



**CITY OF SPRINGFIELD, MISSOURI
DIVISION OF PURCHASES
INVITATION FOR BID #078-2015**

THIS IS NOT AN ORDER

RETURN

TO: Kara Daniel, Buyer
City of Springfield
Division of Purchases
218 E. Central
Springfield, MO 65802

Date Issued: December 10, 2014
Buyer's Email: kdaniel@springfieldmo.gov
Telephone Number: 417-864-1621
Fax Number: 417-864-1927
DUE DATE: JANUARY 7, 2015

SEALED BIDS MUST BE PHYSICALLY RECEIVED IN THE DIVISION OF PURCHASES PRIOR TO 3:00 P.M. ON WEDNESDAY, JANUARY 7, 2015. Bids will be opened by the buyer at the location listed above.

- Bids shall be submitted on the forms provided and must be manually signed by the individual authorized to legally bind the company.
- Bids shall be submitted with the IFB number clearly indicated on the outside of the mailing envelope.
- Bids received after the opening date and time will be rejected.
- The attached Terms and Conditions shall become part of any purchase order resulting from this bid.
- **FAXED/EMAILED BIDS WILL NOT BE ACCEPTED.**

You are invited to submit your bid to furnish the materials and/or services described herein. Please submit your prices/fees net of all discounts.

DESCRIPTION

RADAR INTERSECTION DETECTION SYSTEM

See attached General Conditions, Specifications, and Bid Form for detailed information.

DELIVERY: F.O.B. DESTINATION

The articles to be furnished hereunder shall be delivered all transportation charges paid by the bidder to destination.

It is the intent of the City that this Invitation for Bid promotes competitive bidding. It shall be the Vendor's responsibility to advise the Division of Purchases if any language, requirements, etc. any combination thereof, inadvertently restricts or limits the requirements stated in this Invitation for Bid to a single source. Such notification must be submitted in writing and must be received by the Division of Purchases not later than three (3) days prior to the bid opening date.

**CITY OF SPRINGFIELD
INSTRUCTION TO BIDDERS**

01. Opening Location

The Bids will be opened at the City of Springfield, Division of Purchases, 218 E. Central, Springfield, MO 65802 in the presence of Purchasing officials at the due date and time indicated on the IFB. All bidders or their representatives are invited to attend the opening of the IFB.

02. IFB Delivery Requirements

Any Bids received after the above stated time and date will not be considered. It shall be the sole responsibility of the bidder to have their Bid delivered to the Division of Purchases for receipt on or before the due date and time indicated. If a Bid is sent by U.S. Mail, the bidder shall be responsible for its timely delivery to the Division of Purchases office. Bids delayed by mail shall not be considered, shall not be opened, and shall be rejected. Arrangements may be made for their return at the bidder's request and expense. Bids may be mailed to the Division of Purchases and accepted if the signed bid form and required information was mailed and received prior to the due date and time. Bids sent by email will not be accepted.

03. Sealed and Marked

If sent by mail, one original signed Bid shall be submitted in one sealed package, clearly marked on the outside of the package with the Invitation for Bid number and addressed to:

City of Springfield
Division of Purchases
218 E. Central
Springfield, MO 65802

04. Legal Name and Signature

Bids shall clearly indicate the legal name, address, and telephone number of the bidder (company, firm, corporation, partnership, or individual). Bids shall be manually signed above the printed name and title of signer on the Affidavit of Compliance page. The signer shall have the authority to bind the company to the submitted Bid. Failure to properly sign the Bid form shall invalidate same, and it shall not be considered for award.

05. Corrections

No erasures are permitted. If a correction is necessary, draw a single line through the entered figure and enter the corrected figure above it. Corrections must be initialed by the person signing the Bid.

06. Clarification and Addenda

Each bidder shall examine all Invitation for Bid documents and shall judge all matters relating to the adequacy and accuracy of such documents. Any inquiries or suggestions, concerning interpretation, clarification, or additional information pertaining to the Invitation for Bid shall be made through the Division of Purchases in writing or through email. The Division of Purchases shall not be responsible for oral interpretations given by any City employee, representative, or others. The issuance of written addenda is the official method whereby interpretation, clarification, or additional information can be given.

It shall be the responsibility of each bidder, prior to submitting their Bid, to contact the Division of Purchases at phone number 417-864-1620, or to check the Purchasing website to determine if addenda were issued and to make such addenda a part of their Bid at: www.springfieldmo.gov/bids

07. IFB Expenses

All expenses for making Bids to the City are to be borne by the bidder.

08. Irrevocable Offer

Any Bid may be withdrawn up until the due date and time set for opening of the IFB. Any Bid not so withdrawn shall, upon opening, constitute an irrevocable offer for a minimum period of 90 days to sell to the City the goods or services set forth in the IFB, until one or more of the Bids have been duly accepted by the City.

09. Responsive and Responsible Bidder

To be responsive, a bidder shall submit a Bid which conforms in all material respects to the requirements set forth in the Invitation for Bid. To be a responsible bidder, the bidder shall have the capability in all respects to perform fully the contract requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment and credit which will ensure good faith performance. The lowest responsible bidder shall mean the bidder who makes the lowest Bid to sell goods or services of a quality which conforms closest to the quality of goods or services set forth in the specifications or otherwise required by the City and who is known to be fit and capable to perform the Bid as made.

10. Reserved Rights

The City reserves the right to make such investigations as it deems necessary to make the determination of the bidder's responsiveness and responsibility. Such information may include, but shall not be limited to: current financial statement, verification of availability of equipment and personnel, and past performance records.

11. The Right to Audit

The bidder agrees to furnish supporting detail as may be required by the City to support charges or invoices, to make available for audit purposes all records covering charges pertinent to the purchase, and to make appropriate adjustments in the event discrepancies are found. The cost of any audit will be paid by the City. The City shall have the right to audit the bidder's records pertaining to the work/product for a period of three (3) years after final payment.

12. Applicable Law

All applicable laws and regulations of the State of Missouri and the City including the City Procurement Regulations and Procedures will apply to any resulting agreement, contract, or purchase order. Any involvement with the City Procurement shall be in accordance with the Procurement Regulations and Procedures.

13. Right to Protest

Appeals and remedies are provided for in the City Procurement Regulations. Protestors shall seek resolution of their complaints initially with the City Purchasing Agent.

Any protest shall state the basis upon which the solicitation or award is contested and shall be submitted within ten (10) calendar days after such aggrieved person knew or could have reasonably been expected to know of the facts giving rise thereto.

14. Ethical Standards

With respect to this IFB, if any bidder violates or is a party to a violation of the general ethical standards of the City Procurement Code or the State of Missouri Statutes, such bidder may be disqualified from furnishing the goods or services for which the Bid is submitted and shall be further disqualified from submitting any future Bids. A copy of the City's General Ethical Standards is available at the Division of Purchases.

15. Collusion

By offering a submission to this Invitation for Bid, the bidder certifies the bidder has not divulged, discussed, or compared the Bid with other bidders and has not colluded with any other bidder or parties to this IFB whatsoever. Also, the bidder certifies, and in the case of a joint Bid, each party thereto certifies as to their own organization, that in connection with this IFB:

- a. Any prices and/or cost data submitted have been arrived at independently, without consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such prices and/or cost data, with any other bidder or with any competitor.
- b. Any prices and/or cost data for this Bid have not knowingly been disclosed by the bidder and will not knowingly be disclosed by the bidder prior to the scheduled opening directly or indirectly to any other bidder or to any competitor.
- c. No attempt has been made or will be made by the bidder to induce any other person or firm to submit or not to submit a Bid for the purpose of restricting competition.
- d. The only person or persons interested in this Bid, principal or principals are named therein and that no person other than therein mentioned has any interest in this Bid or in the contract to be entered into.
- e. No person or agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee exempting bona fide employees or established commercial agencies maintained by the Purchaser for the purpose of doing business.

16. Contract Forms

Any agreement, contract, or purchase order resulting from the acceptance of a Bid shall be on forms either supplied by or approved by the City.

17. Liability and Indemnity

- a. In no event shall the City be liable to the Contractor for special, indirect, or consequential damages, except those caused by the City's gross negligence or willful or wanton misconduct arising out of or in any way connected with a breach of this contract. The maximum liability of the City shall be limited to the amount of money to be paid or received by the City under this contract.
- b. The Contractor shall defend, indemnify and save harmless the City, its elected or appointed officials, agents and employees from and against any and all liability, suits, damages, costs (including attorney fees), losses, outlays and expenses from claims in any manner caused by, or allegedly caused by, or arising out of, or connected with, this contract, or the work or any subcontract thereunder (the Contractor hereby assuming full responsibility for relations with subcontractors), including, but not limited to, claims for personal injuries, death, property damage, or for damages from the award of this contract to Contractor.
- c. The Contractor shall indemnify and hold the City harmless from all wages or overtime compensation due any employees in rendering services pursuant to this agreement or any subcontract, including payment of reasonable attorneys' fees and costs in the defense of any claim made under the Fair Labor Standards Act, the Missouri Prevailing Wage Law or any other federal or state law.

18. IFB Forms, Variances, Alternates

Bids must be submitted on attached City IFB forms, although additional information may be attached. Bidders must indicate any variances from the City requested specifications and/or terms and conditions, on the IFB Affidavit of Compliance. Otherwise, bidders must fully comply with the City requested specifications and terms and conditions. Alternate Bids may or may not be considered at the sole discretion of the City Purchasing Agent.

19. Bid Form

All blank spaces must be completed with the appropriate response. The bidder must state the price, written in ink, for what is proposed to complete each item of the project. Bidders shall insert the words "no bid" in the space provided for an item for which no Bid is made. The bidder shall submit an executed Bid form, affidavit of compliance with other requested documents.

20. Modifications or Withdrawal of Bid

A modification for a Bid already received will be considered only if the modification is received prior to the time announced for opening of Bids. All modifications shall be made in writing, executed, and submitted on the same form and manner as the original Bid. Modifications submitted by telephone, fax, or email will not be considered.

21. No Bid

If not submitting a Bid, respond by returning the "Statement of No Bid" no later than the stated Bid opening time and date, and explain the reason in the space provided.

22. Errors in Bids

Bidders or their authorized representatives are expected to fully inform themselves as to the conditions, requirements, and specifications before submitting Bids; failure to do so will be at the bidder's own risk. Neither law nor regulations make allowance for errors either of omission or commission on the part of bidders. In case of error of extension of prices in the Bid, the unit price shall govern.

23. Prices Bid

Give both unit price and extended total. Price must be stated in units of quantity specified in the bidding specifications. In case of discrepancy in computing the amount of the Bid, the unit price of the Bid will govern. All prices shall be F.O.B. destination, freight prepaid (unless otherwise stated in special conditions). Each item must be bid separately and no attempt is to be made to tie any item or items in with any other item or items. If a bidder offers a discount on payment terms, the discount time will be computed from the date of satisfactory delivery at place of acceptance and receipt of correct invoice at the office specified. Payment terms shall be Net 30 if not otherwise specified. Pre-payment terms are not acceptable.

24. Discounts

Any and all discounts except cash discounts for prompt payments must be incorporated as a reduction in the Bid price and not shown separately. The price as shown on the Bid shall be the price used in determining award(s).

25. Descriptive Information

All equipment, materials, and articles incorporated in the product/work covered by this IFB are to be new and of suitable grade for the purpose intended. Brand or trade names referenced in specifications are for comparison purposes only. Bidders may submit Bids on items manufactured by other than the manufacturer specified when an "or equal" is stated.

26. Deviations to Specifications and Requirements

When bidding on an "or equal," Bids must be accompanied with all descriptive information necessary for an evaluation of the proposed material or equipment such as the detailed drawings and specifications, certified operation and test data, and experience records. Failure of any bidder to furnish the data necessary to determine whether the product is equivalent, may be cause for rejection of the specific item(s) to which it pertains. All deviations from the specifications must be noted in detail by the bidder on the Affidavit of Compliance form, at the time of submittal of Bid. The absence of listed deviations at the time of submittal of the Bid will hold the bidder strictly accountable to the specifications as written. Any deviation from the specifications as written and accepted by the City may be grounds for rejection of the material and/or equipment when delivered.

27. Samples (if required)

For certain types of procurements, samples may be required. If samples are required, it will be stated in the IFB. The following conditions and requirements apply to all samples submitted.

- a. The samples submitted by bidders on items for which they have received an award may be retained by the City until the delivery of contracted items is completed and accepted. Bidders whose samples are retained may remove them after delivery is accepted.
- b. Samples not retained must be removed as soon as possible after award has been made on the item or items for which the samples have been submitted. The City will not be responsible for such samples not removed by the bidder within 30 days after the award has been made. The City reserves the right to consume any or all samples for testing purposes.
- c. Bidders shall make all arrangements for delivery of samples to place designated as well as the removal of samples. Cost of delivery and removal of samples shall be borne by the bidder.
- d. All samples packages shall be marked "Sample for Division of Purchases" and each sample shall bear the name of the bidder, item number, Bid number, and shall be carefully tagged or marked in a substantial manner. Failure of the bidder to clearly identify samples as indicated may be considered sufficient reason for rejection of Bid.

28. Quality Guaranty

If any product delivered does not meet applicable specifications or if the product will not produce the effect that the bidder represents to the City, the bidder shall pick up the product from the City at no expense. Also, the bidder shall refund to the City any money which has been paid for same. The bidder will be responsible for attorney fees in the event the bidder defaults and court action is required.

29. Quality Terms

The City reserves the right to reject any or all materials if, in its judgment, the item reflects unsatisfactory workmanship, manufacturing, or shipping damages.

30. Tax-Exempt

The City is exempt from sales taxes and Federal Excise Taxes: Missouri Tax ID Number 12493651.

31. Awards

- a. Unless otherwise stated in the Invitation for Bid, cash discounts for prompt payment of invoices will not be considered in the evaluation of prices. However, such discounts are encouraged to motivate prompt payment.

- b. *As the best interest of the City may require, the right is reserved to make awards by item, group of items, all or none, or a combination thereof; to reject any and all Bids or waive any minor irregularity or technicality in Bids received.*
- c. *Awards will be made to the Bidder whose Bid (1) meets the specifications and all other requirements of the Invitation for Bid and (2) is the lowest and best Bid, considering price, delivery, responsibility of the bidder, and all other relevant factors.*

32. Authorized Product Representation

The successful bidder(s) by virtue of submitting the name and specifications of a manufacturer's product will be required to furnish the named manufacturer's product. By virtue of submission of the stated documents, it will be presumed by the City that the bidder(s) is legally authorized to submit and the successful bidder(s) will be legally bound to perform according to the documents.

33. Regulations

It shall be the responsibility of each bidder to assure compliance with OSHA, EPA, Federal, State of Missouri, and City rules, regulations, or other requirements, as each may apply.

34. Termination of Award

Any failure of the bidder to satisfy the requirements of the City shall be reason for termination of the award. Any Bid may be rejected in whole or in part for good cause when in the best interest of the City.

35. Royalties and Patents

The successful bidder(s) shall pay all royalties and license fees for equipment or processes in conjunction with the equipment being furnished. Bidder shall defend all suits or claims for infringement of any patent right and shall hold the City harmless from loss on account or cost and attorney's fees incurred.

36. Equal Employment Opportunity Clause

The City of Springfield, in accordance with the provision of Title VI of the Civil Rights Act of 1964 (78 Stat. 252) and the Regulations of the Department of Commerce (15 CFR, Part 8) issued pursuant to such Act, hereby notifies all bidders that affirmatively ensure that in any contract entered into pursuant to this advertisement that minority businesses will be afforded full opportunity to submit Bids in response to this advertisement and will not be discriminated against on the grounds of race, color, or national origin in consideration for award.

37. Bid Tabulation

Bidders may request a copy of the bid tabulation of the Invitation for Bid.

38. Budgetary Constraints

The City reserves the right to reduce or increase the quantity, retract any item from the Bid, or upon notification, terminate entire agreement without any obligations or penalty based upon availability of funds.

39. Additional Purchases by Other Public Agencies

The bidder by submitting a Bid authorizes other public agencies to "Piggy-Back" or purchase equipment and services being proposed in this Invitation for Bid unless otherwise noted on the Affidavit of Compliance Form.

40. Order of Precedence

Any and all Special/General Conditions and Specifications attached hereto, which varies from the instruction to bidders, shall take precedence.

41. Affidavit for Service Contracts

The Bidder represents, in accordance with RSMO 285.530.2 that they have not employed, or subcontracted with, unauthorized aliens in connection with the scope of work to be done under the IFB and agrees to provide an affidavit to the City of Springfield affirming that they have not, and will not in connection with the IFB, knowingly employ, or subcontract with, any person who is an unauthorized alien.

42. Inspection and Acceptance

No item(s) received by the City pursuant to this contract shall be deemed accepted until the City has had reasonable opportunity to inspect the item(s). Any item(s) which are discovered to be defective or which do not conform to any warranty of the Seller upon inspection may be returned at the seller's expense for full credit or replacement. If at a later time, the defects were not ascertainable upon the initial inspection may also be returned at the Seller's expense for full credit or replacement. The City's return of defective items shall not exclude any other legal, equitable or contractual remedies the City may have.

**CITY OF SPRINGFIELD
GENERAL TERMS AND CONDITIONS
IFB #078-2015**

1. **PURPOSE:** To provide the City of Springfield equipment for intersection detection systems.
2. **NEW PRODUCT:** All products supplied hereunder shall be **new**. The product shall not be reconditioned or refurbished.
3. **QUANTITY:** Quantities listed are estimates for bid purposes only; actual usage may be more or less on an as needed basis.
4. **SPECIFICATIONS:** The City will not accept equal items. The equipment needs to be brand specific to be compatible with existing equipment.
5. **TERM:** The bid for the radar detection equipment is intended to be an ongoing project. The contract shall be effective for one year from effective notice of award date. The City may, at its sole option, extend the contract for up to four (4) additional one year terms upon written notice to the Contractor. Renewal for each year will be determined by need and available funding. Future quantities are not guaranteed and may vary.
6. **ESCALATION/DE-ESCALATION:** Bid prices shall remain firm for a period of one year from the date of award. The contract prices may be changed after the first year for the following reasons:

An increase or decrease in the supplier's cost of materials may be justification for price change; however, this shall not be construed in any way to increase vendor's margin of profit.

All written request for price increase must include backup documentation as to the nature of the increase and shall be submitted to the City Purchasing Agent at least 60 days prior to the scheduled price increase/decrease or renewal of contract. Approval of each request shall be by written confirmation from the City Purchasing Agent. If the City should consider said increase unwarranted or unreasonable, the City reserves the right to terminate the contract with the vendor. Any price decline at the manufacturer's level shall be reflected in an immediate reduction of the contract prices and the vendor shall notify the buyer of said decline.
7. **DELIVERY:** Delivery of equipment shall be FOB Destination Springfield, MO.
8. **PAYMENT:** The Contractor shall be paid, Net 30, upon completion of the order and upon presentation of proper detailed invoice. The City will pay only for items received and accepted by the City. The City agrees to pay the contractor in accordance with the prices set forth on the pricing page.
9. **QUESTIONS:** All questions regarding this bid should be directed to the Buyer, Kara Daniel, at 417-864-1621 or kdaniel@springfieldmo.gov. No Addenda will be issued less than three (3) working days before the bid due date.
10. **AWARD:** The City reserves the right to award "Item-by-Item" or "All or None" whichever is in the City's best interest. Therefore, bidders are encouraged to bid on one, some, or all of the items listed herein. The City will award the low bidder meeting specifications. Due to the project being time sensitive, delivery times will also be a factor in the award selection process.

11. TERMINATION OF CONTRACT:

A. For Breach: If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner Contractor's obligations under this contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this contract, the City shall thereupon have the right to terminate this contract by giving written notice to the Contractor of such termination and specifying the effective date thereof, at least five (5) days before the effective day of such termination.

B. For Convenience: The City shall have the right at any time upon 30 days written notice to Contractor to terminate and cancel this contract, without cause, for the convenience of the City, and Contractor shall immediately stop work.

In either such event, all finished or unfinished documents, data, studies, reports, or other materials prepared by the Contractor shall, at the option of the City become its property. The Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed prior to termination of the contract. Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any such breach of the contract by the Contractor.

12. CONFLICTS:

A. Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services to be performed under this contract. The Contractor further covenants that in the performance of this contract no person having such interest shall be employed.

B. No salaried officer or employee of the City and no member of the City Council shall have a financial interest, direct or indirect, in this contract. A violation of this provision renders the contract void. Any federal regulations and applicable provisions in Section 105.450 et seq. RSMo. shall not be violated.

13. ASSIGNMENT: The Contractor shall not assign or transfer any interest in this contract (whether by assignment or novation), and shall not substitute any specific individuals and/or personnel qualifications without prior written consent of the City thereto. Provided, however, that claims for money due or to become due to the Contractor from the City under this contract may be assigned to a bank, trust company, or other financial institution without such approval. Notice of such assignment or transfer shall be furnished in writing promptly to the City. Any such assignment is expressly subject to all rights and remedies of the City under this agreement, including the right to change or delete activities from the contract or to terminate the same as provided herein, and no such assignment shall require the City to give any notice to any such assignee of any actions which the City may take under this agreement, though City will attempt to so notify any such assignee.

14. JURISDICTION: This agreement and every question arising hereunder shall be construed or determined according to the laws of the State of Missouri. Should any part of this agreement be adjudicated, venue shall be proper only in the Circuit Court of Greene County, Missouri.

CITY OF SPRINGFIELD
SPECIFICATIONS – IFB #078-2015
RADAR PRESENCE DETECTION SYSTEM

- 1.0 General.** This item shall govern the purchase of aboveground Wavetronix SmartSensor Matrix radar presence detector (RPD).

An RPD detects vehicles by transmitting electromagnetic radar signals through the air. The signals bounce off vehicles in their paths and part of the signal is returned to the RPD. The returned signals are then processed to determine traffic parameters.

RPDs are not affected by normal weather and environmental conditions such as rain, wind, snow, dust, etc. They also do not require cleaning and can maintain performance over a wide range of ambient temperatures.

RPDs provide a non-intrusive means of detecting traffic. This property not only makes them safer to install but also more cost effective than sensors that require roadway modifications or placement.

- 2.0 Sensor Outputs.** The RPD shall present real-time presence data in 10 lanes.
The RPD shall support a maximum of eight zones.

The RPD shall support four channels and have user-selectable channel assignments.

The RPD shall use OR logic to combine multiple zones to a channel output, and shall have channel output extend and delay functionality.

The RPD algorithms shall mitigate detections from wrong way or cross traffic.

The RPD system shall have fail-safe mode capabilities for contact closure outputs if communication is lost.

- 3.0 Detectable Area:**

3.1 Detection Range. The RPD shall be able to detect and report presence in lanes with boundaries as close as 6 ft. (1.8 m) from the base of the pole on which the RPD is mounted.

The RPD shall be able to detect and report presence in lanes located within the 140 ft. (30.5 m) arc from the base of the pole on which the RPD is mounted.

3.2 Field of View. The RPD shall be able to detect and report presence for vehicles within a 90 degree field of view.

3.3 Lane Configuration. The RPD shall be able to detect and report presence in up to 10 lanes.
The RPD shall be able to detect and report presence in curved lanes and areas with islands and medians.

- 4.0 Cabinet Interface Device (CID):**

4.1 Mounting. The CID shall be shelf-mounted. It shall be capable of being mounted on the side of the traffic cabinet with the aid of U-channel mounting brackets.

4.2 Power. The power supply voltage of the CID shall be 90 to 260 VAC. Its AC frequency shall be 50–60 Hz and the maximum power shall be 75 W at 80°C.

The CID's sensor connectors shall output 24 VDC.

4.3 Connections and Communication. The CID shall include the following connections for power and communication:

4.3.1 Power. The CID shall have an IEC AC input.

4.3.2 Terminal Block Connectors. The CID shall have four terminal block connectors for connecting to sensors. These connectors shall be for terminating cables that carry power and RS-485 communications to and from the sensors.

4.3.3 Data RJ-11 Connectors. The CID shall have four RJ-11 jacks for sending detection data from sensors to contact closure devices such as rack cards via jumper cables. This data shall be sent via RS-485. These jacks shall make up the physical interface of a dedicated data bus.

4.3.4 Control Connectors. The CID shall have four other communication ports. These ports shall make up the physical interface of a dedicated control bus and shall allow users to connect to the sensors and configure them.

- DB-9 port for communicating via RS-232
- Two RJ-11 jacks for communicating via RS-485
- USB mini-B connector
- T-bus port for connecting to a T-bus

4.3.5 Ethernet Connector. The CID shall have an RJ-45 10/100 Ethernet port to allow connection to a local network.

4.3.6 SDLC Port. The CID shall have an SDLC port for direct connection to a traffic controller.

4.4 Other features. The CID shall have the following other features:

4.4.1 LEDs. The CID shall have four multicolored LEDs with activity-indicating functions:

- An LED that indicates when the device has power
- An LED that indicates if the device has been disabled by surges
- An LED that indicates when data is being transmitted on the control bus
- An LED that indicates when data is being received on the control bus.

4.4.2 Data RJ-11 Jack Features. The four jacks that make up the physical interface of the data bus (and that each correspond to one sensor) shall have a switch for turning their corresponding sensor off and an LED that indicates when that sensor has power.

4.4.3 Power Switch. The CID shall have a switch for turning power off for the entire device.

4.4.4 OLED Panel with Keypad. The CID shall have a OLED panel on the device with a keypad for device configuration.

4.4.5 Web Interface. The CID shall have a web interface for device configuration, accessible through a web browser from a network-connected device.

4.4.6 Configuration. The CID configuration shall support up to 64 detector channels.

4.5 NEMA TS2-2003 Testing. The CID shall comply with the applicable standards stated in the NEMA TS2-2003 Standard. Test results shall be made available for each of the following tests:

- Shock pulses of 10g, 11 ms half sine wave
- Vibration of 0.5 Grms up to 30 Hz
- 300 V positive/negative pulses applied at one pulse per second at minimum and maximum DC supply voltage
- Cold temperature storage at -49°F (-45°C) for 24 hours
- High temperature storage at 185°F (85°C) for 24 hours
- Low temp, low DC supply voltage at -29.2°F (-34°C) and 10.8 VDC
- Low temp, high DC supply voltage at -29.2°F (-34°C) and 26.5 VDC
- High temp, high DC supply voltage at 165.2°F (74°C) and 26.5 VDC
- High temp, low DC supply voltage at 165.2°F (74°C) and 10.8 VDC

4.6 FCC Testing. The CID shall be FCC-compliant.

4.7 Testing. Before shipping, each CID shall have passed a manufacturer's test.

4.8 Extended Support. Extended support options shall be available. Contact the manufacturer's representative for more information.

4.9 Warranty. The CID shall be warranted to be free from material and workmanship defects for a period of one year from date of shipment.

4.10 Contact Closure Input File Cards. The controller module shall replace the need for contact closure input file cards.

5.0 Maintenance. The RPD shall not require cleaning or adjustment to maintain performance.

The RPD shall not rely on battery backup to store configuration information, thus eliminating any need for battery replacement. Once the RPD is calibrated, it shall not require recalibration to maintain performance unless the roadway configuration changes.

6.0 Physical Properties. The RPD shall not exceed 4.2 lbs. (1.9 kg) in weight.

The RPD shall not exceed 13.2 in. by 10.6 in. by 3.3 in. (33.5 cm x 26.9 cm x 8.4 cm) in its physical dimensions.

All external parts of the RPD shall be ultraviolet-resistant, corrosion-resistant, and protected from fungus growth and moisture deterioration.

6.1 Enclosure.

- The RPD shall be enclosed in a Lexan EXL polycarbonate.
- The enclosure shall be classified "f1" outdoor weatherability in accordance with UL 746C.
- The RPD shall be classified as watertight according to the NEMA 250 Standard.

- The RPD enclosure shall conform to test criteria set forth in the NEMA 250 standard for type 4X enclosures. Test results shall be provided for each of the following type 4X criteria:
 - External Icing (NEMA 250 clause 5.6)
 - Hose-down (NEMA 250 clause 5.7)
 - 4X Corrosion Protection (NEMA 250 clause 5.10)
 - Gasket (NEMA 250 clause 5.14)
- The RPD shall be able to withstand a drop of up to 5 ft. (1.5 m) without compromising its functional and structural integrity.
- The RPD enclosure shall include a connector that meets the MIL-C-26482 specification. The MIL-C-26482 connector shall provide contacts for all data and power connections.

7.0 Power. The RPD shall consume less than 10 W. The RPD shall operate with a DC input between 9 VDC and 28 VDC.

8.0 Communication Ports. The RPD shall have two communication ports, and both ports shall communicate independently and simultaneously. Two independent communication ports allow one port to be used for configuration, verification and traffic monitoring without interrupting communications on the dedicated data port. The RPD shall support the upload of new firmware into the RPD's non-volatile memory over either communication port.

The RPD shall support the user configuration of the following:

- Response delay
- Push port

The communication ports shall support a 9600 bps baud rate.

9.0 Radar Design. The RPD shall be designed with a matrix of radars. The matrix of radars enables the sensor to provide detection over a large area and to discriminate lanes.

9.1 Frequency Stability. The circuitry shall be void of any manual tuning elements that could lead to human error and degraded performance over time.

All transmit modulated signals shall be generated by means of digital circuitry, such as a direct digital synthesizer, that is referenced to a frequency source that is at least 50 parts per million (ppm) stable over the specified temperature range, and ages less than 6 ppm per year. Any upconversion of a digitally generated modulated signal shall preserve the phase stability and frequency stability inherent in the digitally generated signal.

This specification ensures that, during operation, the RPD strictly conforms to FCC requirements and that the radar signal quality is maintained for precise algorithmic quality. Analog and microwave components within an RPD have characteristics that change with temperature variations and age. If the output transmit signal is not referenced to a stable frequency source, then the RPD is likely to experience unacceptable frequency variations which may cause it to transmit out of its FCC allocated band and thus will be non-compliant with FCC regulations.

The RPD shall not rely on temperature compensation circuitry to maintain transmit frequency stability.

Temperature-based compensation techniques have been shown to be insufficient to ensure transmit frequency stability. One reason this type of technique is not sufficient is that it does not compensate for frequency variations due to component aging.

The bandwidth of the transmit signal of the RPD shall not vary by more than 1% under all specified operating conditions and over the expected life of the RPD.

The bandwidth of an RPD directly affects the measured range of a vehicle. A change in bandwidth causes a direct error in the measured range, i.e., a 5% change in bandwidth would cause a range error of 10 ft. (3 m) for a vehicle at 200 ft. (61 m). If the bandwidth changes by more than 1% due to seasonal temperature variations and component aging, then the RPD will need to be frequently reconfigured to maintain the specified accuracy.

9.2 Antenna Design. The RPD antennas shall be designed on printed circuit boards.

Printed circuit board antennas eliminate the need for RF connectors and cabling that result in decreased reliability. Printed circuit antennas are less prone to physical damage due to their extremely low mass.

The vertical beam width of the RPD at the 6dB points of the two-way pattern shall be 65 degrees or greater.

The antennas shall cover a 90 degree horizontal field of view.

- The sidelobes in the RPD two-way antenna pattern shall be -40dB or less.
- Low sidelobes ensure that the performance from the antenna beam widths is fully achieved.

9.3 Resolution. The RPD shall transmit a signal with a bandwidth of at least 245 MHz.

The bandwidth of the transmit signal translates directly into radar resolution, which contributes directly to detection performance. For example, an RPD that transmits at a low bandwidth will have low radar resolution, which could cause it to count a single vehicle as two vehicles in adjacent lanes. As another example of the adverse effects of low radar resolution, the response from a sign or other radar target in the roadway may spill over into the lanes of travel and desensitize the radar. In order to achieve the specified detection accuracy in a variety of conditions, the unwindowed radar resolution cannot be larger than 2 ft. (0.6 m) at the half-power level, which requires a bandwidth of 240 MHz. The high radar resolution reduces the problem of vehicle responses getting drowned out by brighter vehicles in adjacent lanes and improves performance for moving and stopped vehicles near roadway targets.

9.4 RF Channels. The RPD shall provide at least 8 RF channels so that multiple units can be mounted in the same vicinity without causing interference between them.

9.5 Verification. The RPD shall have a self-test that is used to verify correct hardware functionality.

The RPD shall have a diagnostics mode to verify correct system functionality.

10.0 Configuration:

10.1 Auto-configuration. The RPD shall have a method for automatically defining traffic lanes, stop bars and zones without requiring user intervention. This auto-configuration process shall execute on a processor internal to the RPD and shall not require an external PC or other processor.

The auto-configuration process shall work under normal intersection operation and may require several cycles to complete.

10.2 Manual Configuration. The auto-configuration method shall not prohibit the ability of the user to manually adjust the RPD configuration.

The RPD shall support the configuring of lanes, stop bars and detection zones in 1-ft. (0.3-m) increments. When lanes have variable widths or have variable spacing (e.g. gore between lanes), precise resolution is necessary.

10.3 Windows Mobile®-based Software. The RPD shall include graphical user interface software that displays all configured lanes and the current traffic pattern using a graphical traffic representation.

A visual representation of traffic patterns allows an installer to quickly associate specific detections with corresponding vehicles, and it facilitates verification of RPD performance.

The graphical interface shall operate on Windows Mobile, Windows XP and Windows Vista in the .NET framework.

The software shall support the following functionality:

- Operate over a TCP/IP connection
- Give the operator the ability to save/back up the RPD configuration to a file or load/restore the RPD configuration from a file
- Allow the backed-up sensor configurations to be viewed and edited
- Provide zone and channel actuation display
- Provide a virtual connection option so that the software can be used without connecting to an actual sensor
- Local or remote sensor firmware upgradability

11.0 Operating Conditions. The RPD shall maintain accurate performance in all weather conditions, including rain, freezing rain, snow, wind, dust, fog and changes in temperature and light, including direct light on sensor at dawn and dusk.

RPD operation shall continue in snow or in rain up to 1 in. (2.5 cm) per hour.

The RPD shall be capable of continuous operation over an ambient temperature range of -40°F to 165.2°F (-40°C to 74°C).

The RPD shall be capable of continuous operation over a relative humidity range of 5% to 95% (noncondensing).

12.0 Testing:

12.1 FCC. Each RPD shall be Federal Communications Commission (FCC) certified under CFR 47, Part 15, section 15.249 as an intentional radiator.

The FCC certification shall be displayed on an external label on each RPD according to the rules set forth by the FCC.

The RPD shall comply with FCC regulations under all specified operating conditions and over the expected life of the RPD.

12.2 NEMA TS2-2003 Testing. The RPD shall comply with the applicable standards stated in the NEMA TS2-2003 Standard. Third party test results shall be made available for each of the following tests:

- Shock pulses of 10g, 10 ms half sine wave
- Vibration of 0.5 Grms up to 30 Hz
- 300 V positive/negative pulses applied at one pulse per second at minimum and maximum DC supply voltage

Cold temperature storage at -49°F (-45°C) for 24 hours

- High temperature storage at 185°F (85°C) for 24 hours
- Low temp, low DC supply voltage at -29.2°F (-34°C) and 10.8 VDC
- Low temp, high DC supply voltage at -29.2°F (-34°C) and 26.5 VDC
- High temp, high DC supply voltage at 165.2°F (74°C) and 26.5 VDC
- High temp, low DC supply voltage at 165.2°F (74°C) and 10.8 VDC

13.0 Manufacturing. The RPD shall be manufactured and assembled in the U.S.A. The internal electronics of the RPD shall utilize automation for surface mount assembly, and shall comply with the requirements set forth in IPC-A-610C Class 2, Acceptability of Electronic Assemblies.

The RPD shall undergo a rigorous sequence of operational testing to ensure product functionality and reliability. Testing shall include the following:

- Functionality testing of all internal sub-assemblies
- Unit level burn-in testing of duration 48 hours or greater
- Final unit functionality testing prior to shipment

Test results and all associated data for the above testing shall be provided for each purchased RPD by serial number, upon request.

14.0 Support. The RPD manufacturer shall provide both training and technical support services.

14.1 Training. The manufacturer-provided training shall be sufficient to fully train installers and operators in the installation, configuration, and use of the RPD to ensure accurate RPD performance. The manufacturer-provided training shall consist of comprehensive classroom labs and hands-on, in-the-field, installation and configuration training.

Classroom lab training shall involve presentations outlining and defining the RPD, its functions, and the procedures for proper operation. These presentations shall be followed by hands-on labs in which trainees shall practice using the equipment to calibrate and configure a virtual RPD. To facilitate the classroom presentation and hands-on labs, the manufacturer-provided training shall include the following items:

- Knowledgeable trainer or trainers thoroughly familiar with the RPD and its processes.
- Presentation materials, including visual aids, printed manuals and other handout materials for each student.
- Computer files, including video and raw data, to facilitate the virtual configuration of the RPD.

- Laptop computers or Windows CE handheld devices with the necessary software, and all necessary cables, connectors, etc.
- All other equipment necessary to facilitate the virtual configuration of the RPD.
- Field training shall provide each trainee with the hands-on opportunity to install and configure the RPD at roadside. Training shall be such that each trainee will mount and align the RPD correctly.

14.2 Technical Assistance. Manufacturer-provided technical support shall be available according to contractual agreements, and a technical representative shall be available to assist with the physical installation, alignment, and auto-configuration of each supplied RPD. Technical support shall be provided thereafter to assist with troubleshooting, maintenance, or replacement of RPDs should such services be required.

15.0 Documentation. RPD documentation shall include an instructional training guide and a comprehensive user guide as well as an installer quick-reference guide and a user quick-reference guide.

The RPD manufacturer shall supply the following documentation and test results at the time of the bid submittal:

- FCC CFR 47 certification (frequency compliance)
- IED 6100-4-5 class 4 test report (surge)

16.0 Warranty. The RPD shall be warranted free from material and workmanship defects for a period of two years from date of shipment.

**CITY OF SPRINGFIELD
 BID FORM – PROPOSAL
 IFB #078-2015**

SUBMITTED BY: _____
 Company Name

Pursuant to and in accordance with the above stated Invitation for Bid, the undersigned hereby declares that they have examined the IFB documents and specifications for the item(s) listed below.

The undersigned proposes and agrees, if their Bid is accepted to furnish the item(s) submitted below, including delivery to Springfield, Missouri in accordance with the delivery schedule indicated below and according to the prices products/services information submitted.

ITEM	QTY	DESCRIPTION	UNIT PRICE	EXTENDED AMOUNT
1.	4	Wavetronix SmartSensor Matrix; Model #WX-SS-225 Delivery: _____ days after receipt. SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS, LABOR, AND TRAVEL FOR _____	\$ _____	\$ _____
2.	4	SmartSensor Mount; Model #WX-SS-611 Delivery: _____ days after receipt. SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS, LABOR, AND TRAVEL FOR _____	\$ _____	\$ _____
3.	4	SmartSensor 6-conductor cable (100ft harness) Model #WX-SS-704-100 Delivery: _____ days after receipt. SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS, LABOR, AND TRAVEL FOR _____	\$ _____	\$ _____
4.	4	Sensor Cable Junction Box Model #WX-SS-710 Delivery: _____ days after receipt. SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS, LABOR, AND TRAVEL FOR _____	\$ _____	\$ _____

ITEM	QTY	DESCRIPTION	UNIT PRICE	EXTENDED AMOUNT
5.	1	Wavetronix Click 650 cabinet interface device w/SDLC cable; Model #WX-102-0416 Delivery: _____ days after receipt. SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS, LABOR, AND TRAVEL FOR _____	\$ _____	\$ _____
6.	1	U-Channel Mounting Bracket Accessory Pack; Model #WX-102-0423 Delivery: _____ days after receipt. SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS, LABOR, AND TRAVEL FOR _____	\$ _____	\$ _____
7.	1	SmartSensor 6-conductor cable (Bulk spool of 1,000ft); Model #WX-SS-705 Delivery: _____ days after receipt. SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS, LABOR, AND TRAVEL FOR _____	\$ _____	\$ _____
Bid Total				\$ _____

DELIVERY: F.O.B. DESTINATION:

PUBLIC WORKS TRAFFIC SIGNAL SHOP 1134 W. NICHOLS BUILDING H SPRINGFIELD MO 65802

ACCEPT VISA P-CARD: YES _____ NO _____

Prompt Payment Discount _____ % _____ Days, Net _____ Days

**CITY OF SPRINGFIELD
STATEMENT OF "NO BID"
IFB #078-2015**

RETURN THIS PAGE ONLY IF YOUR COMPANY PROVIDES THE PRODUCTS/SERVICES BEING BID AND DECLINES

TO DO SO.

WE, THE UNDERSIGNED, HAVE DECLINED TO QUOTE ON YOUR **IFB #078-2015** FOR **RADAR INTERSECTION DETECTION SYSTEM** FOR THE FOLLOWING REASON(S):

_____ SPECIFICATIONS ARE TOO "TIGHT," I.E. GEARED TOWARD ONE BRAND OR MANUFACTURER ONLY
(PLEASE EXPLAIN BELOW).

_____ INSUFFICIENT TIME TO RESPOND TO INVITATION FOR BID.

_____ OUR PRODUCT SCHEDULE WOULD NOT PERMIT US TO PERFORM.

_____ UNABLE TO MEET SPECIFICATIONS.

_____ UNABLE TO MEET INSURANCE REQUIREMENTS.

_____ SPECIFICATIONS UNCLEAR (PLEASE EXPLAIN BELOW).

_____ OTHER (PLEASE SPECIFY BELOW).

REMARKS: _____

COMPANY NAME: _____

ADDRESS: _____

SIGNATURE AND TITLE: _____

TELEPHONE NUMBER: _____

DATE: _____