



**CITY OF SPRINGFIELD, MISSOURI
DIVISION OF PURCHASES
INVITATION FOR BID #041-2010**

THIS IS NOT AN ORDER

RETURN

TO: Scott Menzer, Buyer
City of Springfield
Division of Purchases
218 E. Central
Springfield, MO 65802

Date Issued: October 13, 2009
Buyer's Email: smenzer@springfieldmo.gov
Telephone Number: 417-864-2079
Fax Number: 417-864-1927
DUE DATE: October 29, 2009

SEALED BIDS MUST BE PHYSICALLY RECEIVED IN THE DIVISION OF PURCHASES PRIOR TO 3:00 P.M. ON THURSDAY, OCTOBER 29, 2009. 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

TRAFFIC CABINETS

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/egov/finance/bid_center.html

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
INVITATION FOR BID #041-2010
GENERAL TERMS AND CONDITIONS**

1. Modifications

The scope of work to be done shall be subject to modification and supplementation upon the written agreement of the duly authorized representatives of the contracting parties. No provision shall be changed or modified without the execution of a formal Change Order, mutually agreed to by the City and the Contractor and processed through the Division of Purchases City.

2. Bidding "or Equal" Products

If bidding an "or equal", Bidders must include with their bid, specification sheets or information sufficient for thorough evaluation. Failure to do so may be cause for rejection as non-compliant.

3. New Products

All Items offered under this Invitation for Bid shall be **new** and manufactured by a company whose primary business is the manufacture of the type product requested.

4. Termination

If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner any Contractor 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. In either such event, all finished or unfinished work, documents, data, studies, surveys, drawings, maps, models, photographs, and reports or other materials prepared by the Contractor under this Contract shall, at the option of the City, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed. 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.

5. Termination for Convenience

The City shall have the right by 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 such event, City shall not be liable to Contractor except for work performed prior to such notice in an amount proportionate to the completed contract price and for the actual costs of preparations made by Contractor for the performance of the canceled portions of the contract, including a reasonable allowance of profit applicable to the work performed and such preparations. Anticipatory profits and consequential damages shall not be recoverable by the Contractor. The Contractor shall make every effort to mitigate costs to the City. All finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports or other materials prepared by the Contractor under this contract shall, at the option of the City, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed on such documents and other materials.

6. Assignment

The Contractor shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or novation), 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 assignments 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.

7. 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
INVITATION FOR BID #041-2010
SPECIFICATIONS**

NOTICE TO BIDDERS

The State of Missouri, the City of Kansas City and the City of Springfield in one form or another use this specification. Bidders should understand that there are similarities and differences between the agencies. The City of Springfield will update their spec from time to time so it should not be assumed this spec is the same as the last one. All orders received by the City of Springfield that do not meet this specification will be rejected. If you have any questions call the Purchasing Dept. of the City of Springfield or Signal Maint section of the City of Springfield. The City of Springfield does not use the MoDOT Approved Products List. Model 222 detectors must be on the City of Springfield's approved list, attached. The City of Springfield does not furnish a set of plans, but uses a Tabulation Sheet, attached.

332D Controller Cabinet Specification

FEATURES

- Meets all Caltrans and FHWA requirements
- Designed to accommodate Caltrans 170/2070 cabinet assemblies.
- Additional 19" EIA rack provides space for UPS and ITS applications
- Standard subassemblies assure interchangeability between manufacturers
- 8-phase, 4-ped
- 2 input files for detection (count, calling, extension, and delay)
- 2-channel or 4-channel detector modules can be used (loop, magnetometer or magnetic)
- 2 R/R preemption inputs
- 4 emergency vehicle inputs
- DC isolation inputs for pedestrian push buttons and special functions
- Programmable "Yellow/Red" or "All Red" flash through the use of flash plugs
- Sufficient space for two 170/2070 controllers
- 210 Monitor slot
- 2 dual-circuit flasher positions
- Fluorescent cabinet light(s) with door switch

ASSEMBLIES

- 14-position Input Files (2)
- 12-position Output File
- Combined power supply and Power Distribution Assembly
- 4 flash transfer relay sockets
- Detector termination panel with terminal blocks
- Service panel
- Police panel with signal "Auto/Flash" switch
- Controller shelf out drawer with pull
- 2 shelves

SPECIFICATIONS

Dimensions 66.77" H x 48.45" W x 30" D

Material 5052-H32 aluminum, 0.125" thick

Mounting Base mounted -(4) ¾" x 16" anchor bolts

Access 2 doors, front and back

Ventilation Thermostatically-controlled 100 CFM fans (2)

Latching System 3-point, choice of Corbin # 2 locks

Handles Stainless steel with padlock feature

Door Stops 90 deg & 180 deg (± 10 deg), each door, top

Rack Assembly Removable, standard 19" EIA rack

TYPE 170E SIGNAL CONTROLLER

CABINETS

Controller Cabinets shall be 0.125 inch reinforced shell aluminum alloy, and be of clean-cut design and appearance. The cabinets to be furnished shall be in accordance with the "Traffic signal control specifications"; published by the State of California, Business, Transportation & Housing Agency: Department of Transportation (CALTRANS), dated January, 1989, and all current Addenda and Revisions. Further, the equipment shall meet the following specifications. In case of conflict, the Agency specifications shall govern.

Bidders shall provide a certification that the equipment proposed is included on the most current (QPL) of CALTRANS. Exception: Agency specific equipment that is not defined in the CALTRANS specification is exempt from this QPL requirement.

The additional requirements for the model 332,332D and the model 336S stretched cabinet assemblies to be supplied by the bidder are as follows. Supplier must be approved for model 332 cabinets. All cabinets shall exhibit a "bare,, aluminum finish. The handles for each door shall swing outward. All main cabinet doors shall accept a NO. 2 Corbin Key. Two sets of keys shall be supplied with each cabinet. All cabinet assemblies shall be supplied with a Power Distribution Assembly Number 2, (PDA#2). The 336S stretched cabinet shall be provided with the specified base adapter and anchor bolts. If any auxiliary output file is specified, the C5 connections shall be included.

Each cabinet shall include two (2) fluorescent lighting fixtures mounted inside the front and back portion of the cabinet. These fixtures shall include a cool white lamp with protective cover and shall operate by a normal power UL listed ballast. A door-actuated switch shall be installed to turn on the cabinet light when the door is open. Each switch should work each individual light.

The police panel door shall contain one DPST toggle switch which shall be labeled FLASH/AUTOMATIC and may be used to switch output control from the switch packs to the flash unit and vice versa. This shall be the only control switch accessible from the police panel.

All output field conductors shall be terminated in the cabinet on a 600-volt heavy-duty mechanical screw connector offset tang assembly. Each mechanical screw connector shall accommodate up to four No. 12 AWG conductors. Each clamp shall be captive to the contact screw and the screw captive to the contact. Field wiring shall not be spade lugged. The A.C. neutral buss and chassis ground buss shall be a 17 position solid copper terminal that allows the wires to be attached without tang assemblies.

The output file shall be hand wired, no printed circuit boards shall be allowed except for red fail monitoring.

A 420 auxiliary output file shall be required when called for on the plans and/or tabulation sheet. This file shall meet the latest CALTRANS Specifications.

PULL OUT DRAWER

A pullout, hinged-top drawer, having sliding tracks, with lockout and quick-disconnect feature, such as a Vent-Rak Retractable Writing Shelf, #D-4090-13 or equivalent shall be installed. The pullout drawer shall extend a minimum of 14 inches in order to facilitate removal of the processor by providing the processor with an aluminum platform covered by a formic type chemical-proof plastic sheet while the rear connector is being removed. It shall be possible to lift this hinged platform in order to gain access to the interior of the drawer. Minimum interior dimensions of the drawer shall be 1 inch high, 13 inches deep, and 16 inches wide. The drawer shall be capable of supporting a 40-pound controller when fully extended. Drawer shall be mounted immediately below the controller assembly.

SURGE PROTECTION

Each cabinet shall be provided with devices to protect the control equipment from surges and over voltages. This shall include incoming power lines, the Input File, the Output File, and communication lines.

All inputs shall be protected with a 30V MOV with (30 Joule rating), P/n ERZ-C20 DK 470 or Equal. The output of all outputs shall be protected with a 150VMOV (80 Joule Rating), P/n ERZ-C20 DK 241U or equal. The MOV's shall be connected from the field terminal to the chassis ground.

For the 332A cabinet, appropriate input surge protection shall be mounted on the Lower Input Termination Panel (LIP). The power distribution assembly (PDA#2) of each controller cabinet shall include a surge protection unit on the AC Service Input. The protector shall be installed between the applied line voltage and earth ground. The surge protector shall be capable of reducing the effect of lightning transient voltages applied to the AC line. The protection device shall be a two-stage series parallel device, and shall be an SHA 1210. It shall include the following features and functions:

Maximum AC line voltage: 140 VAC

Twenty pulses of peak current, each of which will rise in 8 microseconds and fall in 20 microseconds to 1/2 the peak: 20000 Amperes.

The protector shall be provided with the following terminals:

Main line (AC line first stage terminal)

Main Neutral (AC Neutral input terminal)

Equipment Line Out (AC Line second stage output terminal, 10 Amps.).

Equipment Neutral Out (Neutral terminal to protected equipment).

GND (Earth connection)

The Main AC line in and the Equipment Line out terminals shall be separated by a 200 Microhenry (minimum) inductor rated to handle 10 Amp AC Service. The first stage clamp shall be between Main Line and Ground terminals.

The second stage clamp shall be between Equipment Line out and Equipment Neutral.

The protector for the first and second stage clamp must have a MOV or similar solid state device rated at 20KA and be of a completely solid stage design (i.e. no gas discharge tubes allowed).

The Main Neutral and Equipment Neutral Out shall be connected together internally and shall have an MOV similar solid state device or gas discharge tubes rated at 20 KA between Main Neutral and Ground terminals.

Peak clamp voltage: 350 Volts at 20 KA (Voltage measured between Equipment Line Out and Equipment Neutral Out terminals. Current applied between Main Line and Ground Terminals with Ground and Main Neutral terminals externally tied together). Voltage shall never exceed 350 volts.

The Protector shall be epoxy encapsulated in a flame retardant material.

Continuous service current, 10 Amps at 120 VAC RMS

The Equipment Line Out shall provide power to the

Type 170 and to the 24V power supply.

Communications line protector for incoming and outgoing communication lines shall be EDCO part #PC642C-008 or equivalent with mounting connector #PCBIB or equivalent.

CABINET ACCESSORIES

Model 222 Loop Detector Amplifiers. The loop detector amplifier units shall be as specified in the CALTRANS Specifications. A quantity of 8 units shall be provided per cabinet.

Model 242 D.C. Isolator. The D.C. isolators shall be the Model 242 as specified in the CALTRANS Specifications. A quantity of 3 units shall be provided per cabinet.

Model 200 Load Switch. The load switch shall be the Model 200 as specified in the CALTRANS Specifications. A quantity of 12 units shall be provided per cabinet.

Model 204 Flasher. The flashers shall be the Model 204 as specified in the CALTRANS Specifications. Each cabinet shall be supplied with two (2) model 204 flashers.

Model 252 A.C. Isolator. The A.C. isolators shall be the Model 252 as specified in the CALTRANS Specifications. The quantity of units shall be as described on the plans.

Model 430 Flash Transfer Relay. The flash transfer unit shall be the Model 430 as specified in the CALTRANS Specifications. Each cabinet shall be supplied with four (4) model 430 flash transfer relays (2 additional model 430 flash transfer relays when a 420 auxiliary is shown on plans).

Model 400 Modem. A quantity of 1 unit shall be provided.

Model SM 2400 Modem. The quantity of units shall be as described on the plans.

COMPUTER Cable. The cable will consist of both male and female amp connectors as described in addendum 8 section 2-5-6 C2, C20, C30 and C40 Detail Dated November 19, 1993, of Caltrans Traffic Signal Control Specifications dated January 1989. The female connector of the cable will extend past the front edge of the rack a minimum of .5 inches and a maximum of 1 inch. The male connector will be on the cable end and will be in the back of the cabinet. This cable will extend 14 inches along the side of the rack with a minimum of 12 inches free that can be used to plug into any of the 170Es four ports. The cable will consist of one wire connecting the like pin in the other connector starting with A and ending with R. The wire should be 20 gauge (one cable shall be supplied for each cabinet).

MODEL 210 CONFLICT MONITOR

Each cabinet shall be supplied with a Model 210 Conflict monitor as specified as follows:

The conflict monitor shall be capable of monitoring for the absence of voltage on all of the inputs of a channel (defined here as red, yellow, and green). If an input is not present on at least one input of a channel at all times, the unit shall begin timing the duration of this condition. If this condition exists for less than 700 milliseconds, the unit shall not trigger, if this condition exist for more than 1000 milliseconds, the unit shall trigger as if a conflict had occurred, causing the intersection to transfer immediately into a flashing mode, and stop-time to be applied to the controller, a red signal shall require the presence of a minimum of 60 (+/-10) volts ac to satisfy the requirements of a red indication.

A connector and terminal assembly designated as P20 (Magnum P/N 722120 or equivalent) for monitoring the absence of red shall be an integral part of the output file. The connector shall terminate and be compatible with the cable and connector of a Type 170 conflict monitor unit (CMU), capable of monitoring the absence of red. The pin assignments of the P20 connector and terminal assembly shall be provided with the cabinet plans. The OP20 connector shall be physically alike to the cable and connector of a Type 170 CMU to prevent the absence of red cable connector from being inserted into the P20 connector 180 degrees out of alignment. Programming of the

unused red channels shall be accomplished via jumpers. These jumpers shall cause 115 VAC to be applied to any and all unused red monitoring channels. These jumpers and their respective attachment points shall be part of the output file.

TYPE 170E MICROCOMPUTER SIGNAL CONTROLLER

Shall conform to the CALTRANS TRAFFIC SIGNALS CONTROL EQUIPMENT SPECIFICATIONS as published January, 1989, with the exception that Chapter 2, and details related to the Model 170 controller unit, are superseded by addendum 8, dated November 1993, which are herein incorporated by:

This controller shall be fully compatible with the software specified on the plans.

The C2, C20, C30 and C40 connectors shall be amp standard.

One spare set of internal printed circuit boards shall be furnished with each controller unit. This includes, but is not limited to, the power supply, front panel, I/O and CPU.

If fiber optics are specified, a fiber optic modem shall be supplied.

Diagnostic Test Program For each 10 or less Model 170E controllers purchased, the bidder shall provide a Diagnostic Test Program Prom Chip that shall test the operation of the Model 170E controller units, including but not limited to, internal memory, the Program Module, the real-time clock, input-output circuitry, the modem, and the display and keyboard. The program shall be capable of operating with an external CRT (provided by others), and with controller keypad entries and displays. Full documentation on the program shall be included. The software shall be configured to work on a 412C prom module.

A copy of the CALTRANS specifications will be supplied by the state at the request of the contractor.

PROM MODULE

Each Model 170E controller unit shall be furnished with one (1) Program Module, Model 412C as specified in the CALTRANS Specification, dated January, 1989 and all addendum's up to and including addendum **8**, including back up lithium battery, and real time clock adjuster circuit, 1 Dallas 1225 chip, two 6264 ram chips.

Except as herein modified, the Microcomputer 170E controller reference and form a part of this Specification as follows:

SOFTWARE

DISTRICT 4

The most recent revision of Wapiti W41KS or W70SM shall be mounted on the prom module and configured accordingly.

DISTRICT 8

The prom module shall be configured for BiTran software.

CITY OF SPRINGFIELD

The prom module shall be configured for BiTran software

CONFLICT MONITOR TEST CABLE

To facilitate testing of the conflict monitor by maintenance crews, one additional connector cable shall be furnished by the manufacturer and installed in each cabinet. This cable shall be four feet in length, utilizing #18 wire to connect a 36 pin plug to back panel terminals as indicated below:

<u>Receptable Circuit</u>	<u>Terminal Phase</u>		
1		1	G
2		1	Y
3		2	G
4		2	Y
5		3	G
6		3	Y
7		4	G
8		4	Y
9		5	G
10		5	Y
11		6	G
12		6	Y
13		7	G
14		7	Y
15		8	G
16		8	Y
17		2	WALK
18		6	WALK
19		4	WALK
20		8	WALK
21	Circuits used only in a 322A	1	AUX G
22	Cabinet W/Auxiliary Output File	1	AUX Y
23		3	AUX G
24		3	AUX Y
25		5	AUX G
26		5	AUX Y
27		6	AUX Y
28		6	AUX Y
29	14-W		STOP TIME
30			DC GROUND
31			MONITOR RESET
32			DC GROLTND
33			2 AUX G
34		2	AUX Y
35		4	AUX G
36		4	AUX Y

Connector cable shall utilize a 36 circuit polarized nylon Waldom Molex type receptacle (part number 03-06-1361) using 0.0621, female terminals made of 70/30 spring tempered tinplated brass 0.0101, thick with contact of resistance 0.0025 ohm mV, drop of 2.5 mV at 1 amp with 250 volts 4 amps maximum per circuit. This connector cable "free floats" in the front bottom 6 inches of the cabinet and is not used in the normal operation of the controller.

EQUIPMENT TESTING

Controllers and cabinets purchased under this contract shall be tested for conformance to CAT-TRANS, "Traffic Signal Control Equipment Specifications" dated January 1989 and the latest addenda. An independent laboratory may do testing if the manufacturer does not have sufficient facilities to carry out the testing. The manufacturer shall supply a copy of the test results for all equipment purchased.

Each Model 170E controller unit shall be tested over a temperature range of minus 34 to plus 74 degrees Celsius. Proper operation of the unit shall be verified at both temperature extremes and at ambient. This testing is not a substitute for any quality control testing or final inspection testing normally performed; it is a process to be carried out prior to final inspection.

Environmental chamber(s) shall have provision for remotely controlling the Model 170E controller being tested. Proper operation of the equipment shall be verified at minus 34, plus 74 degrees Celsius and ambient. Cold and hot soak times shall be sufficient to allow all components in the device to reach the temperatures desired. A minimum soak time of three hours shall be used for all testing.

A representative of the agency may travel to the testing site to verify that the environmental testing is being carried out properly and to observe manufacturing practices at the factory.

The manufacturer shall submit a proposed testing procedure and schedule 30 days in advance for evaluation by the Agency. Test procedures, environmental chambers, automatic test equipment, display boards, power supplies, and controls shall be described in detail. A "dry run" should be carried out in order to work out any problems with the test procedure. Any problems should be resolved before the arrival of the representative of the Agency.

Minimum test requirements are given below. The manufacturer is free to suggest additional tests or variations on the test given below. Any changes should be described in the testing proposal.

Cabinet. Cabinets shall be tested at ambient conditions only. An automatic or semi-automatic method of checking cabinet wiring between equipment harnesses and field connections is required.

Controllers. Controller shall pass the following test at least 5 times at each temperature extreme and ambient.

Recovery from a short power interrupts of approximately 500 milliseconds.

Recovery from a long power interrupts of approximately 5 seconds.

Front panel displays should be visible from a window in the environmental chamber. Signal outputs shall be brought out of the chamber to display board if controllers cannot be directly observed.

The vendor shall provide a method of testing controller inputs and outputs. Diagnostic software and wraparound connector for controller harnesses may be used. If diagnostic software is not used, outputs shall be brought out to a display board. Inputs may be paralleled to each controller.

ACCEPTANCE TESTING

City Technicians will run a diagnostic test; all equipment must pass prior to acceptance.

**CITY OF SPRINGFIELD
SPECIFICATIONS FOR
MODEL 222 AND 224 DETECTORS
FOR TYPE 170 CONTROLLERS**

Model 222 and 224 loop detector units shall conform to requirements of Chapter 5, sections 1 and 2, of CALTRANS "TRAFFIC SIGNAL CONTROL EQUIPMENT SPECIFICATIONS" dated January 1989 or latest revision and addendums by the State of California Department of Transportation (CALTRANS) pertaining to Detector Sensor Units. Only those manufacturers that have been approved by CALTRANS to supply Detector Sensor Units for loop detectors to the State of California is acceptable to provide Loop Detector Sensors to the City of Springfield, Missouri.

Further, the City of Springfield requires that Loop Detector Sensors from each CALTRANS approved manufacturer shall pass field testing by the City for a minimum of twelve months to demonstrate reliability prior to placement of the manufacturer on the Approved Bidders' List. As of the date of this revision, the following Loop Detector Sensor manufacturers have been approved for supply to the City of Springfield;

Detector Systems Inc.	Reno LED read out
3M/Canoga Vehicle Detection Systems	EDI 222

(outputs must be solid state no relays)

Once the manufacturer is placed on the Approved Bidder's List, it will not be necessary for that manufacturer to submit test units for each revision in design. In fact, the City of Springfield desires to receive the latest models which improve the function and reliability of the units, while conforming to the specifications. Malfunctions will be brought to the manufacturer's attention.

Other Loop Detector Sensor manufacturers that are approved by CALTRANS and desire to be placed on the Approved Bidder's for the City of Springfield, Missouri for future bids are invited to provide a minimum of two- (2) two-channel detector units to the City for field-testing for a minimum of twelve months. These units shall perform trouble-free for the test period. Manufacturers will be advised by the City concerning each documented malfunction of the detector rest units. The test units will be returned to the manufacturer at the end of the test period.

SPECIFICATIONS

TYPE 170 EQUIPMENT

TYPE 170E SIGNAL CONTROLLER

CABINETS

Controller Cabinets shall be 0.125 inch reinforced shell aluminum alloy, and be of clean-cut design and appearance. The cabinets to be furnished shall be in accordance with the "Traffic signal control specifications"; published by the State of California, Business, Transportation & Housing Agency: Department of Transportation (CALTRANS), dated January, 1989, and all current Addenda and Revisions. Further, the equipment shall meet the following specifications. In case of conflict, the Agency specifications shall govern.

Bidders shall provide a certification that the equipment proposed is included on the most current (QPL) of CALTRANS. Exception: Agency specific equipment that is not defined in the CALTRANS specification is exempt from this QPL requirement.

The additional requirements for the model 332 and the model 336S stretched cabinet assemblies to be supplied by the bidder are as follows. Supplier must be approved for model 332 cabinets. All cabinets shall exhibit a "bare,, aluminum finish. The handles for each door shall swing outward. All main cabinet doors shall accept a NO. 2 Corbin Key. Two sets of keys shall be supplied with each cabinet. All cabinet assemblies shall be supplied with a Power Distribution Assembly Number 2, (PDA#2). The 336S stretched cabinet shall be provided with the specified base adapter and anchor bolts. If any auxiliary output file is specified, the C5 connections shall be included.

Each cabinet shall include two (2) fluorescent lighting fixtures mounted inside the front and back portion of the cabinet. These fixtures shall include a cool white lamp with protective cover and shall operate by a normal power UL listed ballast. A door-actuated switch shall be installed to turn on the cabinet light when the door is open. Each switch should work each individual light.

The police panel door shall contain one DPST toggle switch which shall be labeled FLASH/AUTOMATIC and may be used to switch output control from the switch packs to the flash unit and vice versa. This shall be the only control switch accessible from the police panel.

All output field conductors shall be terminated in the cabinet on a 600-volt heavy-duty mechanical screw connector offset tang assembly. Each mechanical screw connector shall accommodate up to four No. 12 AWG conductors. Each clamp shall be captive to the contact screw and the screw captive to the contact. Field wiring shall not be spade lugged. The A.C. neutral buss and chassis ground buss shall be a 17 position solid copper terminal that allows the wires to be attached without tang assemblies.

The output file shall be hand wired, no printed circuit boards shall be allowed except for red fail monitoring.

A 420 auxiliary output file shall be required when called for on the plans and/or tabulation sheet. This file shall meet the latest CALTRANS Specifications.

PULL OUT DRAWER

A pullout, hinged-top drawer, having sliding tracks, with lockout and quick-disconnect feature, such as a Vent-Rak Retractable Writing Shelf, #D-4090-13 or equivalent shall be installed. The pullout drawer shall extend a minimum of 14 inches in order to facilitate removal of the processor by providing the processor with an aluminum platform covered by a formic type chemical-proof plastic sheet while the rear connector is being removed. It shall be possible to lift this hinged platform in order to gain access to the interior of the drawer. Minimum interior dimensions of the drawer shall be 1 inch high, 13 inches deep, and 16 inches wide. The drawer shall be capable of supporting a 40-pound controller when fully extended. Drawer shall be mounted immediately below the controller assembly.

SURGE PROTECTION

Each cabinet shall be provided with devices to protect the control equipment from surges and over voltages. This shall include incoming power lines, the Input File, the Output File, and communication lines.

All inputs shall be protected with a 30V MOV with (30 Joule rating), P/n ERZ-C20 DK 470 or Equal. The output of all outputs shall be protected with a 150VMOV (80 Joule Rating), P/n ERZ-C20 DK 241U or equal. The MOV's shall be connected from the field terminal to the chassis ground.

For the 332A cabinet, appropriate input surge protection shall be mounted on the Lower Input Termination Panel (LIP). The power distribution assembly (PDA#2) of each controller cabinet shall include a surge protection unit on the AC Service Input. The protector shall be installed between the applied line voltage and earth ground. The surge protector shall be capable of reducing the effect of lightning transient voltages applied to the AC line. The protection device shall be a two-stage series parallel device, and shall be an SHA 1210. It shall include the following features and functions:

Maximum AC line voltage: 140 VAC

Twenty pulses of peak current, each of which will rise in 8 microseconds and fall in 20 microseconds to 1/2 the peak: 20000 Amperes.

The protector shall be provided with the following terminals:

Main line (AC line first stage terminal)

Main Neutral (AC Neutral input terminal)

Equipment Line Out (AC Line second stage output terminal, 10 Amps.).

Equipment Neutral Out (Neutral terminal to protected equipment).

GND (Earth connection)

The Main AC line in and the Equipment Line out terminals shall be separated by a 200 Microhenry (minimum) inductor rated to handle 10 Amp AC Service. The first stage clamp shall be between Main Line and Ground terminals.

The second stage clamp shall be between Equipment Line out and Equipment Neutral.

The protector for the first and second stage clamp must have a MOV or similar solid state device rated at 20KA and be of a completely solid stage design (i.e. no gas discharge tubes allowed).

The Main Neutral and Equipment Neutral Out shall be connected together internally and shall have an MOV similar solid state device or gas discharge tubes rated at 20 KA between Main Neutral and Ground terminals.

Peak clamp voltage: 350 Volts at 20 KA (Voltage measured between Equipment Line Out and Equipment Neutral Out terminals. Current applied between Main Line and Ground Terminals with Ground and Main Neutral terminals externally tied together). Voltage shall never exceed 350 volts.

The Protector shall be epoxy encapsulated in a flame retardant material.

Continuous service current, 10 Amps at 120 VAC RMS

The Equipment Line Out shall provide power to the Type 170 and to the 24V power supply.

Communications line protector for incoming and outgoing communication lines shall be EDCO part #PC642C-008 or equivalent with mounting connector #PCBIB or equivalent.

CABINET ACCESSORIES

Model 222 Loop Detector Amplifiers. The loop detector amplifier units shall be as specified in the CALTRANS Specifications. The quantity of 8 units shall be furnished

Model 242 D.C. Isolator. The D.C. isolators shall be the Model 242 as specified in the CALTRANS Specifications. A quantity of 3 units shall be provided per cabinet.

Model 200 Load Switch. The load switch shall be the Model 200 as specified in the CALTRANS Specifications. The quantity of 8 units shall be furnished

Model 204 Flasher. The flashers shall be the Model 204 as specified in the CALTRANS Specifications. Each cabinet shall be supplied with two (2) model 204 flashers.

Model 252 A.C. Isolator. The A.C. isolators shall be the Model 252 as specified in the CALTRANS Specifications. The quantity of units shall be as described on the plans.

Model 430 Flash Transfer Relay. The flash transfer unit shall be the Model 430 as specified in the CALTRANS Specifications. Each cabinet shall be supplied with four (4) model 430 flash transfer relays (2 additional model 430 flash transfer relays when a 420 auxiliary is shown on plans).

Model 400 Modem. A quantity of 1 unit shall be provided.

Model SM 2400 Modem. The quantity of units shall be as described on the plans.

COMPUTER Cable. The cable will consist of both male and female amp connectors as described in addendum 8 section 2-5-6 C2, C20, C30 and C40 Detail Dated November 19, 1993, of Caltrans Traffic Signal Control Specifications dated January 1989. The female connector of the cable will extend past the front edge of the rack a minimum of .5 inches and a maximum of 1 inch. The male connector will be on the cable end and will be in the back of the cabinet. This cable will extend 14 inches along the side of the rack with a minimum of 12 inches free that can be used to plug into any of the 170Es four ports. The cable will consist of one wire connecting the like pin in the other connector starting with A and ending with R. The wire should be 20 gauge (one cable shall be supplied for each cabinet).

MODEL 210 CONFLICT MONITOR

Each cabinet shall be supplied with a Model 210 Conflict monitor as specified as follows:

The conflict monitor shall be capable of monitoring for the absence of voltage on all of the inputs of a channel (defined here as red, yellow, and green). If an input is not present on at least one input of a channel at all times, the unit shall begin timing the duration of this condition. If this condition exists for less than 700 milliseconds, the unit shall not trigger, if this condition exist for more than 1000 milliseconds, the unit shall trigger as if a conflict had occurred, causing the intersection to transfer immediately into a flashing mode, and stop-time to be applied to the controller, a red signal shall require the presence of a minimum of 60 (+/-10) volts ac to satisfy the requirements of a red indication.

A connector and terminal assembly designated as P20 (Magnum P/N 722120 or equivalent) for monitoring the absence of red shall be an integral part of the output file. The connector shall terminate and be compatible with the cable and connector of a Type 170 conflict monitor unit (CMU), capable of monitoring the absence of red. The pin assignments of the P20 connector and terminal assembly shall be provided with the cabinet plans. The OP20 connector shall be physically alike to the cable and connector of a Type 170 CMU to prevent the absence of red cable connector from being inserted into the P20 connector 180 degrees out of alignment. Programming

of the unused red channels shall be accomplished via jumpers. These jumpers shall cause 115 VAC to be applied to any and all unused red monitoring channels. These jumpers and their respective attachment points shall be part of the output file.

TYPE 170E MICROCOMPUTER SIGNAL CONTROLLER

Shall conform to the CALTRANS TRAFFIC SIGNALS CONTROL EQUIPMENT SPECIFICATIONS as published January, 1989, with the exception that Chapter 2, and details related to the Model 170 controller unit, are superseded by addendum 8, dated November 1993, which are herein incorporated by

This controller shall be fully compatible with the software specified on the plans.

The C2, C20, C30 and C40 connectors shall be amp standard.

One spare set of internal printed circuit boards shall be furnished with each controller unit. This includes, but is not limited to, the power supply, front panel, I/O and CPU.

If fiber optics are specified, a fiber optic modem shall be supplied.

Diagnostic Test Program For each 10 or less Model 170E controllers purchased, the bidder shall provide a Diagnostic Test Program Prom Chip that shall test the operation of the Model 170E controller units, including but not limited to, internal memory, the Program Module, the real-time clock, input-output circuitry, the modem, and the display and keyboard. The program shall be capable of operating with an external CRT (provided by others), and with controller keypad entries and displays. Full documentation on the program shall be included. The software shall be configured to work on a 412C prom module.

A copy of the CALTRANS specifications will be supplied by the state at the request of the contractor.

PROM MODULE

Each Model 170E controller unit shall be furnished with one (1) Program Module, Model 412C as specified in the CALTRANS Specification, dated January, 1989 and all addendum's up to and including addendum 8, including back up lithium battery, and real time clock adjuster circuit, 1 Dallas 1225 chip, two 6264 ram chips.

Except as herein modified, the Microcomputer 170E controller reference and form a part of this Specification as follows:

SOFTWARE

DISTRICT 4

The most recent revision of Wapiti W41KS or W70SM shall be mounted on the prom module and configured accordingly.

DISTRICT 8

The prom module shall be configured for BiTran software.

CITY OF SPRINGFIELD

The prom module shall be configured for BiTran software

CONFLICT MONITOR TEST CABLE

To facilitate testing of the conflict monitor by maintenance crews, one additional connector cable shall be furnished by the manufacturer and installed in each cabinet. This cable shall be four feet in length, utilizing #18 wire to connect a 36 pin plug to back panel terminals as indicated below:

<u>Receptacle Circuit</u>	<u>Terminal Phase</u>		
1		1	G
2		1	Y
3		2	G
4		2	Y
5		3	G
6		3	Y
7		4	G
8		4	Y
9		5	G
10		5	Y
11		6	G
12		6	Y
13		7	G
14		7	Y
15		8	G
16		8	Y
17		2	WALK
18		6	WALK
19		4	WALK
20		8	WALK
21	Circuits used only in a 322A	1	AUX G
22	Cabinet W/Auxiliary Output File	1	AUX Y
23		3	AUX G
24		3	AUX Y
25		5	AUX G
26		5	AUX Y
27		6	AUX Y
28		6	AUX Y
29	14-W		STOP TIME
30			DC GROUND
31			MONITOR RESET
32			DC GROLTND
33			2 AUX G
34		2	AUX Y
35		4	AUX G
36		4	AUX Y

Connector cable shall utilize a 36 circuit polarized nylon Waldom Molex type receptacle (part number 03-06-1361) using 0.0621, female terminals made of 70/30 spring tempered tinplated brass 0.0101, thick with contact of resistance 0.0025 ohm mV, drop of 2.5 mV at 1 amp with 250 volts 4 amps maximum per circuit. This connector cable "free floats" in the front bottom 6 inches of the cabinet and is not used in the normal operation of the controller.

EQUIPMENT TESTING

Controllers and cabinets purchased under this contract shall be tested for conformance to CAT-TRANS, "Traffic Signal Control Equipment Specifications" dated January 1989 and the latest addenda. An independent laboratory may do testing if the manufacturer does not have sufficient facilities to carry out the testing. The manufacturer shall supply a copy of the test results for all equipment purchased.

Each Model 170E controller unit shall be tested over a temperature range of minus 34 to plus 74 degrees Celsius. Proper operation of the unit shall be verified at both temperature extremes and at ambient. This testing is not a substitute for any quality control testing or final inspection testing normally performed; it is a process to be carried out prior to final inspection.

Environmental chamber(s) shall have provision for remotely controlling the Model 170E controller being tested. Proper operation of the equipment shall be verified at minus 34, plus 74 degrees Celsius and ambient. Cold and hot soak times shall be sufficient to allow all components in the device to reach the temperatures desired. A minimum soak time of three hours shall be used for all testing.

A representative of the agency may travel to the testing site to verify that the environmental testing is being carried out properly and to observe manufacturing practices at the factory.

The manufacturer shall submit a proposed testing procedure and schedule 30 days in advance for evaluation by the Agency. Test procedures, environmental chambers, automatic test equipment, display boards, power supplies, and controls shall be described in detail. A "dry run" should be carried out in order to work out any problems with the test procedure. Any problems should be resolved before the arrival of the representative of the Agency.

Minimum test requirements are given below. The manufacturer is free to suggest additional tests or variations on the test given below. Any changes should be described in the testing proposal.

Cabinet. Cabinets shall be tested at ambient conditions only. An automatic or semi-automatic method of checking cabinet wiring between equipment harnesses and field connections is required.

Controllers. Controller shall pass the following test at least 5 times at each temperature extreme and ambient.

Recovery from a short power interrupts of approximately 500 milliseconds.

Recovery from a long power interrupts of approximately 5 seconds.

Front panel displays should be visible from a window in the environmental chamber. Signal outputs shall be brought out of the chamber to display board if controllers cannot be directly observed.

The vendor shall provide a method of testing controller inputs and outputs. Diagnostic software and wraparound connector for controller harnesses may be used. If diagnostic software is not used, outputs shall be brought out to a display board. Inputs may be paralleled to each controller.

ACCEPTANCE TESTING

City Technicians will run a diagnostic test; all equipment must pass prior to acceptance.

**CITY OF SPRINGFIELD
SPECIFICATIONS FOR
MODEL 222 AND 224 DETECTORS
FOR TYPE 170 CONTROLLERS**

Model 222 and 224 loop detector units shall conform to requirements of Chapter 5, sections 1 and 2, of CALTRANS "TRAFFIC SIGNAL CONTROL EQUIPMENT SPECIFICATIONS" dated January 1989 or latest revision and addendums by the State of California Department of Transportation (CALTRANS) pertaining to Detector Sensor Units. Only those manufacturers that have been approved by CALTRANS to supply Detector Sensor Units for loop detectors to the State of California is acceptable to provide Loop Detector Sensors to the City of Springfield, Missouri.

Further, the City of Springfield requires that Loop Detector Sensors from each CALTRANS approved manufacturer shall pass field testing by the City for a minimum of twelve months to demonstrate reliability prior to placement of the manufacturer on the Approved Bidders' List. As of the date of this revision, the following Loop Detector Sensor manufacturers have been approved for supply to the City of Springfield;

Detector Systems Inc.	Reno LED read out
3M/Canoga Vehicle Detection Systems	EDI 222

(outputs must be solid state no relays)

Once the manufacturer is placed on the Approved Bidder's List, it will not be necessary for that manufacturer to submit test units for each revision in design. In fact, the City of Springfield desires to receive the latest models which improve the function and reliability of the units, while conforming to the specifications. Malfunctions will be brought to the manufacturer's attention.

Other Loop Detector Sensor manufacturers that are approved by CALTRANS and desire to be placed on the Approved Bidder's for the City of Springfield, Missouri for future bids are invited to provide a minimum of two- (2) two-channel detector units to the City for field-testing for a minimum of twelve months. These units shall perform trouble-free for the test period. Manufacturers will be advised by the City concerning each documented malfunction of the detector rest units. The test units will be returned to the manufacturer at the end of the test period.

**CITY OF SPRINGFIELD
 BID FORM – PROPOSAL
 IFB #041-2010**

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.	2 EA	Description: 332D Controller Cabinet with 170E Controller and Spare Boards in accordance with attached specifications Mfg. _____ Part No. _____ Delivery: _____ Days after receipt of order SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS AND LABOR FOR _____	\$ _____ Per Each	\$ _____
2.	5 EA	Description: 332 Cabinet with 170E Controller and Spare Boards in accordance with attached specifications Mfg. _____ Part No. _____ Delivery: _____ Days after receipt of order SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS AND LABOR FOR _____	\$ _____ Per Each	\$ _____
Total			\$ _____	

DELIVERY: F.O.B. DESTINATION

Prompt Payment Discount _____% _____ Days, Net _____ Days

**CITY OF SPRINGFIELD
STATEMENT OF "NO BID"
IFB #041-2010**

**RETURN THIS PAGE ONLY IF YOUR COMPANY PROVIDES THE PRODUCTS/SERVICES BEING BID AND DECLINES
TO DO SO.**

WE, THE UNDERSIGNED, HAVE DECLINED TO BID ON YOUR **IFB #041-2010** FOR **TRAFFIC CABINETS** 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: _____