



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 14-2016

SUPPLY & INSTALLATION OF 120 METER GUYED RADIO TOWER

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY & INSTALLATION OF 120 METER GUYED RADIO TOWER

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, February 12, 2016.

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 notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.

B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

B4. CONFIDENTIALITY

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

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

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

B5. ADDENDA

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

- B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- B5.2.2 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.2.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6. SUBSTITUTES

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B6.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.
- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B7. BID COMPONENTS

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B7.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B7.5 If the Bid Submission is submitted by mail, courier or personal delivery, it shall be enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address, and shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg, MB R3B 1J1
- B7.5.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B7.6 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.7 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B15.1(a).
- B7.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204 949-1178.
- B7.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B7.8.2 Bids submitted by internet electronic mail (e-mail) will not be accepted.

B8. BID

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

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

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

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

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

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

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

B8.4.2 All signatures shall be original.

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

B9. PRICES

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

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

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

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

B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B10. DISCLOSURE

B10.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B10.2 The Persons are:

- (a) N/A

B11. QUALIFICATION

B11.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; 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.

B11.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/debar.stm>

B11.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B11.4 Further to B11.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractors has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (b) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (c) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>).

B11.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B11.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

- B12.1 Bids will not be opened publicly.
- B12.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>
- B12.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- B12.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B13. IRREVOCABLE BID

- B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.
- B13.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work for the time period specified in Paragraph 9 of Form A: Bid.

B14. WITHDRAWAL OF BIDS

- B14.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B14.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
- B14.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B14.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:
- (a) retain the Bid until after the Submission Deadline has elapsed;
 - (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B14.1.3(b), declare the Bid withdrawn.
- B14.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B13.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law.

B15. EVALUATION OF BIDS

- B15.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity or acceptable deviation there from (pass/fail);

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

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

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

B15.4 Further to B15.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

B15.4.1 Further to B15.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B16. AWARD OF CONTRACT

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

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

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

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

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

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

B16.4 Notwithstanding C4, the City may issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.

B16.5 The Contract, as defined in C1.1, in its entirety shall be deemed to be incorporated in and to form a part of the Purchase Order notwithstanding that it is not necessarily attached to or accompany said Purchase Order.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

D1.1 In addition to the *General Conditions for Construction*, these Supplemental Conditions are applicable to the Work of the Contract.

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of the supply, assembly and installation of a new radio communication facility located on City of Winnipeg property. The Contractor shall be responsible for installing a suitable tower foundation; assembling and erecting the tower; provide an equipment shelter; and installing and testing a tower lighting system. The Contractor is responsible for ensuring the tower, shelter and all work meets or exceeds the design criteria contained in these specifications, or in national or industry standards to which these specifications refer.

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

- (a) Install foundation for tower and guy anchors
- (b) Supply and install guyed tower
- (c) Supply equipment shelter
- (d) Install new electrical service
- (e) Supply and install ground system for tower, shelter and generator
- (f) Supply and install security fencing
- (g) Site Cleanup and restoration

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is:

Ed Richardson P.Eng.
421 Osborne Street
Winnipeg, MB R3L 2A2
Telephone No. 204 986-6002
Email: erichardson@winnipeg.ca

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

D3.3 Bids Submissions must be submitted to the address in B7.5.

D4. CONTRACTOR'S SUPERVISOR

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

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 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D3.1.
- D6.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following facsimile number:
- The City of Winnipeg
Chief Financial Officer
Facsimile No.: 204 949-1174
- D6.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:
- The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services
Facsimile No.: 204 947-9155
- D6.5 Bids Submissions must be submitted to the address in B7.5.**

SUBMISSIONS

D7. AUTHORITY TO CARRY ON BUSINESS

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

D8. SAFE WORK PLAN

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

D8.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgmt/Safety/default.stm>

D9. INSURANCE

D9.1 The Contractor shall provide and maintain the following insurance coverage:

- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
- (c) all risks course of construction insurance, including testing and commissioning, in the amount of one hundred percent (100%) of the total contract price, written in the name of the Contractor and The City of Winnipeg, at all times during the performance of the Work and until the date of Total Performance
- (d) property insurance for all contractors equipment and machinery to be used in connection with the Work

D9.2 Deductibles shall be borne by the Contractor.

D9.3 The Contractor shall provide the Contract Administrator with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than seven (7) Calendar Days from notification of the award of Contract by Purchase Order.

D9.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D10. PERFORMANCE SECURITY

D10.1 If the Contract Price exceeds twenty-five thousand dollars (\$25,000.00), the Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

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

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

D10.2 The Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of Purchase Order and prior to the commencement of any Work on the Site.

D11. SUBCONTRACTOR LIST

D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than seven (7) Calendar Days from notification of the award of Contract.

SCHEDULE OF WORK

D12. COMMENCEMENT

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

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

(a) the Contract Administrator has confirmed receipt and approval of:

- (i) evidence of authority to carry on business specified in D7;
- (ii) evidence of the workers compensation coverage specified in C6.15;
- (iii) the Safe Work Plan specified in D8;
- (iv) evidence of the insurance specified in D9;
- (v) the performance security specified in D10; and
- (vi) the Subcontractor list specified in D11.

(b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D12.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the Purchase Order.

D12.4 The City intends to award this Contract by March 11, 2016

D12.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D13. SUBSTANTIAL PERFORMANCE

D13.1 The Contractor shall achieve Substantial Performance by July 15, 2016.

D13.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D13.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D14. TOTAL PERFORMANCE

D14.1 The Contractor shall achieve Total Performance by August 1, 2016.

- D14.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.
- D14.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

CONTROL OF WORK

D15. JOB MEETINGS

- D15.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.
- D15.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D16. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

- D16.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

D17. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

- D17.1 Further to B11.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B11.4.

MEASUREMENT AND PAYMENT

D18. INVOICES

- D18.1 Further to C12, the Contractor shall submit an invoice for each portion of Work performed. 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
- D18.2 Invoices must clearly indicate, as a minimum:
- the City's purchase order number;
 - date of delivery;
 - delivery address;
 - type and quantity of work performed;

- (e) the amount payable with GST and MRST shown as separate amounts; and
- (f) the Contractor's GST registration number.

D18.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.

D18.4 Bids Submissions must be submitted to the address in B7.5.

D19. PAYMENT

D19.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D20. WARRANTY

D20.1 Warranty is as stated in C13.

FORM H1: PERFORMANCE BOND
(See D10)

KNOW ALL MEN BY THESE PRESENTS THAT

_____ ,
(hereinafter called the "Principal"), and

_____ ,
(hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), in the sum of

_____ dollars (\$_____)

of lawful money of Canada to be paid to the Obligee, or its successors or assigns, for the payment of which sum the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee for

BID OPPORTUNITY NO. 14-2016

SUPPLY & INSTALLATION OF 120 METER GUYED RADIO TOWER

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

By: _____ (Seal)
(Attorney-in-Fact)

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

(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 14-2016
SUPPLY & INSTALLATION OF 120 METER GUYED RADIO TOWER

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

(Name of Contractor)

(Address of Contractor)

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

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

This credit is subject to the Uniform Customs and Practice for Documentary Credit (2007 Revision), International Chamber of Commerce Publication Number 600.

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

| <u>Drawing No.</u> | <u>Drawing Name/Title</u> |
|--------------------|---------------------------|
| F03 | Generator Pad Details |
| F16-01 | Tower Installation |

GUYED TOWER

E2. GENERAL

- E2.1 The Contractor should provide a nominal 120 meter (395 feet) guyed communication tower.
- E2.2 Height of the tower is measured vertically from the base of the tower to the highest point of the tower structure not including any antennas or lightning rods. This is referred to as height above ground level (AGL).
- E2.3 The exact height AGL should be as close to 120m (395 feet) as practical considering the stock dimensions of standard tower sections.
- E2.4 The tower shall be designed and installed in accordance with all applicable CSA S37-13 standards.

E3. LOCATION

- E3.1 The tower shall be installed at the site location specified in Drawing F16-01 This Site is currently unimproved vacant land owned by the City of Winnipeg.
- E3.2 Once the Contract Administrator approves the Contractor's site plans the City of Winnipeg will construct an access road to the base of the proposed tower.
- E3.3 The Contractor is responsible for conducting all required soil sampling and analysis required to complete the design of the tower and guy anchors.

E4. INITIAL TOWER LOADING

- E4.1 The tower shall be designed to accommodate the antennas and feedlines as detailed in Appendix 1.

E4.2 In addition to antennas and feedlines from Appendix 1, the Contractor shall also outfit the tower with the required lightning rods, lighting system, transmission line ladders, ice shields and fall arrest system.

E4.3 The loading under maximum CSA s37-13 ice and wind loading conditions, should not exceed 75% of the maximum load capacity of the tower at any guy level.

E5. MARKINGS AND LIGHTING

E5.1 The tower shall be installed with markings and lighting in accordance with all applicable Canadian Aviation Regulations, Standard 621.

E5.2 The tower lighting shall be protected from falling ice where possible.

E5.3 Wiring for the tower lighting system shall be enclosed in a rigid galvanized steel conduit. This conduit shall be affixed to the transmission line ladder with appropriate hanger kits.

E5.4 The tower lighting and control system shall provide an automatic alarm in the event of a failure. All alarms should be indicated by a Form-C dry contact closure. The City of Winnipeg will interface the lighting monitoring system into the City of Winnipeg provided site monitoring system.

E5.5 The contractor should consider shielding the tower lighting from the residential areas immediately adjacent to the tower site.

E5.6 The Contractor shall provide a complete set of as built drawings and a complete structural analysis of the completed tower structure to the Contract Administrator within forty five (45) days of final acceptance by the City. All documentation shall be sealed by a Professional Engineer registered in Manitoba.

E6. APPURTENANCES

E6.1 The Contractor shall install an approved lightning rod at the top of the tower structure.

E6.2 The Contractor shall install an "offset" style antenna mount near the top of the tower. This structure is intended to hold 3 vertical omnidirectional antennas away from the tower faces. The distance from vertical antenna to vertical antenna should nominally be 16 feet. Refer to Appendix 3 for a sketch of a possible implementation method.

E6.3 The Contractor shall install a copper grounding buss bar to the base of the tower to facilitate future grounding of transmission lines.

E6.4 An ice protected transmission line/waveguide bridge shall be installed between the tower and the equipment shelter. The height of this bridge shall be determined to provide the most direct cable entry into the shelter. The transmission line bridge shall be designed to be self-supporting without requiring support from either the tower or the shelter. The length of the bridge will be the minimum necessary to protect and support all waveguides and transmissions lines between the tower base and the shelter entry ports. Vertical supports for the bridge shall be anchored in concrete bases.

E6.5 A transmission line/waveguide ladder shall be installed along each face of the tower. The ladder should extend from the horizontal bridge to the top of the tower or as high a structurally practical. The ladder shall be predrilled to accept universal snap-in hanger kits. The cable ladder shall be of galvanized steel construction and shall use mounting hardware of stainless steel or galvanized steel construction.

E6.6 Contractor shall install a CSA OHS A approved climbing system consisting of a ladder and fall arrest system. The system shall be sized to accommodate two workers minimum.

E7. EQUIPMENT SHELTER

- E7.1 The Contractor shall provide an equipment shelter in accordance with the following requirements.
- E7.2 The interior finished floor space should not be less than 12 feet by 16 feet. Larger areas are acceptable up to a maximum 300 square feet.
- E7.3 The exterior of the shelter should be metal clad and of a maintenance free construction.
- E7.4 The entry door shall open outwards and be of a metal construction. The door shall be furnished with a secure deadbolt and security key. All Contractor keys shall be turned over to the City upon final acceptance.
- E7.5 The Contractor will install a pad or foundation for the shelter as recommended by the shelter manufacturer or engineer.
- E7.6 The minimum floor loading capacity should be 225 pounds per square foot.
- E7.7 The minimum roof loading capacity should be 150 pounds per square foot.
- E7.8 The minimum roof impact resistance shall be at least 225 foot pounds with no damage to interior or exterior of the roof or shelter.
- E7.9 The shelter shall be of a suitable construction that no air infiltration will occur. This should be demonstrated prior to the installation of any through wall or floor devices.
- E7.10 If the underside of the floor is not in full contact with a concrete pad, the contractor shall install a rodent shield over the complete underside of the floor.
- E7.11 The interior floor surface shall be covered with a commercial grade vinyl tile.
- E7.12 The interior walls and ceiling should be a minimum of 5/8 inch construction. Preference given to plywood material. The interior surface shall be finished either with paint or a fiberglass laminate material.
- E7.13 The walls must be insulated to a minimum R11 rating.
- E7.14 The ceiling must be insulated to a minimum R19 rating.
- E7.15 At all interior point of the shelter, where two pieces of material come together, butt against each other, overlap each other, or are fastened to each other; the seams must be sealed with and industrial grade adhesive sealer to ensure a watertight joint.

E8. ELECTRICAL UTILITY

- E8.1 The Contractor shall provide and install an electrical service into the equipment shelter in accordance with the following specifications.
- E8.2 All costs for permits, construction and installation are the responsibility of the Contractor.
- E8.3 The Contractor shall install an electrical panel for 200 Amp 120 VAC service.
- E8.4 The Contractor shall install 3 electrical conduits between the external generator pad and terminating near the internal breaker panel. This conduit will facilitate the installation of power and control wiring to the future generator. Refer to Drawing F03 for details of this conduit.
- E8.5 The Contractor shall install electrical service to power the tower lighting system. The Contractor shall ensure the tower is illuminated during the construction period. Temporary obstruction lights may be used.
- E8.6 The installation of all other circuits should be the responsibility of the City of Winnipeg.

- E8.7 The Contractor shall install a concrete pad for a future generator. Construction details for this pad are provided in Drawing F03.
- E8.8 The City of Winnipeg will be responsible for the installation of a transfer switch and the wiring from the external generator.
- E8.9 The Contractor shall provide a buried telecommunication vault to facilitate future telecom wiring. The vault should be located a minimum of 2 feet away from the outside perimeter of the shelter. The Contractor shall install a conduit from inside the shelter to the buried vault.

E9. SITE SECURITY

- E9.1 The Contractor shall provide and install security fencing in accordance with the following specifications.
- E9.2 The equipment shelter, tower base, transmission line bridge and generator pad shall be enclosed within the security fence. This fence should be installed with a double opening swing gate to allow access via a vehicle. The opening should be a minimum of 14 feet with both gates open.
- E9.3 Each guy anchor shall be fenced and have one pedestrian gate. The fence shall be located a minimum of 15 feet from each anchor. The distance from the anchor to the fence should be adjusted to allow at least 1 foot of clearance from the top of the fence to the lowest guy wire.
- E9.4 All fences shall be 8 feet high chain link fence with 3 strands of barb wire at the top for a total height of 9 feet.
- E9.5 The chain link fabric shall be 2 inch mesh, 9 gauge.
- E9.6 The chain link posts shall be a minimum of 2-1/2 inch outside diameter (o.d.) spaced no further apart than 10 feet. A top rail of a minimum 1-5/8" o.d. shall be used.
- E9.7 All corner and end posts at gates, shall be 4 inch o.d. complete with 1-5/8 inch o.d. brace rail, 3/8 inch truss assembly using 12 gauge tension bands secured at a maximum of 12 inch on center.
- E9.8 The fence fabric finished grade shall be leveled so that there is no gap between the fence fabric and the finished compound grade. A nominal 2 inch gap between the bottom of all gates and finished compound grade should be provided.
- E9.9 The fence fabric material should be a minimum of ASTM A392 (Class 2) for zinc coated steel chain link fencing.
- E9.10 The posts and rail material should be a minimum of ASTM F1043 for strength and protective coatings of Metal Industrial chain link fencing.
- E9.11 The barbed wire should be in accordance with ASTM F626, Specification for Fence Fittings, Type 1-three strand 45 degree arm.
- E9.12 All fences shall be bonded to the site grounding system in accordance with the Motorola R56-2005 standard.

E10. GROUNDING

- E10.1 The Contractor will provide, install and test an integrated grounding system incorporating the tower, equipment shelter, and transmission line bridge, fencing and generator pad.
- E10.2 The ground system should be designed and tested in accordance with local electrical codes and Motorola R56-2005.
- E10.3 The security fence shall be bonded to the equipment shelter external ground ring.

- E10.4 All bonding connections that will be buried shall use an approved exothermic welding process.
- E10.5 Ground tests shall be performed in the presence of the Contract Administrator or his delegate. The Contractor shall supply all necessary test equipment. The test results will be recorded on a Contractor supplied form and will form part of the as-built documentation.
- E10.6 The Contractor shall supply as-built drawings of the ground system within 45 days of final approval by the City of Winnipeg. Documentation shall include all bonding connections and test results.
- E10.7 The costs of the grounding should be included in the pricing submitted for Item 1 on Form B: Prices.

E11. SITE RESTORATION

- E11.1 The Contractor shall be responsible for cleaning up the work Site on a daily basis. This includes the removal of all rubbish and debris resulting from the work at the Site. The use of a Contractor supplied dumpster located on site would fulfill these requirements.
- E11.2 Upon completion of all Work, the entire job Site shall be left clean and free of trash, debris, mud, excavated fill, scrap materials or excess building materials.
- E11.3 Upon completion of any foundations, or other subsurface site preparations (grounding, utilities etc.), the Contractor shall;
- (a) Remove any remaining vegetation.
 - (b) Grade and compact the compound to at least 1 foot beyond the perimeter of the security fence.
 - (c) Grade as necessary to allow for drainage away from the shelter and tower base.
 - (d) Remove all surface debris or rocks that could damage the vegetation filter cloth.
 - (e) Install a weed suppressing filter cloth covering the area to at least one foot beyond the fenced compound. All seams to be overlapped a minimum of 6 inches or as instructed by filter cloth manufacturer.
- E11.4 The Contractor shall supply and install a gravel base over the entire fenced compound and extending at least 1 foot beyond the fenced perimeter and covering the vegetation filter cloth. The gravel shall be installed to a minimum of 4 inches depth.
- E11.5 The site clean-up and restoration costs shall be included in Item 1 on Form B: Prices.

E12. ANTENNA AND FEEDLINE INSTALLATION

- E12.1 The Contractor shall be responsible for installing the antennas and feedlines contained in Appendix 3. Note that several of the antennas and feedlines contained in Appendix 1 will be installed by the City at a later date by the City of Winnipeg.
- E12.2 All antennas will be provided by the City of Winnipeg.
- E12.3 The Contractor shall provide and install all transmission lines, clamps, and grounding kits.
- E12.4 Transmission lines shall be one continuous length from antenna to termination within the shelter. The use of splices or joined cables is not allowed.
- E12.5 Transmission lines shall be secured to the transmission line ladders with approved universal hangers at the manufacturer recommended separation distances.
- E12.6 The position and quantity of transmission line grounding kits shall be in accordance with Motorola R56-2005. All connections shall be weatherproofed and documented with photographs.

- E12.7 Upon completion of installation, the Contractor will test each feedline from the shelter termination point to the end by measuring:
- (a) Return loss across the frequency band specified in Appendix 2
 - (b) Distance to fault measurement at the center frequency
- E12.8 The tests will be witnessed by the Contract Administrator or his delegate.
- E12.9 The Contractor will provide the test results along with photo document of each antenna mount, feedline connection, and grounding kit installation to the Contract Administrator as part of the As-built documentation package.

APPENDIX 1 – PROPOSED TOWER LOADING

| ANTENNA | QTY | ELEVATION | AZIMUTH | FEEDLINE | QTY |
|-------------------|------------|------------------|----------------|-----------------|------------|
| SC488-HF6LDF(D00) | 3 | 390 Feet | OMNI | LDF7-50A | 3 |
| SRL-310-C4 | 1 | 375 Feet | 180 | LDF5-50A | 1 |
| SRL-210-C4 | 1 | 350 Feet | 180 | LDF5-50A | 1 |
| SRL-210-C4 | 1 | 330 Feet | 180I | LDF5-50A | 1 |
| VHLP6-11 6' dish | 1 | 135 Feet | 228.8 | EWP90-107 | 1 |
| VHLP4-11 4' dish | 1 | 80 Feet | 195.3 | EWP90-107 | 1 |
| VHLP4-11 4' dish | 1 | 210 Feet | 196.8 | EWP90-107 | 1 |

APPENDIX 2 – CONTRACTOR INSTALLED ANTENNAS AND TRANSMISSION LINES

| Antenna Description | QTY | Azimuth | Elevation | Bandwidth | Center freq | Transmission Line | QTY |
|---------------------|-----|---------|-----------|-------------|-------------|-------------------|-----|
| SRL-310-C4 | 1 | 180 | 330 Feet | 410-415 MHz | 412.5 MHz | LDF5-50A | 1 |
| SRL-210-C4 | 1 | 180 | 280 Feet | 148-156 MHz | 152 MHz | LDF5-50A | 1 |
| SRL-210-C4 | 1 | 180 | 265 Feet | 148-156 MHz | 152 MHz | LDF5-50A | 1 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

APPENDIX 3 – TOWER TOP ANTENNA OFFSET MOUNT

The diagram below illustrates one possible method of implementing the antenna offset mount located at the top of the tower. Note the horizontal distance between the antennas is nominally 16 feet.

