



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 162

SUPPLY AND DELIVERY OF GPS MASTER CLOCK COMMAND CENTER

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PART B - BIDDING PROCEDURES

B1. PROJECT TITLE

B1.1 SUPPLY AND DELIVERY OF GPS MASTER CLOCK COMMAND CENTER

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, November 15, 2005

B2.2 Bid Submissions determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.

B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. ENQUIRIES

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

B3.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall 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. 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 Branch internet site at <http://www.winnipeg.ca/matmgt>.

B4.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Branch internet site for addenda shortly before submitting his Bid.

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 shall 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.

B6. BID SUBMISSION

- B6.1 The Bid Submission consists of the following components:

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

B6.2 All components of the Bid Submission 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 in ink, to constitute a responsive Bid.

B6.3 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.

B6.4 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 Branch
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B6.4.1 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.

B6.5 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to (204) 949-1178

B6.5.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.

B6.6 Bid Submissions 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;
- (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 shall be printed below such signatures.

B7.4.2 All signatures shall be original.

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 Submission 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.

B8.1.2 Prices on Form B: Prices shall not include the Manitoba Association for Resource Recovery Corporation (MARRC) Environmental Handling Charge (EHC) which shall be extra where applicable.

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;
- (b) be responsible and not be suspended, debarred or in default of any obligation to the City;
- (c) be financially capable of carrying out the terms of the Contract;
- (d) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract;

- (e) have successfully carried out work, similar in nature, scope and value to the Work;
- (f) employ only Subcontractors who:
 - (i) are responsible and not suspended, debarred or in default of any obligation 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 Branch internet site at <http://www.winnipeg.ca/matmgt>); and
 - (ii) have successfully carried out work similar in nature, scope and value to the portion of the Work proposed to be subcontracted to them, and are fully capable of performing the Work required to be done in accordance with the terms of the Contract;

B9.2 The Bidder shall be prepared to 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.

B9.3 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 Bid Submissions will not be opened publicly.

B10.2 Within two (2) Business Days 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 Branch internet site 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 Branch internet site at <http://www.winnipeg.ca/matmgt>.

B10.4 The Bidder is advised that any information contained in any Bid Submission 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 GC.7.05(2), 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 shall:
- (a) retain the Bid Submission until after the Submission Deadline has elapsed;
 - (b) open the Bid Submission 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 (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 if the interests of the City so require.
- B13.3 Further to B13.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid Submission 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.
- B13.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.
- 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.
- B14.4 Notwithstanding GC.3.01 and GC.3.02, 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 GC.1.01(7), 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

C1. GENERAL CONDITIONS

C1.1 The *General Conditions for the Supply and Delivery of Goods* (Form 21: 88 03) are applicable to the Work of the Contract.

C1.1.1 The *General Conditions for the Supply and Delivery of Goods* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

- D1.1 In addition to the *General Conditions for the Supply and Delivery of Goods*, these Supplemental Conditions are applicable to the Work of the Contract.
- D1.2 The General Conditions are amended by striking out "The City of Winnipeg Act" wherever it appears in the General Conditions and substituting "The City of Winnipeg Charter".
- D1.3 The General Conditions are amended by striking out "Board of Commissioners" or "Commissioner" wherever it appears in the General Conditions and substituting the "Chief Administrative Officer".
- D1.4 The General Conditions are amended by striking out "Tender Package" wherever it appears in the General Conditions and substituting "Bid Opportunity".
- D1.5 The General Conditions are amended by striking out "Tender Submission" wherever it appears in the General Conditions and substituting "Bid Submission".
- D1.6 The General Conditions are amended by striking out "Bidding Instructions" wherever it appears in the General Conditions and substituting "Bidding Procedures".

D2. SCOPE OF WORK

- D2.1 The Work to be done under the Contract shall consist of the supply and delivery of a GPS network clock command center package. The command center package must operate as a complete package solution for time synchronization to provide legally traceable time throughout a center and its network(s).

D3. DEFINITIONS

- D3.1 When used in this Bid Opportunity:
- (a) "**Business Day**" means any Calendar Day, other than a Saturday, Sunday, or a Statutory or Civic Holiday;
 - (b) "**Submission Deadline**" and "**Time and Date Set for the Final Receipt of Bids**" mean the time and date set out in the Bidding Procedures for final receipt of Bids;
 - (c) "**CSA**" means Canadian Standards Association.
 - (d) "**CAD**" means Computer Aided Dispatch.
 - (e) "**GPS**" means Global Positioning System.
 - (f) "**NTP**" means Network Time Protocol.
 - (g) "**SNTP**" means Simple Network Time Protocol.
 - (h) "**SNMP**" means Simple Network Management Protocol.
 - (i) "**NENA**" means National Emergency Number Association.
 - (j) "**PSAP**" means Public Safety Answer Point.
 - (k) "**UTC**" means Coordinated Universal Time.
 - (l) "**IRIG**" means Inter Range Instrumentation Group.
 - (m) "**ANI**" means Automatic Number Identification.

- (n) “**ALI**” means Automatic Location Identification.
- (o) “**VSWR**” means Voltage Standing Wave Ratio.
- (p) “**RS-232**” means Recommended Standard 232 (Electronic Industry Association Standard for serial communications).
- (q) “**RS-485**” means Recommended Standard 485 (Electronic Industry Association Standard for serial communications).
- (r) “**10/100 BaseT**” means 10 or 100 Mbits/sec over Baseband Twisted pair.
- (s) “**BNC**” means Bayonet Neill Concelman coaxial cable connector.
- (t) “**LED**” means Light Emitting Diode.
- (u) “**DB-9**” means “D” shaped serial communications connector with 9 connectors.
- (v) “**UV**” means Ultra Violet.
- (w) “**DC**” means Direct Current.
- (x) “**SSL**” means Secure Sockets Layer.
- (y) “**SSH**” means Secure Shell.
- (z) “**SCP**” means Secure Copy Protocol.
- (aa) “**SFTP**” means Secure File Transfer Protocol.
- (bb) “**LAN**” means Local Area Network.
- (cc) “**WAN**” means Wide Area Network.
- (dd) “**dB**” means decibel.
- (ee) “**FT-4**” means fire tray 4 rated.
- (ff) “**AWG**” means American Wire Gauge.
- (gg) “**RMS**” means Root Mean Square.

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is:

Jason LaFrance, P.Eng.
Radio / Electronics Engineer
421 Osborne Street
Winnipeg, Manitoba, R3L 2A2
Telephone No. (204) 986-3022
Facsimile No. (204) 986-2666

D5. NOTICES

- D5.1** GC.7.05 is hereby amended to delete reference to "registered mail" and to replace same with "ordinary mail".
- D5.2** GC.7.05 is further amended hereby to include delivery by facsimile transmission (fax) as an acceptable means of delivering notices, consents, approvals, statements, authorizations, documents or other communications required or permitted to be given under this Contract. Deliveries by fax will be deemed to have been received on the day of delivery, if a business day, or if not a business day, on the business day next following the day of delivery.
- D5.3** Further to GC.7.05, all notices, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.4, D5.5 or

elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D4.1.

- D5.4 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 Administrative Officer Secretariat
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9
Facsimile No.: (204) 949-1174

- D5.5 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:

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

SUBMISSIONS

D6. AUTHORITY TO CARRY ON BUSINESS

- D6.1 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

D7. COMMENCEMENT

- D7.1 The Contractor shall not commence any Work until he is in receipt of a Purchase Order authorizing the commencement of the Work.

WARRANTY

D8. WARRANTY

- D8.1 Further to GC.10.01, if a defect or deficiency prevents the full and normal use or operation of the Work or any portion thereof, for purposes of calculating the warranty period, time shall be deemed to cease to elapse for the defective or deficient portion, and for any portion of the Work whose use or operation is prevented by such defect or deficiency, as of the date on which the defect or deficiency is observed or the use or operation is prevented and shall begin to run again when the defect or deficiency has been corrected or the Work may be used or operated to the satisfaction of the Contract Administrator.

D8.2 Notwithstanding GC.10.01, GC.10.02 and D8.1, if any law of Manitoba or of the jurisdiction in which the Work was manufactured requires, or if the manufacturer provides, a longer warranty period or a warranty which is more extensive in its nature, then the provisions of such law or manufacturer's warranty shall apply.

PART E - SPECIFICATIONS

GENERAL

E1. GENERAL

E1.1 These Specifications shall apply to the Work.

E2. GOODS

E2.1 The Contractor shall supply and deliver a GPS network clock command center package for the Winnipeg Police Service, in accordance with the itemized components hereinafter specified. The GPS network clock command centre shall comprise of a complete solution for time synchronization and provide legally traceable time throughout a centre and its network(s). All equipment shall be delivered to the Communications Systems Branch of the City of Winnipeg, located at 421 Osborne Street.

E2.2 Item No. 1 - Model Spectracom 9183, v2.3 or greater NetClock/GPS Master Clock, or equivalent with the following minimum requirements:

- (a) Must be capable of synchronizing 9-1-1 systems with computer networks, Computer Aided Dispatch, Radio, Voice Recorders, ANI/ALI, Servers, and Wall Clocks.
- (b) Must meet the National Emergency Number Association (NENA) Public Service Answering Point (PSAP) Master Clock Standard #04-002.
- (c) Must be a Stratum 1 NTP/SNTP Time Server synchronizing time via Global Positioning Satellite (GPS) Methods.
- (d) Must have the following minimum of time code outputs to meet the requirements of numerous systems:
 - (i) Two RS485 Once-per-Second terminal block data bus ports.
 - (ii) Two RS232 Serial Communication outputs.
 - (iii) One Ethernet 10/100 BaseT LAN port.
 - (iv) One IRIG B/E AM/TTL BNC output.
 - (v) One frequency output of 1 pulse per second (PPS).
- (e) Must have the following minimum performance time code output accuracy values:
 - (i) RS-232/RS-484 of 1 mS of Coordinated Universal Time (UTC).
 - (ii) IRIG B/E of 200 microseconds of UTC.
- (f) Must have a GPS Antenna input for the connection of the external GPS antenna.
- (g) Must have security features that can be enabled or disabled including:
 - (i) Secure Sockets Layer (SSL) Web based interface for access configuration.
 - (ii) Password protection.
 - (iii) Enable/block protocols.
 - (iv) Secure Shell (SSH) to transfer data securely to or from the master clock remotely.
 - (v) Secure Copy Protocol (SCP) for file transfer.
 - (vi) Secure File Transfer Protocol (SFTP).
- (h) Must have front panel status indicators and display of:
 - (i) Power and "Sync".
 - (ii) Current Hour, Minute and Seconds.
- (i) Must have automatic adjustment for local time, daylight saving time, and year.

- (j) Must have rack mount hardware included.
- (k) Any equivalent NetClock/GPS Master Clock bid must not be an obsolete/discontinued model.

E2.3 Item No. 2 - Model Spectracom 9188 NTP Ethernet Time Server, or equivalent, with the following minimum requirements:

- (a) Must be able to share accurate time from a Spectracom NetClock/GPS Master Clock per Item No. 1 (or equivalent), for a network using said NTP Ethernet Time Server.
- (b) Should be able to obtain the required time code input via RS-485 provided by Item No. 1 above.
- (c) Must be able to deliver timing information and synchronization to computer network devices and network log files, allowing computer networks to synchronize elements of network hardware and software over LAN's or WAN's.
- (d) Must have Password protection security.
- (e) Should have web-enabled set-up and reporting capability with security policies.
- (f) Must have an Ethernet 10/100 BaseT output providing:
 - (i) Network Time Protocol (NTP) format.
 - (ii) LAN access port for remote monitoring, diagnostics and configuration.
- (g) Must have an Alarm output for "loss of time sync" via:
 - (i) SNMP protocol.
 - (ii) Contact closure.
- (h) Must have front panel status indicators of "Power" and "Sync".
- (i) Must have rack mount hardware included.
- (j) Any equivalent NTP Ethernet Time Server bid must not be an obsolete/discontinued model.

E2.4 Item No. 3 - Model Spectracom 8225 GPS Outdoor Antenna, or equivalent, with the following minimum requirements:

- (a) Must be electrically compatible with Item No. 1. That is:
 - (i) Should provide 30dB of gain at 1575 MHz.
 - (ii) Should require 5 Volts DC at no more than 50 milliamps supply (active antenna).
- (b) Must be mast mountable.
- (c) Must be outdoor and weatherproof rated with a temperature range of at least minus 30 degrees Celsius to 80 degrees Celsius.
- (d) Should have an N-type Female termination connector for antenna coax connection.
- (e) Any equivalent GPS Outdoor Antenna bid must not be an obsolete/discontinued model.

E2.5 Item No. 4 - Model Spectracom 8226 GPS Antenna Surge Suppressor/Protector, or equivalent, with the following minimum requirements:

- (a) Must act as a protection device in the antenna line to protect the GPS receiver and associated connected devices, by shunting potentially damaging voltages on the antenna coaxial to ground.
- (b) Must be rated for:
 - (i) Turn on time of 4 nanoseconds for 2 kV/nS.
 - (ii) 1.2 to 2.0 GHz frequency range.
 - (iii) Turn on Voltage of +7 Volts to -1 Volts.

- (iv) VSWR or 1.1:1 or better.
 - (c) Should have Female N-type connectors.
 - (d) Any equivalent surge suppressor bid must not be an obsolete/discontinued model.
- E2.6 Item No. 5 - Low Loss LMR-400 coaxial, outdoor rated GPS Antenna Cable with the following minimum features:
- (a) Must have ratings equivalent of Times Microwave LMR-400 cable, including:
 - (i) Attenuation rating of 5.1 dB or less, per 100 feet of cable at 1.5 GHz.
 - (ii) Temperature rating of -40 degrees Celsius or less to +85 degrees Celsius or higher.
 - (iii) 50 Ohms nominal impedance.
 - (iv) Copper Clad Aluminum centre conductor.
 - (v) Low loss closed cell polyethylene foam dielectric.
 - (vi) A shield of aluminum laminated tape bonded to the dielectric with a tinned copper overbraid.
 - (vii) A black ultra violet sunlight and weather protected polyethylene jacket.
 - (b) Must be low flame spread to meet CSA FT4 rating.
- E2.7 Item No. 6 - Model Spectracom TV400W TimeView 400 Display Clock, or equivalent with the following minimum requirements:
- (a) Must be able to obtain the required time code input via Item No. 1 or Item No. 2.
 - (b) Must have a large highly visible digital display with:
 - (i) Minimum of 4 inches in height hours and minutes digits and 2 inches in height seconds digits.
 - (ii) Either backlit or Light Emitting Digits.
 - (c) Must have 12 or 24 hour display format options.
 - (d) Should have expansion potential by being able to synchronize other devices, such as clocks, time servers, timetaps.
 - (e) Any equivalent display clock bid, must not be an obsolete/discontinued model.
- E2.8 Item No. 7 - Model Spectracom 8179T TimeTap RS-485 to RS-232 Converter, or equivalent, with the following minimum requirements:
- (a) Must be capable of synchronizing computers, consoles, CAD, ANI/ALI, Networks, and Workstations.
 - (b) Must have an RS-485 once-per-second time code input via terminal block.
 - (c) Must have an RS-232 once-per-second time code output via DB-9 female type connector.
 - (d) Must function as an RS-485 to RS-232 converter.
 - (e) Must be either self powered from the RS-232 signalling lines, or include a power adaptor.
 - (f) Any equivalent TimeTap bid, must not be an obsolete/discontinued model.
- E2.9 Item No. 8 – RS-485 Station Cable with the following minimum requirements:
- (a) Must be equivalent to Belden part number 9501 cable meeting applicable standards and with the following minimum requirements:
 - (i) Number of conductor pairs must be one.
 - (ii) Total number of conductors must be two.
 - (iii) Conductor gauge should be 24 AWG, stranded (7x32).
 - (iv) Conductor material must be tinned copper.

- (v) Conductor insulation material must be semi-rigid polyvinyl chloride. Should be Black and Red pair.
- (vi) Outer shield material should be aluminum foil polyester tape with 100% coverage.
- (vii) Outer shield drain wire should be 24 AWG tinned copper.
- (viii) Outer shield drain wire stranding 7x32.
- (ix) Outer jacket material must be polyvinyl chloride.
- (x) Overall nominal diameter should be approximately 0.156 inches.
- (xi) Operating temperature range of at least -30 degrees Celsius to +80 degrees Celsius.
- (xii) Must be FT4 flame test rated.
- (xiii) Must be rated for maximum operating voltage of 300 volts RMS and maximum recommended current of 2.2 amps per conductor at 25 degrees Celsius.

E3. DELIVERY

- E3.1 Goods shall be delivered within thirty (30) Calendar Days of the award of Contract, f.o.b. City of Winnipeg Communications Systems Branch, 421 Osborne Street, Winnipeg, Manitoba, R3L 2A2, freight prepaid.
- E3.2 Goods shall be delivered between 8:30 a.m. and 4:30 p.m. on Business Days.