2.15 sq. ft.
- weight 60 lbs. **and**
 - ii) Attachment on the joint use pole shaft:
One 12 foot reach traffic signal clamp on arm, attached to the joint use pole shaft.
Top of arm flange
14 feet 11 inches above the bottom of the base, to provide a signal head tenon mounting height of 19 feet 3 inches above the bottom of the base - weight 200 lbs.
and
 - iii) Attachment on the 12 foot traffic signal clamp on arm:
One (5 section x 12 inch) signal head: dimensioned 14 inches wide x 72 inches high - weight 80 lbs.
(mounted 29 inches from tenon centreline to top, 43 inches from tenon centreline to bottom)
One street name sign: dimensioned 84 inches wide x 12 inches high – weight 17 lbs.
(mounted 17.5 feet above base to bottom of sign and 10 feet 2 inches to outer edge of sign from centre line of shaft) **and**

the following additional attachments are mounted on the 35' signals street light joint use pole shaft:

- iv) One traffic sign: dimensioned 24 inches wide x 36 inches high - weight 14 lbs.
(mounted 12 feet above base to bottom of sign) **and**
- v) Two pedestrian heads at 90 degrees: each dimensioned 13 ½ inches wide x 13 ½ inches high – total weight 50 lbs. (mounted 8 feet 7 inches above base to bottom of head, and 16 inches out from edge of pole) **and**
- vi) One traffic sign: dimensioned 36 inches wide x 12 inches high – weight 10 lbs.
(mounted 10 feet above base to bottom of sign) **and**
- vii) One traffic sign: dimensioned 5 inches wide x 8 inches high - weight 5 lbs.

(mounted 4 feet above base to bottom of sign)

- c) **Configuration 3.** For a clamp on traffic signal arm of 12 foot reach:
- i) Attachment on the 10 foot street light davit arm:
One (1) 250 watt street lighting luminaries with effective projected wind load area of 2.15 sq. ft.
- weight 60 lbs. **and**
 - ii) Attachment on the joint use pole shaft:
One 12 foot reach traffic signal clamp on arm, attached to the joint use pole shaft.
Top of arm flange
14 feet 11 inches above the bottom of the base, to provide a signal head tenon mounting height of 19 feet 3 inches above the bottom of the base - weight 200 lbs.
and
 - iii) Attachment on the 12 foot traffic signal clamp on arm:
One pedestrian corridor unit: dimensioned 36 ½ inches wide x 32 ½ inches high x 18 inches deep and four flashing lights, each dimensioned 10 inches wide x 10 inches high – total weight 100 lbs. (suspended from the end of clamp on arm) **and**

the following additional attachments are mounted on the 35' signals/street light joint-use pole shaft:

- iv) One traffic sign: dimensioned 24 inches wide x 36 inches high - weight 14 lbs. (mounted 12 feet above base to bottom of sign) **and**
- v) One traffic sign: dimensioned 36 inches wide x 12 inches high - weight 10 lbs. (mounted 10 feet above base to bottom of sign) **and**
- vi) One traffic sign: dimensioned 5 inches wide x 8 inches high - weight 5 lbs. (mounted 4 feet above base to bottom of sign).

E6. MATERIAL

E6.1 All materials used for fabrication of 35 foot signals street lighting joint use poles shall be new and not previously used.

E6.2 The octagonal joint use pole shaft walls shall be fabricated from 7 gauge structural steel meeting as a minimum the requirements of ASTM A570 Grade 50 (50 ksi Design Yield Strength).

NOTE: Steel shall not be acceptable unless the mill test certificates state the grade to be 50 ksi minimum yield. Lower grade steel shall not be acceptable (despite favourable published mill test yield results) and joint use pole shafts fabricated without steel certification shall be rejected.

E6.3 The octagonal joint use 10 foot street light davit arm walls shall be fabricated from 11 gauge structural steel meeting as a minimum the requirements of ASTM A570 Grade 50 (50 ksi Design Yield Strength).

NOTE: Steel shall not be acceptable unless the mill test certificates state the grade to be 50 ksi minimum yield. Lower grade steel shall not be acceptable (despite favourable published mill test yield results) and joint use pole arms fabricated without steel certification shall be rejected.

E6.4 The 7 gauge and 11 gauge structural steel shall have silicon content less than or equal to 0.06 percent. Other components shall have silicon content controlled as required to prevent detrimental galvanizing effects

- E6.5 Base plate material shall be steel meeting the requirements of CSA G40.21 44W.
- E6.6 The lower handhole cover shall be minimum 11 gauge steel meeting the requirements of ASTM A570 Grade 50.
- E6.7 The access panel cover shall be 7 gauge steel meeting the requirements of ASTM A570 Grade 50.
- E6.8 Type 316 stainless steel (non-magnetic) hardware shall be used for:
- the 3/8 inch by 1 inch long grounding bolt in the lower handhole, nut, flat washer and lock washer (**Drawing No. ST-158 page 1**, latest revision).
 - 3/8 inch diameter by 4 inches long lower handhole cover mounting bolt and nut (**Drawing No. ST-163** latest revision).
 - the two 3/8 inch diameter by 2 ½ inches long cover mounting bolts, the 3/8 inch diameter by 1 ½ inches long terminal strip mounting bolt, the ¼ inch diameter by 1 ½ inches long grounding bolt and the two grounding bolt nuts associated with the wiring access panel (**Drawing No. ST-164 R1** latest revision and **Drawing No. ST-111** latest revision).
- E6.8.1 Aluminum shall be used for the tamper-proof cup washers (**Drawing No. ST-163** latest revision and **Drawing No. ST-164** latest revision), associated with the lower handhole cover and the wiring access panel cover.

E7. FABRICATION

- E7.1 Welding of steel structures shall be in accordance with the requirements of:
- CSA W59-03 Welded Steel Construction (Metal Arc Welding).
 - The fabricator shall be fully approved by the Canadian Welding Bureau as per CSA W47.1-03 Certification of Companies for Fusion Welding of Steel
- E7.2 All seams shall be continuously welded and free from any slag or splatter.
- E7.3 The longitudinal seam weld shall be a minimum of 60% penetration, except that within 6 inches of lower end of shaft, 4 inches from upper end of shaft and 4 ½ inches from lower end of street light davit arm shall be complete penetration.
- Note:** A 60% penetration longitudinal seam weld in the vicinity of the lower handhole and the access panel will be acceptable, provided this seam weld does not intercept the circumference of the lower handhole and the circumference of the access panel.
- E7.4 Only one longitudinal seam weld is permitted in each pole shaft and street light davit arm.
- E7.5 Pole shaft and street light davit arm shall be one continuous length with no circumferential butt joint welds.
- E7.6 The surface of exposed welds shall be free of any slag and splatter.
- E7.7 All openings and surfaces of internal passages, through which cables will be routed, shall be free of burrs, sharp edges and points.

E8. TESTING

- E8.1 Notwithstanding the Contractor's own quality control testing of all materials, the Contract Administrator may arrange for inspection of welding procedures and steel fabrication to ascertain compliance with the Specifications and Drawings.
- E8.2 A testing agency may be engaged to work with the Contract Administrator to carry out shop inspections and fabrication testing of the Work throughout the manufacturing process. The

Contractor shall cooperate fully with the testing firm. The firm shall have access to all the Contractor's normal quality control records associated with this Contract.

E8.3 Testing may include radiographic inspection and magnetic particle inspection, as determined by the Contract Administrator.

E8.4 Weld inspection will be carried out in accordance with the requirements of CSA W59-03. Welds found by any of the inspection methods to be inadequate and unsatisfactory shall be repaired in accordance with CSA W59-03 and then retested. The cost of the repairs and the cost of the retest shall be paid for by the Contractor. No repair shall be made until agreed to by the Contract Administrator.

E9. PROTECTIVE COATING SYSTEMS

E9.1 The sole approved protective coating system for 35 foot signals street lighting joint use pole shafts and street light davit arms is hot dip galvanizing.

E9.2 Hot dip galvanizing shall be carried out in accordance with CSA Standard G164-M92 to a net minimum retention of 600 grams per square metre.

E9.3 After hot dip galvanizing, all sharp edges and shards of galvanizing material on exterior of pole shafts and arms shall be removed. The same standard of care shall apply to all accessible interior surfaces.

E9.4 All areas of damaged galvanizing shall be repaired with self fluxing low temperature zinc based alloy rod. Use of spray on coatings is not acceptable.

E10. DESIGN FEATURES

E10.1 Each 35 foot signals street lighting joint use pole shaft and 10 foot reach street light davit arm shall be complete in all respects. Shafts and arms shall be of shell type construction, octagonal in cross section and uniformly tapered.

E10.2 **Base Plate:** Each joint use pole will be base mounted and therefore suitable for installation on a concrete foundation, break away base or on a steel screw in base using 1 ¼" inch diameter anchor bolts or connecting bolts. On existing City of Winnipeg concrete bases with 1 inch diameter anchor bolts, load configurations on ST-158 sheet 3 shall be used.

- a) Joint use pole shaft shall have base plate as shown on (**Drawing No. ST- 158 sheet 1**, latest revision). The base plate shall be G40.21 44W steel, 1 ¼ inch thick, 12 inches square, having 1 ½ inch diameter bolt holes designed to suit 1 ¼ inch diameter anchor bolts which are spaced on a 11 ½ inch bolt circle diameter. The base plate corners shall be chamfered ¾" inch. Flame access slots (if necessary) shall radiate from the anchor bolt holes to the outer corners of the base plate and shall be ¼" inch maximum width.
- b) Joint use pole shaft shall be welded to the base plate by continuous full penetration groove weld with backing ring. The backing ring shall be welded to base plate with continuous fillet weld. The tolerance for alignment of the base plate to the joint use pole shaft shall be plus or minus one inch at the top of the shaft from the perpendicular centreline of the base plate.

E10.3 **35 Foot Signals Street Light Joint Use Pole Shaft and Street Light Davit Arm:** The 35 foot signals street lighting joint use pole shall consist of a straight shaft portion which tapers uniformly from the baseplate to the upper end of the shaft. The 35 foot signals street lighting joint use pole shaft shall support a 10 foot street light davit arm by means of a slip joint which permits feed through of internal wires (**Drawing No. ST-158**, latest revision).

Note: The 10 foot street light davit arms, whether supplied under this Contract or currently in the City's stock, must inter-mate with the joint use pole shafts being supplied.

- a) The exterior dimensions measured "across the flats" of the 35 foot signals street lighting joint use pole shaft and davit arm after welds are cleaned of slag and splatter (but prior to galvanizing) shall be as follows:
 - i) exterior dimensions "across flats" at **bottom** of the pole shaft shall be **8 inches +0, -1/8 inch**;
 - ii) exterior dimensions "across flats" at **top** of the pole shaft shall be **4 5/16 inches +0, -1/8 inch**;
 - iii) exterior dimensions "across flats" at **bottom** of the street light davit arm shall be **4 3/4" inches, +0, -1/8 inch**;
 - iii) exterior dimensions "across flats" at **top** of the street light davit arm shall be **2 3/4" inches, +0, -1/8 inch**.
- a) The nominal spread (i.e. horizontal reach) of the street light davit arm, measured to the outer end of the tenon at the end of the octagonal portion of the arm, shall be ten feet (10' 0"). The 10 foot reach street light davit arm shall be terminated with a 2 inch IPS (2 3/8 inch outer diameter) pipe which shall project 8 1/4 inches beyond the octagonal section of the davit arm and be at an angle of 7 degrees above horizontal, when not bearing the weight of a street light luminaries. Street light davit arm shall have a radius bend of 7'-6", i.e. ninety (90) inches. The tenon of assembled joint use pole davit arm shall be nominally thirty five (35) feet above the bottom of the base plate.
- b) The 35 foot signals street lighting joint use pole shaft and matching 10 foot street light davit arm shall have detailed, repeatable, close tolerance dimensions. The slip joint, at the top of the pole shaft, will make **interchangeability** possible between joint use pole shafts and 10 foot street light davit arms, whether provided under this Contract or those currently in the City's stock.
- c) To ensure correct fit of the davit arm and the joint use pole shaft, the top of all finished joint use pole shafts shall fit into the 10 foot street light davit arms to an overlap distance of at least eight (8) inches and at most twelve (12) inches.
- d) To ensure correct fit of the joint use pole shaft and the davit arm, the bottom of all finished 10 foot street light davit arms shall overlap the joint use pole shafts to an overlap distance of at least eight (8) inches and at most twelve (12) inches.
- e) The longitudinal seam weld of the 10 foot street light davit arm shall be adjacent to the "flat" which is the "outermost" flat through the bend radius (**Drawing No. ST-158**, latest revision identifies this as "Flat B").
- f) Finished 10 foot street light davit arm shall be symmetrical such that arm fits to finished shaft on any "flat to flat" angle (i.e. arm shall fit shafts at any of the eight (8) possible "flat to flat" mounting positions).
- g) Overall height of the joint use pole **shaft** from its top opening to bottom of the base plate shall be 25 feet, 6 inches (-0, +1 inch).

- h) The total overall height of assembled joint use pole with 10 foot street light davit arm shall be 35 feet (-0, + 6 inches).

E10.4 **4 3/4 inch x 24 inch (38 Circuit) Wiring Access Panel:** Each pole shall be provided with a 4 3/4 inches wide x 24 inches long (38 circuit) wiring access panel for termination of signal control cables. The (38 circuit) wiring access panel, upper and lower mounting brackets, removable terminal strip bracket and lower terminal strip bracket support arrangement is shown on attached (**Drawing No. ST-111**, latest revision). The (38 circuit) wiring access panel shall be located at a height of 46 ± 2 inches [3 feet, 10 inches] measured from centre line of panel to bottom of base plate.

E10.4.1 The (38 circuit) access panel shall have a minimum clear opening of 4 3/4 inches wide x 24 inches long except at the corners (which are rounded as per (**Drawing No. ST-111**, latest revision)). The (38 circuit) access panel ring shall be fabricated either of one continuous length of steel plate formed into a ring and welded at the junction, or may be formed of two symmetrical halves welded at the top and bottom of the panel opening.

- a) The (38 circuit) access panel shall contain a **removable terminal strip bracket**, of 1 1/4 inches wide by 7 GA thick steel, having 12 drilled and tapped holes precisely located as specified on (**Drawing No. ST-111**, latest revision, to accommodate both a 0.438 inch density double row 16 conductor terminal strip and a 0.438 inch density double row 22 conductor terminal strip. These 12 holes are located such that either the longer or the shorter terminal strip may be mounted higher or lower on the removable terminal strip bracket. The lower end of the removable terminal strip bracket shall be held captive by means of a lower terminal strip support bracket, serving as a retainer clip, welded across the interior flats near the bottom of the (38 circuit) access panel opening. A backing piece of 11 GA material, 1 inch wide shall be stitch welded to the back centreline of the removable terminal strip bracket as per ST-111, latest revision, to render the bracket more rigid.
- b) **Upper Mounting Bracket and the Electrical Grounding Bolt:** An upper mounting bracket shall be provided with a 1/4 inch diameter x 1 1/2 inches long full-threaded Type 316 stainless steel grounding bolt and two stainless steel hexagonal nuts, for the connection of ground wire(s). The grounding bolt shall be installed in a drilled and tapped hole as shown on the upper mounting bracket, its threaded portion facing outwards, and its head **welded** to the rear of the upper mounting bracket. The threads of the grounding bolt shall be kept clean and free of welding splatter etc. and shall either be protected during galvanizing, or rethreaded after.
- i) The upper mounting bracket shall have two 3/8" - 16 UNC (Unified Standard Coarse Thread) General Purpose U-type nuts installed (Au-ve-co Part Number 10054, or equal). A lower mounting bracket shall also be installed as shown with one 3/8" - 16 UNC General Purpose U -type nut to fasten the access panel cover.
- ii) Three U-type nuts are required: two to fasten the access panel cover, the other secures the removable terminal strip mounting bracket to the upper mounting bracket. The three U-nuts must be installed after galvanizing. All three U-nuts shall be installed "edgewise" (that is, with the fold of the U-nut facing the side of the access panel ring, not facing the top or bottom of the ring).
- iii) Three corresponding Type 316 stainless steel full-thread hexagonal head bolts (9/16 inch across flats) are required. Two stainless steel full-thread hexagonal head bolts (9/16 inch across flats), both 3/8 inch diameter x 2 1/2 inches long shall fasten the cover to the wiring access panel. A stainless steel full-thread hexagonal head bolt (also 9/16 inch across flats), 3/8 inch diameter x 1 1/2

inches long shall secure the removable terminal strip bracket to the upper mounting bracket.

- c) Prior to galvanizing, all sharp edges within the (38 circuit) access panel shall be ground smooth to eliminate any sharp edges or corners. The lower perimeter edge of the access panel ring, upper and lower mounting bracket and the removable terminal strip bracket shall be so treated.

E10.5 Cover for the (38 Circuit) Wiring Access Panel: The (38 circuit) access panel shall be provided with a flanged, weatherproof steel cover. The access panel cover is detailed in **(Drawing No. ST-164, latest revision.**

- a) The cover shall be fabricated of **7 gauge** steel.
- b) The access panel cover shall have a continuous circumferential perimeter flange. The flange shall overlap the access panel ring sufficient to prevent driven snow or rain entry into the access panel, even at 25.6 psf design wind pressure. Flat covers will be rejected.
- c) The two holes in the cover for the mounting bolts shall be circular, ½ inch diameter and centred over the upper and lower bracket mounting holes both vertically and horizontally to match the 'U'-nuts.
- d) Cover shall have a smooth, continuous perimeter flange edge. All rough edges on the covers shall be ground smooth.
- e) Cover shall have both interior and exterior surfaces galvanized.
- f) After galvanizing, a weather strip of closed cell foam, ¼ inch thick and ¾ inch wide, shall be applied to form a continuous perimeter around the outer edge of the interior flat portion of the cover. This interior perimeter weather strip shall bear down onto the access panel ring to effectively seal the access panel when the cover is attached.
- g) The Contractor shall install the access panel covers after the poles have been galvanized, prior to final delivery.
- h) An alternate access panel cover manufactured from "non-steel" material may be substituted for the galvanized steel cover, subject to review and approval of the Contract Administrator prior to manufacturing. "Non-steel" type access panel covers shall be strong, durable, ultraviolet-stabilized, tamper-proof and not subject to breakage or deformation under temperatures ranging from -50° C to +50° C. A sample of the proposed alternate cover shall be provided to the Contract Administrator for inspection prior to approval.
- i) The cover shall be secured to the access panel by two 3/8 inch diameter by 2 1/2 inch long, fully-threaded hexagonal head Type 316 stainless steel bolts (hex head bolts, 9/16-inch across flats), each bolt complete with tamper-proof cup washers **(Drawing No. ST-164, latest revision)** The tamper-proof cupwasher shall have an internal diameter of 13/16-inch.

E10.6 4 3/4 inch x 12 inch Lower Handhole: Each 35 foot signals street lighting joint use pole shall be provided with a 4 ¾ inch wide x 12 inch long lower handhole for termination of street lighting cables. The lower handhole shall be located at a height of 12 ± 2 inches (centre line of handhole to underside of base plate) and centred on the same flat as the (38 circuit) wiring access panel. The lower handhole shall have a minimum clear opening of 4 ¾ inches wide by 12 inches long, except the corners are rounded as per **(Drawing No. ST-163, latest revision)**. The lower handhole ring shall be fabricated either of one continuous length of steel plate, 3/8 inch thick and 2 1/2 inches wide, formed into a ring and welded at the junction, or may be formed of two symmetrical halves welded at the top and bottom of the handhole opening. The lower handhole ring shall be welded into the pole shaft such that the outer edge of the handhole ring shall project out ½ inch from the flat within which the handhole is centred. Prior to galvanizing, all edges within the lower handhole shall be ground smooth to eliminate sharp edges or corners.

- a) **Lower Handhole Cover:** The lower handhole shall be provided with a flanged, weatherproof cover secured by one 3/8 inch diameter by 4 inches long fully-threaded Grade 316 stainless steel bolt complete with aluminum cup type tamper proof washer, nut and a steel clamp bar. The aluminum tamper proof cup washer shall conform to **(Drawing No. ST-163, latest revision)**. The clamp bar shall be a 1/4 inch thick galvanized flat steel plate, 1 3/4 inches wide and 14 inches long and shall have a drilled hole in its centre with 3/8 stainless steel nut welded on to hold captive the 4 inches long bolt. The lower handhole cover shall have smooth, continuous perimeter edges. The Contractor shall grind smooth any rough edges on the cover. Cover and clamp bar shall have both interior and exterior surfaces galvanized. The Contractor shall install the cover after the poles have been galvanized and after installation of nut and washers on the pole grounding bolt as described in E10.7, prior to delivery.

E10.7 Pole Grounding Bolt: To provide internal connection for grounding conductors, a 3/8 inch diameter by 1 inch long Type 316 stainless steel bolt shall be welded to protrude from the inner shaft wall, on the flat immediately opposite the centre of the lower hand hole opening. The pole grounding bolt shall be fully threaded. The contractor shall install a stainless steel nut, one stainless steel flat washer and one stainless steel lock washer to the grounding bolt after the pole and grounding bolt, has been galvanized and prior to delivery.

E11. MANUFACTURERS IDENTIFICATION

E11.1 Each 35 foot signal street lighting joint use pole shaft and street light davit arm shall be marked in a clearly legible form to identify **the manufacturer and the production year**. Raised lettering shall be not less than 1 inch in height, confined to one flat and shall be raised not less than 1/16 inch in weld metal at the following prescribed location:

- a) Joint use pole shaft: External face of shaft within 24 inches of the bottom of shaft.
b) Street light davit arm: External face of arm within 12 to 18 inches of the bottom of davit arm.

E11.2 Format of the raised lettering markings shall be as follows:

- a) **"XX -YR"** - where "XX" shall be the abbreviation or logo of the Contractor's firm, followed by "dash", followed by the last 2 digits of the year of manufacture.

