

BID FORM

MISSOURI DEPARTMENT OF TRANSPORTATION
GENERAL SERVICES

PO Box 270, Jefferson City, MO 65102(Mailing Address)
830 MoDOT Drive, Jefferson City, MO 65109 (Physical Address)

REQUEST NO.	2-120927RW2
DATE	September 11, 2012

SEALED BIDS, SUBJECT TO THE ATTACHED CONDITIONS WILL BE RECEIVED AT THIS OFFICE UNTIL

2:00 p.m., Local Time, September 27, 2012

AND THEN PUBLICLY OPENED AND READ FOR FURNISHING THE FOLLOWING SUPPLIES OR SERVICES.

BIDS TO BE BASED F.O.B. MISSOURI DEPARTMENT OF TRANSPORTATION

Submit net bid as cash discount stipulations will not be considered
Various MoDOT Locations

BUYER: Robin Warren
BUYER EMAIL:
Robin.Warren@modot.mo.gov

BUYER TELEPHONE: 573-526-7929

SUPPLIES OR SERVICES

Traffic Controllers – Type 170E

To establish a contract to furnish “**Traffic Controllers – Type 170E**” with an effective date of Notice to Proceed and ending September 30, 2013 in accordance with the following pages.

*****NOTE: It is the responsibility of the Bidder to access MoDOT’s website in order to obtain any and all addenda(s) issued during the course of this RFB process.**

All questions regarding this RFB shall be submitted to the RFB Coordinator/Contact.

(SEE ATTACHED FOR CONDITIONS AND INSTRUCTIONS)

In compliance with the above Request For Bid, and subject to all conditions thereof, the undersigned bidder agrees to furnish and deliver any or all the items on which prices were bid within the timeframe specified herein, after receipt of formal purchase order.

Date: _____
Telephone No.: _____
Fax No.: _____
Email Address: _____

Firm Name: _____
Address: _____
By (Signature): _____
Type/Print Name _____

Title:
Is your firm WBE certified? Yes No

1. INTRODUCTION AND GENERAL INFORMATION

1.1 Introduction:

- 1.1.1 This Request for Bid seeks bids from qualified organizations to provide **traffic controllers**, with an effective contract period of Notice to Proceed through September 30, 2013, to the Missouri Highways and Transportation Commission (MHTC) and Missouri Department of Transportation (MoDOT). Each bid must be mailed in a sealed envelope to Robin Warren, Missouri Department of Transportation, General Services Procurement, P.O. Box 270, Jefferson City, MO 65102, or hand-delivered in a sealed envelope to the General Services Procurement Office at 830 MoDOT Drive, Jefferson City, MO 65109. All questions regarding the RFB shall be submitted to Robin Warren. Bids must be returned to the office of General Services Procurement no later than 2:00 p.m., CDT, September 27, 2012.

RFB Coordinator:

**Robin Warren, Sr. General Services Specialist
Missouri Department of Transportation
General Services - Procurement**

**Phone: 573-526-7929
E-mail: Robin.Warren@modot.mo.gov**

1.2 General Information:

1.2.1 This document constitutes an invitation for competitive, sealed bids for the procurement of traffic controllers as set forth herein.

1.2.2 Organization - This document, referred to as a Request for Bid (RFB), is divided into the following parts:

- 1) Introduction and General Information
- 2) Scope of Work
- 3) Bid Submission
- 4) Pricing Page(s)
- 5) Signature Page(s)
- 6) Terms and Conditions
- 7) Attachments

Attachment A – Assembly Equipment List

Attachment B – Specifications

Attachment C – Order Forms (Phasing Sheets)

Attachment D – District Map

- 8) MoDOT Approved Products List – Traffic Controllers (Click on separate link to view this document)

2. SCOPE OF WORK

2.1 General Requirements:

- 2.1.1 The contractor shall provide *Type 170E Traffic Signal Controllers* (hereinafter referred to as “traffic controllers”) on an as needed, if needed basis for the Missouri Highway and Transportation Commission (MHTC) and Missouri Department of Transportation (MoDOT), in accordance with the provisions and requirements stated herein.
- 2.1.2 The contractor shall provide all deliverables/services to the sole satisfaction of the MoDOT.
- 2.1.3 MoDOT estimates, but does not guarantee, the purchase of the estimated quantities stated herein.
- 2.1.4 MoDOT reserves the right to obtain “like or similar” products as specified herein from other manufacturers, exclusive of the contract, when use of such products is deemed in the best interest of the MoDOT.
- 2.1.5 Unless otherwise specified herein, the contractor shall furnish all material, labor, facilities, equipment, and supplies necessary to provide the deliverables/services required herein.

2.2 Specific Requirements:

- 2.2.1 The contractor shall insure all materials, equipment, and/or services comply with the MoDOT specifications specified on Attachment B, and as specified in any other provisions outlined in the solicitation document.
- 2.2.2 The contractor shall insure traffic controllers are built according to the attached specifications and wired according to the individual phasing sheets as specified herein on Attachment C.
- 2.2.3 The contractor shall provide traffic controllers in which all boxes required to complete the traffic controller assembly are packaged together as one.
- 2.2.4 The contractor shall agree and understand that only items on the latest revision of the MoDOT Approved Products List for Traffic Signals and Highway Lighting Equipment will be accepted.

2.3 Delivery Requirements:

- 2.3.1 The contractor shall deliver the specified traffic controllers to MoDOT Districts located throughout the State of Missouri specified in Attachment D.
- 2.3.2 The contractor shall not deliver any traffic controllers to MoDOT until being notified by MoDOT by telephone or purchase order.
- 2.3.3 The contractor shall deliver traffic controllers at the specified location within 90 calendar days after the issue date of a purchase order.
- 2.3.4 The contractor shall agree and understand that MoDOT shall not receive any deliveries on a Saturday or Sunday.

2.4 Additional Requirements:

- 2.4.1 The contractor shall agree and understand that all traffic controllers shall be subject to a twenty (20) day acceptance period, which includes fifteen (15) days for testing the equipment and five (5) days for the contractor to repair or replace any defective equipment.

- a. The test period shall begin no later than fifteen (15) days after the date the equipment is received. Any failure or malfunction of the equipment during the test period shall be corrected at the contractor's expense. The equipment shall then be tested for an additional fifteen (15) days. The procedure shall be repeated until the equipment has operated to the state's satisfaction for fifteen (15) consecutive days.

2.5 Liquidated Damage Requirements:

2.5.1 The contractor shall agree and understand that providing traffic controllers in accordance with the requirements stated herein is considered critical to the efficient operations of the MoDOT. However, since the amount of actual damages would be difficult to establish in the event the contractor fails to comply with the contractual requirements, the contractor shall agree and understand that the amount identified below as liquidated damages shall be reasonable and fair under the circumstances.

- a. In the event the contractor fails to provide traffic controllers in accordance with the contractual requirements specified herein, the contractor shall be assessed liquidated damages in the amount of \$50.00 per controller, per day for each such delinquent day after the twenty (20) day acceptance period.
- b. The contractor shall further agree and understand that such liquidated damages shall either be deducted from the total amount due the contractor or paid by the contractor as a direct payment to the MoDOT, at the sole discretion of the MoDOT.
- c. The contractor shall understand that the liquidated damages described herein shall not be construed as a penalty.
- d. The contractor shall understand and agree that all assessments of liquidated damages shall be within the discretion of each District as a separate entity, and shall be in addition to, not in lieu of, the rights of the State of Missouri to pursue other appropriate remedies. The contractor shall understand and agree that each District's decision shall be individual, final, and without recourse.
- e. The contractor shall agree and understand that all assessments of liquidated damages shall be within the discretion of the State of Missouri and shall be in addition to, not in lieu of, the rights of the State of Missouri to pursue other appropriate remedies.

2.6 Invoicing and Payment Requirements:

2.6.1 The contractor shall submit an itemized invoice to the applicable requesting address, as specified herein.

2.6.2 The contractor shall be paid in accordance with the firm, fixed price(s) stated on the pricing page of this document, after completion of deliverables specified herein and acceptance by MoDOT.

2.6.3 Other than the payment specified above, no other payments or reimbursements shall be made to the contractor for any reason whatsoever.

2.6.4 MoDOT is exempt from paying Missouri Sales Tax, Missouri Use Tax and Federal Excise Tax. However, the contractor may themselves be responsible for the payment of taxes on materials they purchase to fulfill the contract. A Federal Excise Tax Exemption Certificate will be furnished to the successful bidder upon request.

2.6.5 Unless otherwise provided for in the solicitation documents, payment for all equipment, supplies, and/or services required herein shall be made in arrears. The Missouri Highways and Transportation Commission (MHTC) shall not make any advance deposits.

2.6.6 The MHTC assumes no obligation for equipment, supplies, and/or services shipped or provided in excess of the quantity ordered. Any authorized quantity is subject to the MHTC's rejection and shall be returned at the contractor's expense.

2.6.7 The MHTC reserves the right to purchase goods and services using the state-purchasing card.

2.7 Other Contractual Requirements:

2.7.1 Contract Period - The contract shall commence from the Notice to Proceed until September 30, 2013.

2.7.2 Inspection Specifications - MoDOT reserves the right to inspect the material at the point of manufacture, intermediate storage point, or at a destination which shall be at the discretion of MoDOT.

4. PRICING PAGE

4.1 Traffic Controllers - The bidder shall provide firm, fixed prices in the table below for providing the deliverables/services in accordance with the provisions and requirements of this RFB. All costs associated with providing the required deliverables/services shall be included in the prices stated below.

TRAFFIC CONTROLLERS – Type 170E
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Item #	Description and C/S Code	Estimated Qty.	Firm, Fixed Price, <i>Per Unit</i>	Extended Price
001	Type 170E Traffic Signal Controller Assemblies Southwest District - Springfield	21	\$ _____ <i>per unit</i>	\$ _____ <i>total</i>

Signature

Date

VENDOR INFORMATION & PREFERENCE CERTIFICATION FORM

Vendor Information

All bidders must furnish ALL applicable information requested below

Vendor Name/Mailing Address: Email Address:	Vendor Contact Information (including area codes): Phone #: Cellular #: Fax #:									
Printed Name of Responsible Officer or Employee:	Signature:									
For Corporations - State in which incorporated:	For Others - State of domicile:									
If the address listed in the Vendor Name/Mailing Address block above is not located in the State of Missouri, list the address of Missouri offices or places of business: If additional space is required, please attach an additional sheet and identify it as <u>Addresses of Missouri Offices or Places of Business.</u>										
M/WBE INFORMATION: List all certified Minority or Women Business Enterprises (<u>M/WBE</u>) utilized in the fulfillment of this bid. Include <u>percentages</u> for subcontractors and identify the M/WBE certifying agency: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; border-bottom: 1px solid black;"><u>M/WBE Name</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>Percentage of Contract</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>M/WBE Certifying Agency</u></th> </tr> </thead> <tbody> <tr> <td style="border-bottom: 1px solid black;"> </td> <td style="border-bottom: 1px solid black;"> </td> <td style="border-bottom: 1px solid black;"> </td> </tr> <tr> <td style="border-bottom: 1px solid black;"> </td> <td style="border-bottom: 1px solid black;"> </td> <td style="border-bottom: 1px solid black;"> </td> </tr> </tbody> </table> If additional space is required, please attach an additional sheet and identify it as <u>M/WBE Information</u>		<u>M/WBE Name</u>	<u>Percentage of Contract</u>	<u>M/WBE Certifying Agency</u>						
<u>M/WBE Name</u>	<u>Percentage of Contract</u>	<u>M/WBE Certifying Agency</u>								

Preference Certification

All bidders must furnish ALL applicable information requested below

<u>GOODS/PRODUCTS MANUFACTURED OR PRODUCED IN USA:</u> If any or all of the goods or products offered in the attached bid which the bidder proposes to supply to the MHTC are <u>not</u> manufactured or produced in the "United States", or imported in accordance with a qualifying treaty, law, agreement, or regulation, list below, by item or item number, the country other than the United States where each good or product is manufactured or produced.	
Item (or item number)	Location Where Item is Manufactured or Produced
If additional space is required, please attach an additional sheet and identify it as <u>Location Products are Manufactured or Produced.</u>	
<u>MISSOURI SERVICE-DISABLED VETERAN BUSINESS:</u> Please complete the following if applicable. Additional information may be requested if preference is applicable. See below definitions for qualification criteria: Service-Disabled Veteran is defined as any individual who is disabled as certified by the appropriate federal agency responsible for the administration of veterans' affairs. Service-Disabled Veteran Business is defined as a business concern: <ol style="list-style-type: none"> a. Not less than fifty-one (51) percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than fifty-one (51) percent of the stock of which is owned by one or more service-disabled veterans; and b. The management and daily business operations of which are controlled by one or more service-disabled veterans. 	
<u>Veteran Information</u>	<u>Business Information</u>
_____ Service-Disabled Veteran's Name (Please Print)	_____ Service-Disabled Veteran Business Name
_____ Service-Disabled Veteran's Signature	_____ Missouri Address of Service Disabled Veteran Business

NOTICE

The Department is interested in assisting Missouri governmental entities, etc. in purchasing equipment, various materials, and supplies that meet the MoDOT specifications.

Each bidder is asked to indicate below whether they would be willing to offer **Traffic Controllers Type 170E** listed in the attached "Request for Bid" for sale to these local political entities at the same bid price offered to this Department.

It is understood the Department will not issue purchase orders, accept delivery nor make payment for these items ordered by any of these agencies. It is further understood the price is based on the **Traffic Controllers Type 170E** meeting the Department specifications. Any added options, deletions, or extra freight costs would be negotiated between the local agency and the successful vendor.

Indicate below whether your company is willing to offer such cooperative purchasing for Missouri counties, cities or other political entities.

YES _____ NO _____

If the price varies throughout the state on Department bids because of different delivery destinations, please indicate the price f.o.b. your location that would be offered as described.

F.O.B. Location _____

Indicate the deadline date that orders will be accepted. _____

COMPANY NAME _____

ADDRESS _____

PHONE NUMBER _____

SIGNATURE _____

TITLE _____

DATE _____

Missouri Highways and Transportation Commission
Standard Bid/Proposal Provisions, General Terms and Conditions and Special Terms and Conditions
STANDARD SOLICITATION PROVISIONS

- a. The solicitation for the procurement of the supplies referenced therein, to which these "Standard Bid Provisions, General Terms and Conditions and Special Terms and Conditions" are attached, is being issued under, and governed by, the provisions of Title 7 – Missouri Department of Transportation, Division 10 – Missouri Highways and Transportation Commission, Chapter 11 – Procurement of Supplies, of the Code of State Regulations. The Missouri Highways and Transportation Commission (MHTC), acting by and through its operating arm, the Missouri Department of Transportation (MoDOT), draws the Bidder's attention to said 7 CSR 10-11 for all the provisions governing solicitation and receipt of bids/quotes and the award of the contract pursuant to this solicitation.
- b. All bids/quotes must be signed with the firm name and by a responsible officer or employee. Obligations assumed by such signature must be fulfilled.

GENERAL TERMS AND CONDITIONS

Definitions

Capitalized terms as well as other terms used but not defined herein shall have the meaning assigned to them in section 7 CSR 10-11.010 Definition of Terms.

Nondiscrimination

- a. The Contractor shall comply with all state and federal statutes applicable to the Contractor relating to nondiscrimination, including, but not limited to, Chapter 213, RSMo; Title VI and Title VII of Civil Rights Act of 1964 as amended (42 U.S.C. Sections 2000d and 2000e, *et seq.*); and with any provision of the "Americans with Disabilities Act" (42 U.S.C. Section 12101, *et seq.*).
- b. **Sanctions for Noncompliance:** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, MHTC shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - i. withholding of payments to the Contractor under the contract until the Contractor complies, and/or,
 - ii. cancellation, termination or suspension of the contract, in whole or in part.

Contract/Purchase Order

- a. By submitting a bid/quote, the Bidder agrees to furnish any and all equipment, supplies and/or services specified in the solicitation documents, at the prices quoted, pursuant to all requirements and specifications contained therein.
- b. A binding contract shall consist of: (1) the solicitation documents, amendments thereto, and/or Best and Final Offer (BAFO) request(s) with any changes/additions, (2) the Contractor's bid response, and (3) the MHTC's acceptance of the bid by post-award contract or purchase order.
- c. A notice of award does not constitute an authorization for shipment of equipment or supplies or a directive to proceed with services. Before providing equipment, supplies and/or services, the Contractor must receive a properly authorized notice to proceed and/or purchase order.

Applicable Laws and Regulations

- a. The contract shall be construed according to the laws of the State of Missouri. The Contractor shall comply with all local, state, and federal laws and regulations related to the performance of the contract. The exclusive venue for any legal proceeding relating to or arising, out of the contract shall be in the Circuit Court of Cole County, Missouri.
- b. The Contractor must be registered and maintain good standing with the Secretary of State of the State of Missouri, Missouri Department of Revenue, and other regulatory agencies, as may be required by law or regulations. Prior to the issuance of a purchase order and/or notice to proceed, the Contractor may be required to submit to MHTC a copy of their current Authority Certificate from the Secretary of State of the State of Missouri and/or a copy of their Certificate of No Tax Due from the Missouri Department of Revenue.
- c. Prior to the issuance of a purchase order and/or notice to proceed, all **out-of-state** Contractors **providing services** within the state of Missouri must submit to MHTC a copy of their current Transient Employer Certificate from the Missouri Department of Revenue, in addition to a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.

Executive Order:

The Contractor shall comply with all the provisions of Executive Order 07-13, issued by the Honorable Matt Blunt, Governor of Missouri, on the sixth (6th) day of March, 2007. This Executive Order, which promulgates the State of Missouri's position to not tolerate persons who contract with the state engaging in or supporting illegal activities of employing individuals who are not eligible to work in the United States, is incorporated herein by reference and made a part of this Agreement.

- 1) "By signing this Agreement, the Contractor hereby certifies that any employee of the Contractor assigned to perform services under the contract is eligible and authorized to work in the United States in compliance with federal law."
- 2) In the event the Contractor fails to comply with the provisions of the Executive Order 07-13, or in the event the Commission has reasonable cause to believe that the contractor has knowingly employed individuals who are not eligible to work in the United States in violation of federal law, the Commission reserves the right to impose such contract sanctions as it may determine to be appropriate, including but not limited to contract cancellation, termination or suspension in whole or in part or both.
- 3) The Contractor shall include the provisions of this paragraph in every subcontract. The Contractor shall take such action with respect to any subcontract as the Commission may direct as a means of enforcing such provisions, including sanctions for noncompliance.

Preferences

- a. In the evaluation of bids/quotes, preferences shall be applied in accordance with 7 CSR 10-11.020(7). Contractors should apply the same preferences in selecting subcontractors. The attached document entitled "**VENDOR INFORMATION AND PREFERENCE CERTIFICATION FORM**" must be completed and returned with the solicitation documents.
- b. Bidders are encouraged to obtain minority business enterprise (MBE) and women business enterprise (WBE) participation in this work through the use of subcontractors, suppliers, joint ventures, or other arrangements that afford meaningful participation for M/WBEs. Bidders are encouraged to obtain 10% MBE and 5% WBE participation.

Missouri Highways and Transportation Commission
Standard Bid/Proposal Provisions, General Terms and Conditions and Special Terms and Conditions

Cancellation of Contract

The MHTC may cancel the Contract at any time for a material breach of contractual obligations or for convenience by providing Contractor with written notice of cancellation. Should the MHTC exercise its right to cancel the contract for such reasons, cancellation will become effective upon the date specified in the notice of cancellation sent to the Contractor.

Bankruptcy or Insolvency

Upon filing for any bankruptcy or insolvency proceeding by or against the Contractor, whether voluntarily, or upon the appointment of a receiver, trustee, or assignee, for the benefit of creditors, the Commission reserves the right and sole discretion to either cancel the Agreement or affirm the Agreement and hold the Contractor responsible for damages.

Warranty

The Contractor expressly warrants that all equipment, supplies, and/or services provided shall: (1) conform to each and every specification, drawing, sample or other description which was furnished to or adopted by the MHTC, (2) be fit and sufficient for the purpose expressed in the solicitation documents, (3) be merchantable, (4) be of good materials and workmanship, and (5) be free from defect.

Status of Independent Contractor

The Contractor represents itself to be an independent Contractor offering such services to the general public and shall not represent itself or its employees to be an employee of the MHTC. Therefore, the Contractor shall assume all legal and financial responsibility for taxes, FICA, employee fringe benefits, workers' compensation, employee insurance, minimum wage requirements, overtime, etc., and agrees to indemnify, save and hold the MHTC, its officers, agents and employees harmless from and against any and all losses (including attorney fees) and damage of any kind related to such matters.

Non-Waiver

If one of the parties agrees to waive its right to enforce any term of this Contract, that party does not waive its right to enforce such term at any other time or to enforce any or all other terms of this Contract.

Indemnification

The Contractor shall defend, indemnify and hold harmless MHTC, including its members and department employees, from any claim or liability whether based on a claim for damages to real or personal property or to a person for any matter relating to or arising out of the Contractor's performance of its obligations under the contract awarded pursuant to this solicitation.

SPECIAL TERMS AND CONDITIONS

Temporary Suspension of Work

- a. The **District Engineer** shall have authority to suspend work wholly or in part for such period or periods as may be deemed necessary when weather or other conditions are such that in the opinion of the engineer, the work may be done at a later time with advantage to MoDOT or for failure on the part of the Contractor to comply with any of the provisions of the Contract.
- b. If MoDOT suspends the work for its own advantages and not because of the Contractor's failure to comply with the Contract, the Contractor will be allowed an equal number of calendar days after the completion date for the completion of the work. MoDOT may at its discretion give the Contractor an extension of time for completing the work where the Contractor incurs delays for causes beyond his control.
- c. Normal rainfall is not considered a cause qualifying for an extension of time. Claim for extension of time for all causes must be submitted by the Contractor in writing within **30 Days** after the claimed cause for the delay has ceased to exist.

ATTACHMENT A

TRAFFIC CONTROLLER ASSEMBLY EQUIPMENT LIST

The following list shall be completed and returned with the bid. Equipment shall be agreed to and approved prior to the contract award. All delivered equipment shall be the products listed below.

<u>Item</u>	<u>Manufacturer</u>	<u>Catalog Number</u>
Cabinet and Rack Assembly	_____	_____
Type 170 Controller	_____	_____
Conflict Monitor	_____	_____
Load Switch	_____	_____
Flasher	_____	_____
Flash Transfer Relay	_____	_____
Surge Protector	_____	_____
Model 222 Detector	_____	_____
Model 242 Isolator	_____	_____
252 Isolator Module	_____	_____
Dial-Up Modem (Provide spec sheet with bid)	_____	_____

Signed: _____ Title: _____ Date: _____

ATTACHMENT B

MISSOURI DEPARTMENT OF TRANSPORTATION

SPECIFICATIONS

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 Department Specifications shall govern.

Bids shall provide a certification that the equipment proposed is included on the most current QPL of CALTRANS and MoDOT Approved Products List. Exception: Department specific equipment, that is not defined in the CALTRANS specification is exempt from this QPL requirement.

Only items on the latest revision of the Missouri Department of Transportation Approved Products List for Traffic Signals and Highway Lighting Equipment will be accepted. The attached Traffic Controller Assembly Equipment List shall be completed and returned with the bids.

The additional requirements for the model 332 and the model 336S stretched or any other cabinet assemblies to be supplied by the bidder are as follows. Supplier must be approved for model 332 cabinet. All cabinets shall exhibit a "bare" aluminum finish and the Police door shall be made of the same finished material as the rest of the cabinet. 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 standard "M" base adapter attached to the cabinet 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.

ATTACHMENT B

All output field conductors shall be terminated in the cabinet on a one piece copper 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 neutral bar with set screws that allows the wires to be attached without tang or spade assemblies.

The output file shall be hand wired, no printed circuit boards shall be allowed except for red fail monitoring. The back of the load switch bay and the conflict monitor bay shall be enclosed to prevent any wires interfering with plugging in of components.

A 420 auxiliary output file shall be required when called for on the plans or if more than 12 load switches are required. This file shall meet the latest CALTRANS Specifications.

I and J input files shall be provided unless otherwise specified.

All cables shall be located and secured so that they do not interfere with the removal of the controller or the opening of the controller front panel.

A removable and replaceable furnace type fiberglass filter shall be housed behind the door vents. The filter filtration area shall cover the vent openings. A filter shell shall be provided that fits over the filter providing mechanical support for the filter. The shell shall be louvered to direct the incoming air downward.

A diagnostic cabinet test program complete with documentation will be provided for each 10 or less cabinets ordered.

PULL OUT DRAWER

A pull-out, 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. The pull-out 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 formica-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.

ATTACHMENT B

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 input file inputs shall be protected with a 30V MOV with (30 Joule rating). The output of all load switch outputs shall be protected with a 150V MOV (80 Joule Rating). The MOV's shall be connected from the AC positive field terminal to the chassis ground. The output MOV's shall be mounted on the field terminal side of the output assembly.

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. (Refer to MoDOT approved product list) 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.

ATTACHMENT B

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 #PCB1B or equivalent. If fiber or radio communications are specified these communications line protectors are not required.

CABINET ACCESSORIES

Model 222 Loop Detector Amplifiers. The loop detector amplifier units shall be as specified in the CALTRANS Specifications. The quantity of units shall be as described on the plans or traffic signal controller order form.

Model 242 D.C. Isolator. The D.C. isolators shall be the Model 242 as specified in the CALTRANS Specifications. A minimum of (1) shall be supplied. Additional quantities of units shall be needed for actuated pedestrian, preemption or as described on the plans or traffic signal controller order form.

Model 200 Load Switch. The load switch shall be the Model 200 as specified in the CALTRANS Specifications. The quantity of units shall be as described on the plans or traffic signal controller order form.

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 or traffic signal controller order form.

ATTACHMENT B

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. The quantity of units shall be as described on the plans or traffic signal controller order form.

Model SM 2400 Modem. The quantity of units shall be as described on the plans or traffic signal controller order form.

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 be located in the front of the cabinet and 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 170E's 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). The mounting of this cable or any switch shall not interfere in any way with the installation or removal of the controller. If the cable is mounted within the pull out drawer any hole that is drilled in the drawer shall be equipped with a rubber grommet to protect the cable and shall have enough slack to prevent binding of the cable.

MODEL 210 CONFLICT MONITOR

Each cabinet shall be supplied with a Model 210 Conflict Monitor as specified in the CALTRANS specification and addenda 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

ATTACHMENT B

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

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

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, CPU and modem if specified.

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.

ATTACHMENT B

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.

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.

EQUIPMENT TESTING

Controllers and cabinets purchased under this contract shall be tested for conformance to CALTRANS, "Traffic Signal Control Equipment Specifications" dated January 1989 and the latest addenda. Testing may be done by an independent laboratory if the manufacturer does not have sufficient facilities to carry out the testing. A copy of the test results for all equipment purchased shall be supplied by the manufacturer.

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.

ATTACHMENT B

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 interrupt of approximately 500 milliseconds.

Recovery from a long power interrupt 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.

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:

ATTACHMENT B

<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
22	Cabinet W/Auxiliary Output File
23	1 Aux G
24	1 Aux Y
25	3 Aux G
26	3 Aux Y
27	5 Aux G
28	5 Aux Y
29	6 Aux G
30	6 Aux Y
31	I14-W Stop Time
32	DC Ground
33	Monitor Reset
34	DC Ground
35	2 Aux G
36	2 Aux Y
	4 Aux G
	4 Aux Y

Connector cable shall utilize a 36 circuit polarized nylon Waldom Molex type receptacle (part number 03-06-1361) using 0.062" female terminals made of 70/30 spring tempered tin-plated brass 0.010" 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. A moisture proof cap shall be provided to prevent the accumulation of moisture on the plug terminals. This cap shall remain attached to the connector when the cable is in use.

170 Traffic Signal Controller Order Form

SW-Sprfld

DISTRICT 8 - SPRINGFIELD	COUNTY CHRISTIAN	DESIGNATION US	TRAVELWAY 160	CROSS STREET RT. EE	LOG MILE 0.00000
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SHIP TO:

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SIGNAL ID	170 SOFTWARE BITRAN	CONTROLLER TYPE ACTUATED	CABINET TYPE 332
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SYSTEM MASTER	INTERCONNECT TYPE NON-COORDINATED	CABINET DESCRIPTION
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<input type="checkbox"/> PHASE 1	# PED PHASES	<input type="text" value="0"/>
<input checked="" type="checkbox"/> PHASE 2	# OVERLAPS	<input type="text" value="0"/>
<input type="checkbox"/> PHASE 3	EXCLUSIVE PED PHASE	<input type="text" value="0"/>
<input checked="" type="checkbox"/> PHASE 4	# OF LOAD SWITCHES	<input type="text" value="4"/>
<input type="checkbox"/> PHASE 5		
<input checked="" type="checkbox"/> PHASE 6		
<input type="checkbox"/> PHASE 7		
<input checked="" type="checkbox"/> PHASE 8		

CONFLICT MONITOR TYPE

# OF STANDARD 2 CHANNEL CARD RACK DETECTORS	<input type="text" value="4"/>
# MODEL 242 DC ISOLATORS	<input type="text" value="1"/>
# MODEL 252 AC ISOLATORS	<input type="text" value="0"/>
# OF DELAY/EXTEND DETECTOR	<input type="text" value="0"/>

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

SW-Sprfld

DISTRICT 8 - SPRINGFIELD	COUNTY CHRISTIAN	DESIGNATION US	TRAVELWAY 160	CROSS STREET CST Kathryn/Aldersgate	LOG MILE 0.00000
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SHIP TO:

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SIGNAL ID 0	170 SOFTWARE BITRAN	CONTROLLER TYPE ACTUATED	CABINET TYPE 332 w/ AUX File
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SYSTEM MASTER 	INTERCONNECT TYPE RADIO CLOSED LOOP	CABINET DESCRIPTION Auxillary Output File required. Interconnect radio provided by others
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<input checked="" type="checkbox"/> PHASE 1	# PED PHASES	0
<input checked="" type="checkbox"/> PHASE 2	# OVERLAPS	0
<input checked="" type="checkbox"/> PHASE 3	EXCLUSIVE PED PHASE	0
<input checked="" type="checkbox"/> PHASE 4	# OF LOAD SWITCHES	8 ✓
<input checked="" type="checkbox"/> PHASE 5		
<input checked="" type="checkbox"/> PHASE 6		
<input checked="" type="checkbox"/> PHASE 7		
<input checked="" type="checkbox"/> PHASE 8		

CONFLICT MONITOR TYPE

210E

# OF STANDARD 2 CHANNEL CARD RACK DETECTORS	8
# MODEL 242 DC ISOLATORS	1
# MODEL 252 AC ISOLATORS	0
# OF DELAY/EXTEND DETECTOR	0

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT (NW-Springfield) COUNTY CHRISTIAN DESIGNATION MO TRAVELWAY 14 CROSS STREET RT. M/ CST Nicholas LOG MILE 0.00000
8 - SPRINGFIELD

SHIP TO:

SIGNAL ID 0 170 SOFTWARE BITRAN CONTROLLER TYPE ACTUATED CABINET TYPE 332 w/ AUX File

SYSTEM MASTER _____ INTERCONNECT TYPE RADIO CLOSED LOOP CABINET DESCRIPTION Auxillary Output File required. Interconnect radio provided by others.

- PHASE 1
- PHASE 2 # PED PHASES 0
- PHASE 3 # OVERLAPS 0
- PHASE 4 EXCLUSIVE PED PHASE 0
- PHASE 5
- PHASE 6 # OF LOAD SWITCHES 5
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 5

MODEL 242 DC ISOLATORS 1

MODEL 252 AC ISOLATORS 0

PRE-EMPT _____

PRE-EMPT INFORMATION _____

OF DELAY/EXTEND DETECTOR 0

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT 8 - SPRINGFIELD	COUNTY GREENE	DESIGNATION RT	TRAVELWAY D	CROSS STREET CST Ventura	LOG MILE 0.0000
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SHIP TO:

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SIGNAL ID 0	170 SOFTWARE BITRAN	CONTROLLER TYPE ACTUATED	CABINET TYPE 332
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SYSTEM MASTER	INTERCONNECT TYPE FIBER CLOSED LOOP	CABINET DESCRIPTION
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<input type="checkbox"/> PHASE 1	# PED PHASES	0
<input checked="" type="checkbox"/> PHASE 2	# OVERLAPS	0
<input type="checkbox"/> PHASE 3	EXCLUSIVE PED PHASE	0
<input checked="" type="checkbox"/> PHASE 4	# OF LOAD SWITCHES	4
<input type="checkbox"/> PHASE 5		
<input type="checkbox"/> PHASE 6		
<input type="checkbox"/> PHASE 7		
<input checked="" type="checkbox"/> PHASE 8		

CONFLICT MONITOR TYPE

210E

# OF STANDARD 2 CHANNEL CARD RACK DETECTORS	4
# MODEL 242 DC ISOLATORS	1
# MODEL 252 AC ISOLATORS	0
# OF DELAY/EXTEND DETECTOR	0

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT *(SW-Springfield)* COUNTY GREENE DESIGNATION RT TRAVELWAY D CROSS STREET CST Oak Grove LOG MILE 0.00000

SHIP TO:

SIGNAL ID 0 170 SOFTWARE BITRAN CONTROLLER TYPE ACTUATED CABINET TYPE 332

SYSTEM MASTER _____ INTERCONNECT TYPE FIBER CLOSED LOOP CABINET DESCRIPTION _____

- PHASE 1
 - PHASE 2
 - PHASE 3
 - PHASE 4
 - PHASE 5
 - PHASE 6
 - PHASE 7
 - PHASE 8
- # PED PHASES 0
- # OVERLAPS 0
- EXCLUSIVE PED PHASE 0
- # OF LOAD SWITCHES 5

CONFLICT MONITOR TYPE 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 5

MODEL 242 DC ISOLATORS 1

MODEL 252 AC ISOLATORS 1

OF DELAY/EXTEND DETECTOR 0

PRE-EMPT RR PRE-EMPT

PRE-EMPT INFORMATION
252 AC Isolator required for R/R pre-empt input.

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

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170 Traffic Signal Controller Order Form

DISTRICT 8 - SPRINGFIELD	COUNTY GREENE	DESIGNATION BU	TRAVELWAY 65	CROSS STREET CST Erie	LOG MILE 0.00000
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SHIP TO:

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SIGNAL ID 0	170 SOFTWARE BITRAN	CONTROLLER TYPE ACTUATED	CABINET TYPE 332 w/ AUX File
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SYSTEM MASTER	INTERCONNECT TYPE FIBER CLOSED LOOP	CABINET DESCRIPTION Auxillary Output File required.
---------------	--	--

- PHASE 1
 - PHASE 2
 - PHASE 3
 - PHASE 4
 - PHASE 5
 - PHASE 6
 - PHASE 7
 - PHASE 8
- # PED PHASES
- # OVERLAPS
- EXCLUSIVE PED PHASE
- # OF LOAD SWITCHES

CONFLICT MONITOR TYPE

OF STANDARD 2 CHANNEL CARD RACK DETECTORS

MODEL 242 DC ISOLATORS

MODEL 252 AC ISOLATORS

OF DELAY/EXTEND DETECTOR

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT 8 - SPRINGFIELD	COUNTY GREENE	DESIGNATION MO	TRAVELWAY 13	CROSS STREET CST Grand	LOG MILE 0.00000
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SHIP TO:

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SIGNAL ID 0	170 SOFTWARE BITRAN	CONTROLLER TYPE ACTUATED	CABINET TYPE 332 w/AUX File
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SYSTEM MASTER 	INTERCONNECT TYPE FIBER CLOSED LOOP	CABINET DESCRIPTION Auxillary Output File required.
-------------------	--	--

- PHASE 1 # PED PHASES
- PHASE 2 # OVERLAPS
- PHASE 3 EXCLUSIVE PED PHASE
- PHASE 4 # OF LOAD SWITCHES
- PHASE 5
- PHASE 6
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE

OF STANDARD 2 CHANNEL CARD RACK DETECTORS

MODEL 242 DC ISOLATORS

MODEL 252 AC ISOLATORS

OF DELAY/EXTEND DETECTOR

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT (SW-Springfield) COUNTY GREENE DESIGNATION MO TRAVELWAY 13 CROSS STREET CST Walnut LOG MILE 0.00000
8 - SPRINGFIELD

SHIP TO:

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SIGNAL ID 0 170 SOFTWARE BITRAN CONTROLLER TYPE ACTUATED CABINET TYPE 332 w/ AUX File

SYSTEM MASTER INTERCONNECT TYPE FIBER CLOSED LOOP CABINET DESCRIPTION Auxillary Output File required.

- PHASE 1 # PED PHASES 0
- PHASE 2
- PHASE 3 # OVERLAPS 0
- PHASE 4 EXCLUSIVE PED PHASE 0
- PHASE 5
- PHASE 6 # OF LOAD SWITCHES 6
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 6

MODEL 242 DC ISOLATORS 1

MODEL 252 AC ISOLATORS 1

OF DELAY/EXTEND DETECTOR 0

PRE-EMPT RR PRE-EMPT

PRE-EMPT INFORMATION 252 AC Isolator required for R/R pre-empt input.

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT (94- <i>Springfld</i>)	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
8 - SPRINGFIELD	GREENE	LP	44	CST Evergreen	0.00000

SHIP TO:

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SIGNAL ID	170 SOFTWARE	CONTROLLER TYPE	CABINET TYPE
0	BITRAN	ACTUATED	332 w/ AUX File

SYSTEM MASTER	INTERCONNECT TYPE	CABINET DESCRIPTION
	FIBER CLOSED LOOP	Auxillary Output File required.

- PHASE 1
 - PHASE 2
 - PHASE 3
 - PHASE 4
 - PHASE 5
 - PHASE 6
 - PHASE 7
 - PHASE 8
- # PED PHASES
- # OVERLAPS
- EXCLUSIVE PED PHASE
- # OF LOAD SWITCHES

CONFLICT MONITOR TYPE

OF STANDARD 2 CHANNEL CARD RACK DETECTORS

MODEL 242 DC ISOLATORS

MODEL 252 AC ISOLATORS

OF DELAY/EXTEND DETECTOR

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

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170 Traffic Signal Controller Order Form

DISTRICT (Syl-Springfld) COUNTY GREENE DESIGNATION RT TRAVELWAY M CROSS STREET RT. FF LOG MILE 0.00000
8 - SPRINGFIELD

SHIP TO:

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SIGNAL ID 0 170 SOFTWARE BITRAN CONTROLLER TYPE ACTUATED CABINET TYPE 332 w/ AUX File

SYSTEM MASTER INTERCONNECT TYPE NON-COORDINATED CABINET DESCRIPTION Auxillary Output File required.

- PHASE 1 # PED PHASES 0
- PHASE 2 # OVERLAPS 0
- PHASE 3 EXCLUSIVE PED PHASE 0
- PHASE 4 # OF LOAD SWITCHES 8
- PHASE 5
- PHASE 6
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 8

MODEL 242 DC ISOLATORS 1

MODEL 252 AC ISOLATORS 0

OF DELAY/EXTEND DETECTOR 0

PRE-EMPT
 PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

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170 Traffic Signal Controller Order Form

DISTRICT *(Pw-SprngAld)* COUNTY DESIGNATION TRAVELWAY CROSS STREET LOG MILE
 8 - SPRINGFIELD GREENE MO 13 CST Norton 0.00000

SHIP TO:

SIGNAL ID 170 SOFTWARE CONTROLLER TYPE CABINET TYPE
 0 BITRAN ACTUATED 332

SYSTEM MASTER INTERCONNECT TYPE CABINET DESCRIPTION
 _____ FIBER CLOSED LOOP Existing video detection will remain.

- PHASE 1 # PED PHASES 0
- PHASE 2 # OVERLAPS 0
- PHASE 3 EXCLUSIVE PED PHASE 0
- PHASE 4 # OF LOAD SWITCHES 8
- PHASE 5
- PHASE 6
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE
 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 0

MODEL 242 DC ISOLATORS 1

MODEL 252 AC ISOLATORS 0

OF DELAY/EXTEND DETECTOR 0

PRE-EMPT

 PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

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170 Traffic Signal Controller Order Form

DISTRICT (S.W. Springfield) COUNTY GREENE DESIGNATION BU TRAVELWAY 65 CROSS STREET CST Battlefield LOG MILE 0.0000
8 - SPRINGFIELD

SHIP TO:

SIGNAL ID 0 170 SOFTWARE BITRAN CONTROLLER TYPE ACTUATED CABINET TYPE 332

SYSTEM MASTER ADDITIONAL FIELD MASTER INTERCONNECT TYPE FIBER CLOSED LOOP CABINET DESCRIPTION Additional 170E required. Cabinet is BiTRAN Field Master location. Existing video detection will remain.

- PHASE 1 # PED PHASES 4
- PHASE 2
- PHASE 3 # OVERLAPS 0
- PHASE 4 EXCLUSIVE PED PHASE 0
- PHASE 5
- PHASE 6 # OF LOAD SWITCHES 12
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 0

MODEL 242 DC ISOLATORS 3

MODEL 252 AC ISOLATORS 0

OF DELAY/EXTEND DETECTOR 0

PRE-EMPT _____

PRE-EMPT INFORMATION _____

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

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170 Traffic Signal Controller Order Form

DISTRICT 8 - SPRINGFIELD	COUNTY GREENE	DESIGNATION RT	TRAVELWAY D	CROSS STREET CST Plaza	LOG MILE 0.00000
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SHIP TO:

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SIGNAL ID 0	170 SOFTWARE BITRAN	CONTROLLER TYPE ACTUATED	CABINET TYPE 332
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SYSTEM MASTER 	INTERCONNECT TYPE FIBER CLOSED LOOP	CABINET DESCRIPTION
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- PHASE 1
 - PHASE 2
 - PHASE 3
 - PHASE 4
 - PHASE 5
 - PHASE 6
 - PHASE 7
 - PHASE 8
- # PED PHASES: 0
- # OVERLAPS: 0
- EXCLUSIVE PED PHASE: 0
- # OF LOAD SWITCHES: 6

CONFLICT MONITOR TYPE
210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS: 6

MODEL 242 DC ISOLATORS: 1

MODEL 252 AC ISOLATORS: 0

OF DELAY/EXTEND DETECTOR: 0

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No partial shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT SW-Springfield COUNTY GREENE DESIGNATION MO TRAVELWAY 13 CROSS STREET MO 413/ Sunshine LOG MILE 0.00000
8 - SPRINGFIELD

SHIP TO:

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SIGNAL ID 0 170 SOFTWARE BITRAN CONTROLLER TYPE ACTUATED CABINET TYPE 332

SYSTEM MASTER INTERCONNECT TYPE FIBER CLOSED LOOP CABINET DESCRIPTION Existing video detection will remain.

- PHASE 1 # PED PHASES 4
- PHASE 2
- PHASE 3 # OVERLAPS 0
- PHASE 4 EXCLUSIVE PED PHASE 0
- PHASE 5
- PHASE 6 # OF LOAD SWITCHES 12
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 0
 # MODEL 242 DC ISOLATORS 3
 # MODEL 252 AC ISOLATORS 0
 # OF DELAY/EXTEND DETECTOR 0

PRE-EMPT
 PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

Go To Next Record



Go to Previous Record



Add a New Record



Close File



170 Traffic Signal Controller Order Form

DISTRICT 8 - SPRINGFIELD	COUNTY GREENE	DESIGNATION US	TRAVELWAY 160	CROSS STREET RT. AB	LOG MILE 0.00000
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SHIP TO:

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SIGNAL ID 0	170 SOFTWARE BITRAN	CONTROLLER TYPE ACTUATED	CABINET TYPE 332 w/AUX File
----------------	------------------------	-----------------------------	--------------------------------

SYSTEM MASTER	INTERCONNECT TYPE RADIO CLOSED LOOP	CABINET DESCRIPTION Auxillary Output File required. Interconnect radio provided by others.
---------------	--	--

<input checked="" type="checkbox"/> PHASE 1	# PED PHASES	1
<input checked="" type="checkbox"/> PHASE 2		
<input checked="" type="checkbox"/> PHASE 3	# OVERLAPS	0
<input checked="" type="checkbox"/> PHASE 4		
<input checked="" type="checkbox"/> PHASE 5	EXCLUSIVE PED PHASE	0
<input checked="" type="checkbox"/> PHASE 6	# OF LOAD SWITCHES	9
<input checked="" type="checkbox"/> PHASE 7		
<input checked="" type="checkbox"/> PHASE 8		

CONFLICT MONITOR TYPE

210E

# OF STANDARD 2 CHANNEL CARD RACK DETECTORS	8
# MODEL 242 DC ISOLATORS	3
# MODEL 252 AC ISOLATORS	0
# OF DELAY/EXTEND DETECTOR	0

PRE-EMPT

FIRE STATION PRE-EMPT

PRE-EMPT INFORMATION

242 D.C. Isolator provides pre-emption input - already included in 242 total.

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT (SW- Springfield) COUNTY DESIGNATION TRAVELWAY CROSS STREET LOG MILE
 8 - SPRINGFIELD GREENE MO 413 CST Scenic 0.00000

SHIP TO:

SIGNAL ID 170 SOFTWARE CONTROLLER TYPE CABINET TYPE
 0 BITRAN ACTUATED 336S

SYSTEM MASTER INTERCONNECT TYPE CABINET DESCRIPTION
 _____ FIBER CLOSED LOOP _____

- PHASE 1 # PED PHASES 0
- PHASE 2
- PHASE 3 # OVERLAPS 0
- PHASE 4 EXCLUSIVE PED PHASE 0
- PHASE 5
- PHASE 6 # OF LOAD SWITCHES 8
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE
 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 8

MODEL 242 DC ISOLATORS 1

MODEL 252 AC ISOLATORS 0

PRE-EMPT

PRE-EMPT INFORMATION

OF DELAY/EXTEND DETECTOR 0

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

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Add a New Record



Close File



170 Traffic Signal Controller Order Form

DISTRICT (Sw-Sprngfld)	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
8 - SPRINGFIELD	POLK	MO	83	Wal-Mart	0.00000

SHIP TO:

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SIGNAL ID	170 SOFTWARE	CONTROLLER TYPE	CABINET TYPE
0	BITRAN	ACTUATED	332

SYSTEM MASTER	INTERCONNECT TYPE	CABINET DESCRIPTION
	RADIO CLOSED LOOP	Interconnect radio provided by others.

<input type="checkbox"/> PHASE 1	# PED PHASES	0
<input checked="" type="checkbox"/> PHASE 2	# OVERLAPS	0
<input type="checkbox"/> PHASE 3	EXCLUSIVE PED PHASE	0
<input checked="" type="checkbox"/> PHASE 4	# OF LOAD SWITCHES	4
<input type="checkbox"/> PHASE 5		
<input checked="" type="checkbox"/> PHASE 6		
<input type="checkbox"/> PHASE 7		
<input checked="" type="checkbox"/> PHASE 8		

CONFLICT MONITOR TYPE

210E

# OF STANDARD 2 CHANNEL CARD RACK DETECTORS	4
# MODEL 242 DC ISOLATORS	1
# MODEL 252 AC ISOLATORS	0
# OF DELAY/EXTEND DETECTOR	0

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT 8 - SPRINGFIELD	COUNTY <i>(Sw. Springfield)</i> STONE	DESIGNATION MO	TRAVELWAY 13	CROSS STREET CST Kissee	LOG MILE 0.00000
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SHIP TO:

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SIGNAL ID 0	170 SOFTWARE BITRAN	CONTROLLER TYPE ACTUATED	CABINET TYPE 332 w/AUX File
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SYSTEM MASTER 	INTERCONNECT TYPE NON-COORDINATED	CABINET DESCRIPTION Auxillary Output File required.
-------------------	--------------------------------------	--

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5
- PHASE 6
- PHASE 7
- PHASE 8

PED PHASES

OVERLAPS

EXCLUSIVE PED PHASE

OF LOAD SWITCHES

CONFLICT MONITOR TYPE

OF STANDARD 2 CHANNEL CARD RACK DETECTORS

MODEL 242 DC ISOLATORS

MODEL 252 AC ISOLATORS

OF DELAY/EXTEND DETECTOR

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

Go To Next Record



Go to Previous Record



Add a New Record



Close File



170 Traffic Signal Controller Order Form

DISTRICT (SW - Springfield) COUNTY TANEY DESIGNATION MO TRAVELWAY 248 CROSS STREET CST Shepherd Hills Expwy. LOG MILE 0.00000
8 - SPRINGFIELD

SHIP TO: _____

SIGNAL ID 0 170 SOFTWARE BITRAN CONTROLLER TYPE ACTUATED CABINET TYPE 332 w/AUX File

SYSTEM MASTER _____ INTERCONNECT TYPE NON-COORDINATED CABINET DESCRIPTION Auxillary Output File required.

- PHASE 1 # PED PHASES 0
- PHASE 2 # OVERLAPS 0
- PHASE 3 EXCLUSIVE PED PHASE 0
- PHASE 4 # OF LOAD SWITCHES 8
- PHASE 5
- PHASE 6
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 8

MODEL 242 DC ISOLATORS 1

MODEL 252 AC ISOLATORS 0

OF DELAY/EXTEND DETECTOR 0

PRE-EMPT _____

PRE-EMPT INFORMATION _____

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT 8 - SPRINGFIELD	COUNTY TANEY	DESIGNATION MO	TRAVELWAY 248	CROSS STREET CST Gretna/Pirate Dr.	LOG MILE 0.00000
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SHIP TO:

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SIGNAL ID 0	170 SOFTWARE BITRAN	CONTROLLER TYPE ACTUATED	CABINET TYPE 332
----------------	------------------------	-----------------------------	---------------------

SYSTEM MASTER	INTERCONNECT TYPE NON-COORDINATED	CABINET DESCRIPTION
---------------	--------------------------------------	---------------------

<input checked="" type="checkbox"/> PHASE 1	# PED PHASES	0
<input checked="" type="checkbox"/> PHASE 2		
<input checked="" type="checkbox"/> PHASE 3	# OVERLAPS	0
<input checked="" type="checkbox"/> PHASE 4		
<input checked="" type="checkbox"/> PHASE 5	EXCLUSIVE PED PHASE	0
<input checked="" type="checkbox"/> PHASE 6	# OF LOAD SWITCHES	8
<input checked="" type="checkbox"/> PHASE 7		
<input checked="" type="checkbox"/> PHASE 8		

CONFLICT MONITOR TYPE

210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 8

MODEL 242 DC ISOLATORS 1

MODEL 252 AC ISOLATORS 0

OF DELAY/EXTEND DETECTOR 0

PRE-EMPT

PRE-EMPT INFORMATION

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

170 Traffic Signal Controller Order Form

DISTRICT (NW-Springfield) COUNTY TANEY DESIGNATION MO TRAVELWAY 76 CROSS STREET CST College LOG MILE 0.00000
8 - SPRINGFIELD

SHIP TO: _____

SIGNAL ID 0 170 SOFTWARE BITRAN CONTROLLER TYPE ACTUATED CABINET TYPE 336S

SYSTEM MASTER _____ INTERCONNECT TYPE NON-COORDINATED CABINET DESCRIPTION _____

- PHASE 1 # PED PHASES 0
- PHASE 2 # OVERLAPS 0
- PHASE 3 EXCLUSIVE PED PHASE 0
- PHASE 4 # OF LOAD SWITCHES 8
- PHASE 5
- PHASE 6
- PHASE 7
- PHASE 8

CONFLICT MONITOR TYPE 210E

OF STANDARD 2 CHANNEL CARD RACK DETECTORS 8

PRE-EMPT _____

PRE-EMPT INFORMATION _____

MODEL 242 DC ISOLATORS 1

MODEL 252 AC ISOLATORS 0

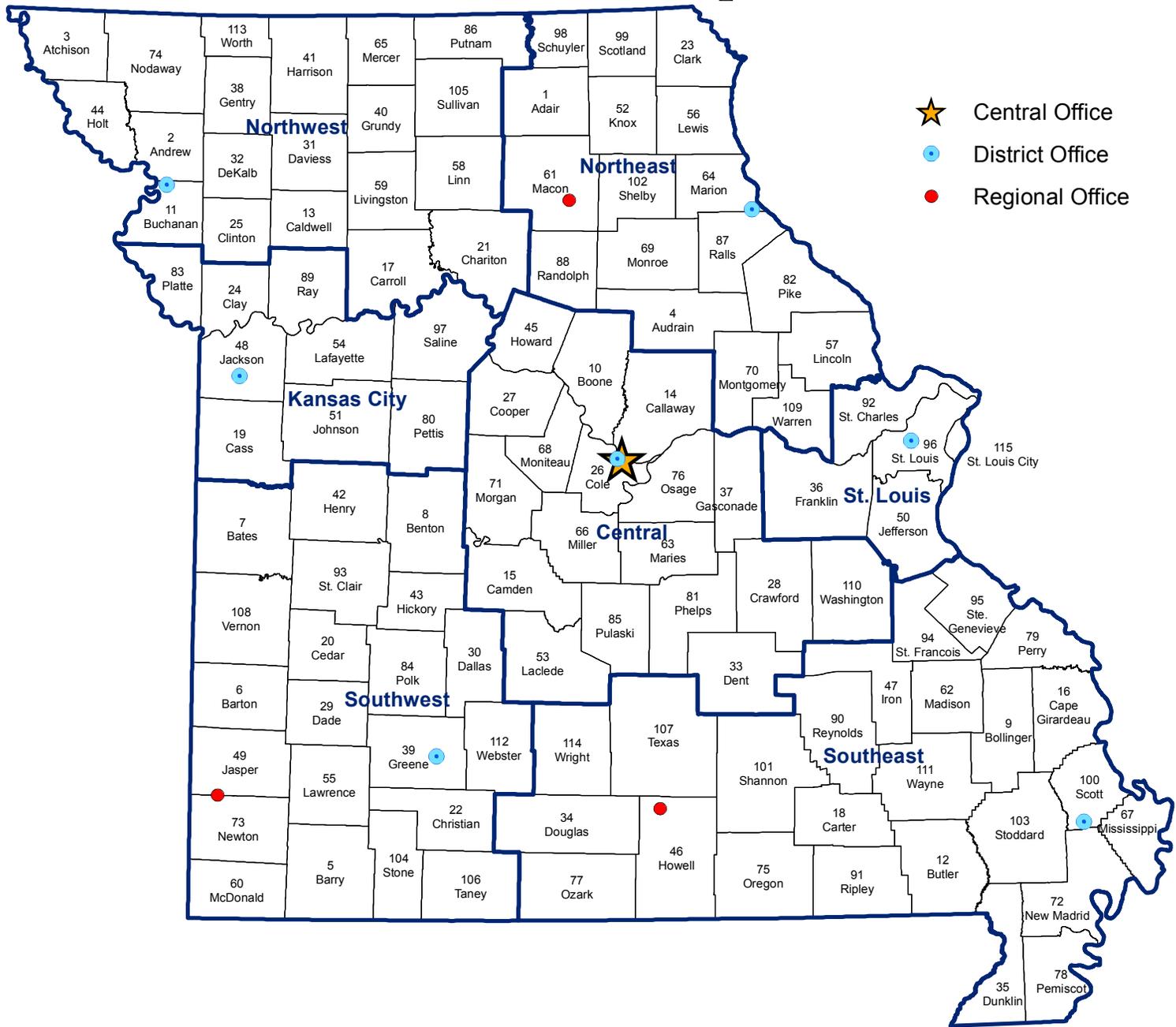
OF DELAY/EXTEND DETECTOR 0

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Order must be shipped COMPLETE with all specified components. No parital shipments accepted. One spare set of printed circuit boards for 170E controller required per MoDOT Standard Spec. 1092.4.2.1.

ALL CABINETS AND MODULES MUST BE ON THE MODOT APPROVED PRODUCTS LIST.

Missouri Department of Transportation District Map



County	No. Dist.	County	No. Dist.	County	No. Dist.	County	No. Dist.	County	No. Dist.	County	No. Dist.						
Adair	1	NE	Chariton	21	NW	Harrison	41	NW	Macon	61	NE	Phelps	81	C	Shannon	101	SE
Andrew	2	NW	Christian	22	SW	Henry	42	SW	Madison	62	SE	Pike	82	NE	Shelby	102	NE
Atchison	3	NW	Clark	23	NE	Hickory	43	SW	Maries	63	C	Platte	83	KC	Stoddard	103	SE
Audrian	4	NE	Clay	24	KC	Holt	44	NW	Marion	64	NE	Polk	84	SW	Stone	104	SW
Barry	5	SW	Clinton	25	NW	Howard	45	C	Mercer	65	NW	Pulaski	85	C	Sullivan	105	NW
Barton	6	SW	Cole	26	C	Howell	46	SE	Miller	66	C	Putnam	86	NW	Taney	106	SW
Bates	7	SW	Cooper	27	C	Iron	47	SE	Mississippi	67	SE	Ralls	87	NE	Texas	107	SE
Benton	8	SW	Crawford	28	C	Jackson	48	KC	Moniteau	68	C	Randolph	88	NE	Vernon	108	SW
Bollinger	9	SE	Dade	29	SW	Jasper	49	SW	Monroe	69	NE	Ray	89	KC	Warren	109	NE
Boone	10	C	Dallas	30	SW	Jefferson	50	SL	Montgomery	70	NE	Reynolds	90	SE	Washington	110	C
Buchanan	11	NW	Daviess	31	NW	Johnson	51	KC	Morgan	71	C	Ripley	91	SE	Wayne	111	SE
Butler	12	SE	Dekalb	32	NW	Knox	52	NE	New Madrid	72	SE	St. Charles	92	SL	Webster	112	SW
Caldwell	13	NW	Dent	33	C	Laclede	53	C	Newton	73	SW	St. Clair	93	SW	Worth	113	NW
Callaway	14	C	Douglas	34	SE	Lafayette	54	KC	Nodaway	74	NW	St. Francois	94	SE	Wright	114	SE
Camden	15	C	Dunklin	35	SE	Lawrence	55	SW	Oregon	75	SE	Ste. Genevieve	95	SE	St. Louis City	115	SL
Cape Girardeau	16	SE	Franklin	36	SL	Lewis	56	NE	Ozark	76	C	St. Louis	96	SL			
Carroll	17	NW	Gasconade	37	C	Lincoln	57	NE	Pemiscot	77	SE	Saline	97	KC			
Carter	18	SE	Gentry	38	NW	Linn	58	NW	Perry	78	SE	Schuyler	98	NE			
Cass	19	KC	Greene	39	SW	Livingston	59	NW	Stoddard	103	SE	Scotland	99	NE			
Cedar	20	SW	Grundey	40	NW	McDonald	60	SW	Pettis	80	KC	Scott	100	SE			

