



WILLIAM A. BELL, SR.
MAYOR

CITY OF BIRMINGHAM

FINANCE DEPARTMENT

PURCHASING DIVISION

P-100 CITY HALL
710 NORTH 20TH STREET
BIRMINGHAM, ALABAMA 35203-2227

TELEPHONE (205) 254-2265
FAX (205) 254-2484

December 29, 2014

J. THOMAS BARNETT, JR.
FINANCE DIRECTOR

RON NICKEL
PURCHASING AGENT

WILLIAM E. CAFFEE
ASSISTANT PURCHASING AGENT

INVITATION TO BID #15-06

Sealed bids for traffic signal controllers and related parts for a period of one (1) year and month to month thereafter upon mutual agreement of both parties for the City of Birmingham, will be received by the Purchasing Agent, P-100 First Floor City Hall, Birmingham, Alabama, until 2:00 p.m., January 23, 2015, at which time and place they will be publicly opened and read.

Bidder's wishing to bid can download the complete solicitation including the specifications and bid form via the internet at www.birminghamal.gov (go to the link titled **Bidding Opportunities**), or by visiting the Purchasing Office at the address shown above, or by calling (205) 254-2265, fax (205) 254-2484 and requesting a copy be mailed to you. Any addenda will be available on the internet. Bidder is responsible for checking the website for addenda until bid opening date. Addenda will be mailed to only those vendors who were provided a copy in person or by mail.

All quotations are to be F.O.B. Birmingham Alabama delivered.

It is required for any contract exceeding \$10,000.00 that the bidder submits with his bid either a certified check, a cashier's check, or a bid bond payable to the City of Birmingham in the amount of \$500.00. In order for any bid award to be considered that exceeds \$10,000.00, your bid must be accompanied by an acceptable bid bond or check. Bid bond checks will be returned to all unsuccessful bidders after the formal award is made and to the successful bidder after acceptance of award. Should the successful bidder fail to accept the award, the bid bond or check shall be forfeited.

The City follows a policy of nondiscrimination. No contractor with the City should discriminate on the basis of race, sex, religion, or national origin. Failure by the vendor to carry out these requirements is a material breach of its obligations, which may result in its termination or such other remedy as the City deems appropriate.

No bid may be withdrawn for a period of sixty (60) days after the date of the bid opening.

The City reserves the right to reject any or all bids submitted or part of any bid, and to waive any informalities.

Bids must be submitted in a sealed envelope marked, "**SEALED BID – TRAFFIC SIGNAL CONTROLLERS & RELATED PARTS - 2:00 P.M., 1-23-15**". Bids may be hand delivered to Room P-100 First Floor City Hall, Birmingham, Alabama, or mailed to City of Birmingham, P. O. Box 11295, Birmingham, Alabama 35202-1295. **(DO NOT MAIL BIDS TO ROOM P-100 FIRST FLOOR CITY HALL)**. However, bids sent by any express carrier (Federal Express, UPS, Airborne, etc.) must be mailed to 710 North 20th Street, 35203 and specify delivery to P-100 First Floor City Hall.

It is the bidder's responsibility to make sure that his bid is in the possession of the Purchasing Agent on or before 2:00 p.m., January 23, 2015. Bids received after this time will not be considered.


W. E. Caffee, Assistant Purchasing Agent

yc
Attachments
B.N. 1-11-15

SPECIFICATIONS FOR TRAFFIC SIGNAL CONTROLLERS AND RELATED PARTS FOR THE CITY OF BIRMINGHAM

GENERAL:

The City of Birmingham is seeking bids for the supply of traffic signal controllers and related parts. The complete cabinet and controller units (twisted pair and fiber optic configurations) and the 336-S cabinets only will be awarded as a single lot to the lowest responsive responsible bidder. The related parts pricing request will be awarded to the lowest responsive responsible bidder on an individual line item basis. Where a brand/maker for parts is specified, item must be that brand – no substitute. For purchase of personal property, the City's policy is to apply local preference option, as allowed by State of Alabama Code, Section 41-16-50, in determining the low bidder.

The proposed contract shall extend for a minimum time frame of one (1) year, with a month-to-month extensions thereafter, at the prices originally bid, upon mutual agreement of both parties. This extension phase is not to exceed twenty-four (24) months. Prior to the end of the initial contract year or during any extension phase of this contract, the successful bidder shall give the City an advanced thirty (30) days written notice if they wish to terminate the contract. During the extension phase of the contract should any product bid have a manufacturer's price increase which applies across the board to all sales of the product (ex: new price list published), the City shall allow the bidder to increase the bid price by the exact dollar amount of the manufacturer's price increase. Bidder must provide to the City printed documentation from the manufacturer of any such price increase at least thirty (30) days prior to implementing any increase in price. No increase in price shall be allowed during the first twelve (12) months of the contract. Should any product herein experience a manufacturer's price reduction during the contracted period, the City is to immediately receive the benefit of such reduction.

No bid may be withdrawn for a period of sixty (60) days after the date of the bid opening.

Failure to adhere to any or all terms, conditions and specifications as set forth in the contract may result in the immediate termination of the contract. Should termination occur, the holder of the contract may be declared a "non-responsible vendor". This declaration may result in the rejection of any future bids submitted by the vendor for a period of time to be determined by the City.

The City will issue purchase order(s) to the successful bidder for the goods and/or services (bid items) that are the subject of the bid. Unless otherwise agreed in a writing that is signed by both parties, the entire agreement between the City and the successful bidder concerning the bid items is comprised of the terms, conditions, specifications and requirements stated in (a) the contemplated purchase order(s), (b) this Invitation to Bid and Specifications and (c) your bid (collectively, the "Contract Requirements"). These writings supersede all former proposals, offers, negotiations, representations or agreements, either written or oral, concerning the provision of vendor's goods and/or services. By acceptance of the City's purchase order(s), the successful vendor agrees to abide by and perform its responsibilities related to the bid items in compliance with the Contract Requirements.

Each bidder is to extend prices and provide a total for the bid being submitted. In order for any bid award to be considered that exceeds \$10,000.00 your bid must have been accompanied by an acceptable bid bond, certified check or cashier's check in the amount of \$500.00. Bid bond checks will be returned to all unsuccessful bidders after the formal award is made and to the successful bidder after acceptance of award. Should the successful bidder fail to accept the award, the bid bond or check shall be forfeited.

Successful bidder shall not assign this contract to any other party without prior written approval of the City of Birmingham. Contract shall not be assigned to an unsuccessful bidder who was rejected because he was not a responsive or responsible bidder.

The contract shall become effective from the date noted in the Notification of Award Letter, which will be mailed to the successful vendor.

The City reserves the right to cancel the contract, in whole or in part, and seek new bids at any time the city determines that the service, item(s) and/or product line(s) being supplied is/are failing to perform satisfactorily.

Any bid that imposes a service fee or any other type of fee on any order not exceeding a minimum order quantity or minimum purchase order dollar amount, will be determined a non-responsive bid and will not be considered for award.

Any bid that stipulates a reversal of freight charges if a minimum quantity or purchase order amount is not ordered, will be determined a non-responsive bid and will not be considered for award.

All bids submitted are to be F.O.B. Birmingham Alabama delivered. Deliveries are to be made Monday through Thursday, 7:00 a.m. to 4:00 p.m. – NO FRIDAY DELIVERIES WILL BE ACCEPTED.

The quantities on the Bid Form are **estimated annual usages for evaluation purposes only**. Merchandise shall be ordered as requirements dictate. The City reserves the right to purchase more or less than this quantity as conditions require, and no bidder shall attempt to hold the quantities shown as a firm quantity under this contract.

Should other traffic signal controllers or related items currently not shown on the bid form, be required during the life of the contract, the City reserves the right to seek verbal bids from only the responsive respondents of this Invitation To Bid, and to make an award of these additional items to the lowest responsive, responsible bidder (s) for the remaining life of this contract.

Bids may be solicited for products included in this contract where immediate/emergency need exists, including large quantities. The decision of the Purchasing Agent as to what constitute a biddable situation shall be final and shall not be construed as a breach of contract.

Contract award to purchase the materials covered in this bid document shall be construed under and governed by the laws of the State of Alabama and each party hereto irrevocably agrees to be subject to the jurisdictions of the courts of the State of Alabama.

The City's standard payment term is Net-30 Days from acceptance. Exception may be allowed for discounted early payment, such as 2%-10, Net 30 Days. The reference date for all such discounted early payment terms will be the date the invoice is received or the date the goods are received, whichever is later. In the event of a dispute the City's records shall prevail. **The City will not consider any bids requiring C.O.D. payments.**

Bidder (and its employees, agents and any subcontractors) shall not discriminate on the basis of race, color, national origin, or sex in the performance of the services contemplated hereunder. Failure by the bidder to carry out these requirements is a material breach of its obligations, which may result in its termination or such other remedy as the City deems appropriate.

Bidder acknowledges and agrees that, consistent with federal law and City's public policy, it will encourage disadvantaged business enterprise (DBE) participation to the extent permitted by law. A "disadvantaged business enterprise" is a for-profit small business concern (i) at least 51% owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51% of the stock is owned by one or more such individuals; and (ii) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it. In accordance with federal law, a "socially and economically disadvantaged individual" includes African-Americans, Hispanic Americans, Native American, Asian-Americans, women, and any additional groups designated as socially and economically disadvantaged by the federal Small Business Administration.

Successful bidder acknowledges and agrees that the City has the right to deduct from total amount of consideration to be paid, if any, to the successful bidder under this agreement all unpaid, delinquent, or overdue license fees, taxes, fines, penalties and other amounts due the City from the successful bidder.

Any potential vendor who is not currently set up as a vendor in the City of Birmingham vendor file will be required to submit a completed W-9 tax form prior to any award. The W-9 tax form may be submitted with your bid or no later than seven (7) working days of receipt of notice of intent to award.

The City of Birmingham must have a copy of the successful bidder's current City of Birmingham business license prior to formal award of contract. Each bidder may submit a copy of his/her license along with his/her bid. However, bidder must provide a copy of his/her current business license no later than seven (7) working days of receipt of notice of intent to award. Failure to submit the requested information will result in the notice of intent to award being revoked.

Successful Vendor (located in the State of Alabama or located outside of the State of Alabama, but employs one or more employees within the State of Alabama) represents and warrants that it does not knowingly employ, hire for employment, or continue to employ an "unauthorized alien", as defined by the Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No. 2011-535 (H.B.56) of the Alabama Legislature, as amended from time to time (the "Act") and that, during the performance of this contract, Vendor shall participate in the E-Verify program as required under the term of the Act. Vendor agrees to comply with all applicable provisions of the Act. As a condition for the award of any contract, Vendor shall provide documentation establishing that the Vendor is enrolled in the E-Verify program, or a signed, written statement that the Vendor does not have a presence (one or more employees) in the State of Alabama. Vendor may submit applicable documentation with his/her bid or no later than seven (7) working days of receipt of notice of intent to award.

Any questions concerning these specifications should be addressed to the Purchasing Division, Phone: (205) 254-2265 – Fax: (205) 254-2484 between the hours of 8:00 a.m. and 4:00 p.m., Monday through Friday.

ALABAMA DEPARTMENT OF TRANSPORTATION

DATE: October 29, 2007
SUBJECT: Furnishing Traffic Control Equipment
City of Birmingham, Alabama

Alabama Standard Specifications, Latest Edition, including all supplements, are hereby amended as follows:

SECTION 730 - FURNISHING TRAFFIC CONTROL EQUIPMENT

730.01 Description.

This Article (730.01) shall be deleted as written and the following substituted thereof:

730.01 Description.

(a) GENERAL

This Section shall cover the work of furnishing traffic control equipment in accordance with the provisions of this Section and in accordance with the plans. For the purpose of these Specification traffic control equipment will be classified as operational units or systems in accordance with the following:

Unit – One intersection operating independently of a system.

System- Intersections interconnected and operating in unison.

(b) DEFINITIONS

For the definition of equipment, words and terminology used in the furnishing of traffic control equipment, refer to the Manual of Uniform Traffic Control Devices (MUTCD), publications of the Institute of Transportation Engineers (ITE), and the current edition of the Transportation Electrical Equipment Specifications published by the State of California Department of Transportation (Caltrans).

730.02 Materials.

This Article (730.02) shall be amended as written to include the following additional paragraph:

All traffic control equipment shall be manufactured in accordance with the current edition of the Transportation Electrical Equipment Specifications (TEES), published by the State of California Department of Transportation (Caltrans), dated August 16th, 2002.

All equipment shall be complete. In case of conflict, the requirements of the Special Provision shall govern.

SECTION 890- SIGNAL EQUIPMENT, MATERIALS AND SERVICES

890.01 General.

This Article (890.01) shall be amended by deleting the first paragraph under CODES, PERMITS, AND INSPECTIONS and substitute the following in lieu thereof:

All installations shall comply with the regulations of the latest edition of the national Electrical Code and the latest edition of the National Electrical Safety Code, and with the service rules of the Utility Company providing the electricity.

This Article (890.01) shall be further amended by deleting the second paragraph under "MATERIAL AND EQUIPMENT LISTS, SHOP DRAWING AND APPROVAL" and substitute the following in lieu thereof:

Submissions shall be clear, complete and in quadruplicate. Material and equipment lists shall include catalog cutouts or published data sheets and a completed Material Submittal form as provided by the Engineer. Shop drawings may be submitted on 8½" x 11" letter size sheets or multiples thereof. Unacceptable submittal data will be returned for corrective action. A copy of the approved material and equipment listings along with approved shop drawings will be returned to the Contractor.

A list of recommended spare parts shall be provided by the Contractor and shall be included with the Material Submittal. This list shall include prices and all necessary ordering data for items such as diagnostic chips, extender boards, adapter, wrap around cables, as well as any and all replacement parts and components. The prices offered shall be good for a minimum of ninety (90) days.

This list shall include components for all equipment provided under this Contract and shall include:

- 170E Controller Unit
- Cabinet without controller
- Cabinet with controller
- Adapter to existing NEMA cabinet foundation

This Article (890.01) shall be further amended by the addition of the following to the fourth paragraph under "TESTING OF MATERIALS AND EQUIPMENT":

All traffic control equipment shall be manufactured and tested in accordance with Chapter 1 Section 8 of TEES, dated August 16th, 2002. The contractor, upon request, shall supply a copy of the test results to the Engineer. One complete cabinet with controller and all components shall be furnished for testing and approval. The Contractor shall arrange and pay for the return of the equipment. Additional cabinets, controllers, and components shall not be shipped prior to the approval of the first cabinet provided for testing. In addition to the equipment requirements stated above, the Model 400 Modem Module and Loop Vehicular Detectors shall meet the requirements above and shall go further to state:

Three Model 400 Modem Modules (of the same manufacturer, model, and revision being bid) shall be furnished for testing as stated in the Section "Model 400 Modem Module", at no cost. At the completion of the testing, the modems shall be returned.

Three Model 222 Loop Detector Modules (of the same manufacturer, model, and revision being bid) shall be provided for testing at no cost. At the completion of the testing, the unit shall be returned.

This Article (890.01) shall be further amended by addition the following paragraph under "AS BUILT DRAWINGS AND OPERATIONAL MANUALS":

Equipment provided under this contract shall include full documentation and shall be supplied by the Contractor to the City of Birmingham.

Two (2) paper copies and two (2) CD copies each of the following shall accompany the first five (5) units delivered; thereafter two (2) CD copies each per cabinet delivered.

- Controller Operations Manual
- Controller schematic diagrams and parts lists
- Cabinet wiring diagrams
 - Each diagram shall include but not be limited to the following details to be shown, as appropriate for the diagram:
 - All Cables and Harnesses (showing termination points, conductor gauge, and functions)
 - Input Files (Front and Rear Views)
 - Output Files (Front and Rear Views)

- Police Panel Switches
- Communications Termination Panel
- Service Panels
- Cabinet Lighting and Fan Details
- Door Open Switches
- All Surge Protection Devices
- Red Monitor Board
- Typical 336 Cabinet – Control & Power Distribution Line to Line Presentation
- Cabinet Layout
- PDA #2 Front and Rear View
- EDI 2010 ECL Conflict Monitor Program Detail
- EDI 2010 ECL Monitor Channel Assignments
- Input Panel Detail
- Sheet Definitions

In addition, full documentation, including schematic diagrams and parts lists, shall be furnished for all other components and items provided under this Contract.

890.02 Controllers.

This Article (890.02) shall be deleted as written and the following substituted in lieu thereof:

890.03 Controllers.

GENERAL.

A controller shall consist of a complete electrical mechanism for controlling the operations of traffic control signal, including timing mechanism and all necessary auxiliary equipment, mounted in a cabinet. The equipment shall include, but not limited to, 170E controller unit with Pedestrian features and time base coordination, Model 336S Cabinet, Model EDI 2010 ECL conflict Monitor or equal, and any other equipment for a fully functional controller. The following requirements apply to controllers to be furnished for use in the City of Birmingham's Centralized Traffic Signal Control System.

1. CABINET REQUIREMENTS.

(a) GENERAL.

The controller unit and associated equipment shall be furnished completely housed in a Model 336S (Stretch) Cabinet. **The Model 336S cabinet shall be based upon the Model 336A cabinet, in conformance as stated in Article 730.02 Materials of this special provision with the addition of an extended vertical cabinet dimension and the following amendments to the TEES.**

The Contractor shall coordinate the assignments of cabinet wiring and terminations as specified in these provisions with the developer of the local traffic controller software for this project. The existing software traffic software package is Wapiti W4IKS with Protocol-90. It shall be the responsibility of the contractor to ensure compatibility between the requirements of this specification and the software being used for the Birmingham system. The City of Birmingham shall furnish the software for this contract. It shall be the responsibility of the contractor to install the software at the direction of the City of Birmingham.

(1) Cabinet Dimensions

The 336S cabinet dimensions shall be approximately 1168 mm high x 616 mm wide x 514 mm deep (46" high x 24.25" wide x 20.25" deep). The interior rack assembly and all other components affected by the increased height of the cabinet enclosure shall be modified as required to provide the full functionality defined in the specifications for the standard Model 336A cabinet. The arrangement of components **shall be in accordance with Figure 1 and Picture 1**. As much space, as possible (with a minimum of 20 cm (7.8") vertical clearance shall be left in the bottom center of the cabinet for conduit entry.

(2) Interior Lighting & Fuses

There shall be two 457 mm (18-inch) fluorescent cabinet light fixtures installed in each cabinet at the top of the rack assembly, positioned so that the fixtures best illuminate the controls and terminals of the cabinet equipment. A protective shield to prevent accidental contact with the lamp tubes or the electrical wiring shall be provided for each fixture. Appropriately sized and rated fuses for the fixtures shall be provided. The lights shall be wired so that both are illuminated when either cabinet door is opened. All fuses shall be cabinet mounted. No inline fuses shall be allowed.

(3) Cabinet Door Open Switches

A bracket with one or more momentary contact, push button type switches shall be provided at the top right of the front cabinet door for the following functions:

- Provide a "Door Open" signal, when the door is open, wired within the cabinet to provide and input on the appropriate input of the controller unit.
- Cause the intersection to revert to flashing operation if the door is closed without a conflict monitor installed.
- Illuminate the fluorescent light fixtures when the door is open.

A bracket with one or more momentary contact, push button type switches shall be provided at the top left of the rear cabinet door for the following functions:

- To illuminate the fluorescent light fixtures when the door is open.
- To provide a "Door Open" signal, when the door is open, wired within the cabinet to provide an input on the appropriate input of the controller unit.
- All door switches shall be clearly labeled as to their function. **See Picture 3, 4, & 5.**

(4) Absence of Red Monitoring Circuitry

Each cabinet shall be provided with the necessary circuitry and harnesses to provide Absence of Red monitoring through the use of a modified Model 225 Monitor Unit or equal.

An Absence of Red Programming assembly shall be incorporated into the Output File.

There shall be a minimum of twelve easily accessible jumper plug attachment areas made of three male pins per position, one for each conflict monitor channel for each switchpack.

Jumper plugs for all positions shall be provided. Each jumper plug shall be a three position Molex type connector using crimped wire pins. There shall be installed in each jumper plug two female pin receptacles, one in the center position and one in an outer position, connected by a single insulated jumper wire. It shall be possible, by inserting and positioning each of the jumper plugs, to apply 120 VAC into each of the vehicular red signal inputs of the Model 225 Monitor Unit or equal via the Absence of Red monitoring connector.

The Absence of Red programming assembly shall be supplied with all jumper plugs installed so that channels 1 through 8 are programmed to allow actual red monitoring, while channels 9 through 12 are programmed to apply 120 VAC directly to the monitor.

In addition, there shall be furnished within each cabinet a Red Enable disconnect delay which controls the 120 VAC red enable signal into the 225 Model Monitor Unit or equal. During normal operation, the normally closed contacts of this relay shall supply 120 VAC into the Red Enable input of the monitor. When the controller program initiates a flashing output via the switchpack drivers, this Red Enable disconnect relay shall be energized and the 120 VAC shall be removed from the Red Enable input.

(5) AC Line Voltage Surge Protection

A hybrid type power line surge protection device, such as the EDCO Surrrestor SHA-1210, or equal, shall be furnished in each controller cabinet. The protector shall be installed between the applied line voltage and earth ground. The surge protector shall be capable of reducing the effects of transient voltages applied to

the AC line. The protector shall be mounted inside the PDA #2 (Power Distribution Assembly).

(6) Ventilation

The fan fuse shall be labeled. **See Picture 3 & 4.** Filters used within the cabinet shall be washable for continuous use. **See Picture 11.**

(7) Police Panel

In addition to the On-Off and Flash-Automatic switches defined in the Caltrans specifications, each cabinet shall be provided with a Manual Police Push Button and Manual/Auto switch, mounted within the Police Panel. The push button shall be a jack mounted type with a coiled rubber cord at least 1.2 m (4 feet) in length when extended. The switch shall be wired within the cabinet such that, when placed in the Manual position, "Advance Enable" shall be applied to the controller. The Advance Enable input shall cause the controller software to place Minimum Recall and Hold on all phases and Pedestrian Recall on all phases with pedestrian features activated. Activation of the push button shall apply an input to the "Advance" input of the controller, which shall advance the controller to the next interval, with advancement prohibited in the pedestrian clearance, yellow change, and red clearance timing intervals. The push button circuit shall be designed such that the Manual/Auto switch must be in the Manual position for the push button input to be received by the controller unit. The cover over the police panel, on the inside of the cabinet, shall be aluminum and protect the police panel on all sides.

A voice phone jack, (GC #30-9700, 6C modular flush wall jack or equal) shall be mounted within the police panel.

On cabinets designed for twisted pair communications, the jack shall be connected by a two conductor twisted pair cable to the voice pair terminations on the communications panel.

On cabinets designed for fiber optic communications, the jack shall be connected to a two conductor twisted pair cable. The cable shall be at least 600 millimeters (24 inches) in length and shall be coiled and secured for future use.

All switches and the voice jack shall be clearly and permanently labeled. **See Picture 10.**

(8) Storage Shelf

An aluminum shelf storage compartment shall be provided in the rack below the Input File. The maximum vertical dimension shall be approximately 44.5 mm (1.75 inches). The storage compartment will have telescoping drawer guides for full extension and a hinged lid for access to a document storage area. The compartment top shall have a non-slip plastic laminate attached. The shelf storage compartment shall easily retract into the rack and shall not lock or catch in the extended position. Included in, or immediately adjacent to, the storage shelf assembly, and easily accessible from the front of the cabinet shall be a connector (and harness) providing an extension of the controller unit's C40 connector, allowing the connection of the Controller Data Transfer and Storage Device (notebook computer) when placed on the storage shelf.

(9) Equipment Configuration and Inventory

Each Model 336S cabinet shall be provided with the following:

- Two (2), Model 204 solid-state flashers.
- One (1) Model 252 AC isolators.
- One (1) Model 242 DC isolators.
- Six (6) Model 200 solid-state switchpacks.
- Four (4) Model 430 flash transfer relays.
- Four (4) Model 222 two (2) channel loop detector sensor units.

(10) Input File

Each cabinet shall have a surge protection device panel located on the Input file as shown in **Figure 2 and Picture 8 & 9.** This panel shall be hinged so as to fold down for access to the back of the Input File.

This panel shall include the following surge protection devices:

- Sixteen (16) EDC SRA-6LC, or equal, surge protectors for the Model 222 vehicle loop detectors. **These shall be wired according to Figure 2.**
- Four (4) EDCO SRA64-030N, or equal, surge protectors for the Model 242 DC Isolator. **These shall be wired according to Figure 2.**

(11) Output File

The output file, including the conflict monitor slot assembly, shall be hard-wired, without the use of printed circuit boards, with the exception of the Absence of Red programming card. Each cabinet shall have thirty-six (36) HS4 150L20 MOVs, or equal, surge protectors wired to protect each circuit of each switchpack. These shall be mounted on the inside of the panel. The rear panel of the output file shall be hinged to allow it to swing down for access to the surge protectors.

All output field terminals shall be labeled by both phase and function.

(12) Special Wiring

Detector Reset output shall be generated by the controller on the appropriate controller unit output and shall be wired within the cabinet for proper operation.

(13) Flashing Operation Wiring

The cabinet wiring shall be configured to provide for the simultaneous flashing of all indications on any approach; outputs for phases 1, 2, 5, and 6 shall be on flash circuit one (1), and outputs for phases 3, 4, 7, and 8 shall be on flash circuit two (2). The Flash Transfer Relay sockets shall mate with Midtex type 136-62T3A3, 115 VAC relays.

The programming of flash color shall be accomplished by color coded Molex connectors. The Molex connectors shall be located in numerical phase order, with phase one on the right as viewed from the rear of the cabinet, and shall be clearly labeled as to phase designation. **See Picture 12.**

(14) Cabinet Mounting Hardware

The cabinets provided under this Contract shall be adaptable to pole-mounting, base mounting utilizing an adapter to existing NEMA cabinet foundations, and base mounting on new foundations designed for the cabinet. Each 336S cabinet shall be provided with pole mounting brackets, a bottom plate, and a bolt pattern that will allow maximum flexibility of mounting options given the different applications required. The pole mounting brackets shall be manufactured of aluminum or zinc plated steel in the shape and dimensions **shown in Figure 3.**

The cabinet bolt pattern and stiffener brackets **shall be as shown in Figure 4.** These stiffener brackets shall be on both sides of each cabinet. Each cabinet shall be furnished with a 127 mm wide x 162 mm high x 4.78 mm thick (5.0"W x 6.375"H x 0.188"T) bearing plate with the same bolt pattern as the pole stiffener bracket for vertical mounting.

The service panel and input panel shall be 380 mm (15 inches) high and mounted between the two stiffener brackets. This will allow access to the bolt holes located in the stiffener brackets without having to remove the rack assembly.

Note for Items (15) & (16): A separate bid price shall be provided for cabinets designed for Twisted Pair Communications and for cabinets designed for Fiber Optic Communications. **The bid for both a Twisted Pair Communications Cabinet with 170 Controller and a Fiber Optic Communications Cabinet with 170 Controller shall be awarded to the same company.** The award of the bid shall be based on the combined price for one cabinet designed for Twisted Pair communications and one cabinet designed for Fiber Optic Communications.

(15) Twisted Pair Communications Panel

Each Model 336S Cabinet **destined for use on the twisted pair cable network** shall be provided with a Communications Termination Panel, which provides a mounting location for communications cable termination blocks, over-voltage protection devices, and the termination points for the C2P harness and connector. **See Figure 5.** A shielded, multi-conductor cable assembly shall be provided within the cabinet for interconnecting the Communications Termination Panel with the C-2 connector of the Model 170E controller unit.

The panel shall be fabricated from 3.18 mm (0.125 inch) sheet aluminum and shall have the dimensions **shown in Figure 5.** The panel shall be drilled and tapped as necessary to mount the terminal blocks and other attachments described below as well as to mount the panel to the EIA rack within the cabinet. Sharp edges or burrs caused by the cutting or drilling process shall be removed. Corners shall be rounded with a 19 mm (0.75 inch) radius. The panel shall be mounted in the right rear of the cabinet (left side of the cabinet when viewed from the rear door). The panel shall be labeled at the top part of the terminal strips.

The Communications Cable Terminal Blocks (CTB-1) shall be quick-connected blocks consisting of 25 horizontal rows of six (6) clips per row, mounted in a molded self-extinguishing plastic case. These blocks, commonly referred to "66B Type" blocks, shall terminate 12 pairs of 20 through 24 AWG solid unstripped conductors. The blocks shall be equipped with integral fanning strips and an enclosed back to prevent grounding of clips to the panel. The block shall be mounted on the panel as shown in Figure 5.

The Active Pairs Termination Block (CTB-2) shall be a six position, dual screw, closed back barrier strip mounted on the Communications Termination Panel, as shown in Figure 5. The strip shall be rated at 15 amperes and shall be provided with 6 each 32 x ¼ inch nickel plated brass binder head screws.

And EDCO type PC 642C-200 suppressor (or equal) with mounting socket and a wiring harness to controller cabinet voice/phone jack shall be provided and mounted on the communications panel as **shown in Figure 5.**

An EDCO type PC 642C-008D suppressor or (equal) with mounting socket and C2 harness to controller data line inputs (transmit and receive) shall be provided and mounted on the communications panel as **shown in Figure 5.**

(16) Fiber Optic Communications Panel

Each Model 336S cabinet **destined for use on the fiber optic communications network** shall be provided with a fiber optic communications panel, which provides a mounting location for the Fiber Optic Transceiver and its related devices. The mounting location and the manner in which the panel is mounted shall be submitted to and approved by the City of Birmingham Traffic Engineer prior to manufacture of the units.

A shielded, multi-conductor cable assembly shall be provided within the cabinet for interconnecting the RS-232 port of the Fiber Optic Transceiver with the C-2 connector of the Model 170E controller unit.

A fiber optic patch panel for terminating a six-fiber (Single Mode) drop cable with ST type connectors shall be provided within the cabinet. The size of the patch panel and the installation location shall be proposed by the manufacturer and shall conform to these special provisions. The construction and testing of the fiber optic patch panel shall comply with all applicable Electronic Industry Standards (EIA/TIA), International Telegraph and Telephone Consultative Committee (CCOTT), ANSI, ASTM standards and FDDI specifications.

The patch panel shall consist of six Single Mode ST/ST couplers mounted on a flange, and shall be equipped with strain relief for the fiber optic cable. Four (4) jumper cables (also called patch cables) shall be provided and be compatible with single mode optical fiber. The length of the cable and the type of connectors on the patch cables shall be submitted to and approved by the City of Birmingham Traffic Engineer prior to shipment.

(17) Power Distribution Assembly

The PDA #2 shall be in conformance with Article 730.02 Materials of this Special Provision. Chapter 3 of the TEES shall be amended as written to include the following paragraph:

All cabinets shall be supplied with the most current PDA #2 Power Distribution Assembly. No printed circuit boards shall be utilized in this assembly with the exception of the Red-Enable program board. The AC Line Voltage lightning suppressor (EDCO SHA-1210) shall be located in PDA #2. The Equipment Line Out shall provide power to the controller, 24 VDC power supply, input file and conflict monitor through shielded cable or twisted pair to the units AC plus and AC minus inputs. Each Service Breakers on the PDA #2 shall be labeled as to the function of the switchpack that it is providing protection for as shown in Figure 11 and Picture 7.

(18) Electric Service Panel

The Electric Service Panel shall be in conformance with Article 730.02, Materials, of this Special Provision. The electric service terminal block (TBS) shall be mounted a minimum of 280 mm (11 inches) above the bottom of the cabinet. TB-1, TB-2, and TB-3 shall be labeled at the top part of the terminal strip. The (black) 120 VAC line shall be the outer most wire. The (white) Neutral line shall be the middle wire. The (copper) GND line shall be the inner most wire.

TYPE 170E CONTROLLER UNIT AND ACCESSORIES

GENERAL.

Each controller assembly shall be furnished with a Model 170E controller unit. The Model 170E controller unit shall be in conformance with Article 730.02, Materials, of this Special Provision, except for the following:

- (1) Chapter 2 of TEES Replaced to describe HC-11 CPU

This specification complies with the requirement in the current edition of the Transportation Electrical Equipment Specifications (TEES), published by the State of California Department of Transportation (Caltrans), dated August 16th, 2002, for the Model 170E enhanced Controller Unit and associated Model 412C and Model 172 Modules, with the exception that the 170 Controller/Unit and details related to the Model 170E/Model 412C Module are superseded by the following HC-11 CPU Specification. When conflicts arise between the specifications this HC-11 specification shall take precedence.

CHAPTER 2

SPECIFICATION FOR MODEL HC-11 CPU BOARD

SECTION 1 – GENERAL

2.1.1 The purpose of this specification is to define a replacement CPU board for the 6800 based CPU board in the standard 170 E controller.

2.1.2 The HC-11 based CPU Module shall operate a 68HC11F1 MPU to replace the existing 6800 MPU installed in the existing 170E CPU board. The MPU shall operate with a crystal frequency of 8MHz. The MPU chip shall be socket mounted in an AMP PLCC socket #821574-1 series HPT or equal.

2.1.3 The 6850 communication IC's shall be used and shall operate with a crystal frequency of 6.144MHz. There shall be four (4) chips (6850) with programmable jumpers to select 5 different communication baud rates per chip (1200, 2400, 4800, 9600, and 19200) for a total of 20 jumpers. There shall be no IRQ inhibits provided therefore all SCIA's shall be active. Programs should be written to initialize the four communications chips upon startup. An IRQ status register shall be provided as defined in the 170 E CALTRANS spec.

2.1.4 The EPROM and RAM shall be resident on the CPU board, and shall be socket mounted. The EPROM socket shall be a 32 pin ZIF force device. The RAM socket shall be a 28 pin Augat 282 series or equal.

2.1.4.1 Ram will continuous from locations \$0000 to 6FFF. RAM shall be a ZERO power device exclusively, and be a Dallas 1230 or equal.

2.1.4.2 When an optical RTC clock is required, the RAM shall be a DALLAS 1644 or equal. (Clock address shall be in the I/O map at location \$7FF8 to \$7FFF).

2.1.4.3 A jumper select shall be provided to switch locations \$6000 to \$6FFF from Internal to External for access to the remote Dual Port location. The status of the jumper position shall be read on the IRQ register – bit five (5).

When an enhanced Program Module is used with this system, it will only have access to addresses 6000/6FFF for dual-port.

2.1.4.4 The Prom chip shall be either a 32K x 8 or a 128K x 8 device, and be jumper selectable.

2.1.4.5 When using a 128K EPROM, a bank switch shall be enabled within the EPROM memory system. This bank switch shall function by moving to the upper 64K segment of the EPROM. The bank switch jumper controls address line A16. The bank shall be activated by a write to location \$7002 (directly connected to Port G on HC-11 MPU), which will cause memory to go to the upper 64K of the 128K EPROM. This will enable an extra 32K of EPROM memory via bank switching. The status of A16 will be read on the IRQ status register – bit six (6).

2.1.5 Feature and location switches shall be provided on the front portion of the CPU board. Each switch shall be an eight-position front reading dip switch. These switches shall be decoded as follows:

Features switch shall be addressed at \$700A – Port E

Location switches shall be addressed \$7000 – Port A

2.1.6 A header shall be provided near the front of the module for the SPI and serial interface pins.

2.1.7 There shall be one LED indicator located on the front of the CPU board that shall be controlled via a software output of Port G bit 3.

2.1.8 The +12VDC, +5VDC and +/-12VDC voltages input to the CPU board shall have transorb protection.

2.1.9 The system address organization of the HC-11 Module shall consist of two addressing configurations. The decoder shall be furnished in address 1.

2.1.9.1 The two addressing configurations shall be selectable by use of a three-post jumper. The following input line state conditions shall cause the Decoder to provide the associated address configuration. The jumper shall be labeled "INT" and "EXT".

CONFIGURATION	LINE	FUNCTION
1	INT	Address 6000-6FFF shall reside on the internal RAM
2	EXT	Address 6000-6FFF shall reside on the external Program Module

HC-11 BASED 170 MEMORY MAP

Configuration 1

LOCATION	BLOCK SIZE	FUNCTION	NOTES
0000-5FFF	24K	170 RAM	CPU BOARD RAM
6000-6FFF	4K	RAM	INT JUMPER POSITION *(See note below)
7000-73FF	1K	CONFIG REG+RAM	INITIATE IMMEDIATELY ON START UP
7400-75FF	512 BYTES	I/O	EXTERNAL I/O FUNCTIONS
7600-7FFF	2K	RAM	CPU BOARD RAM
8000-FFFF	32K	EPROM	CPU BOARD PROM MEMORY

DETAILED BLOCK ALLOCATION			
LOCATION	BLOCK SIZE	FUNCTION	NOTES
700A	1 BYTE	SWITCH	FEATURE SWITCH/HC11 PORT E
7000	1 BYTE	SWITCH	LOCATION SWITCH/HC11 PORT A
7002	1 BYTE	BANK SELECT	PROM BANK SWITCH SELECT HC11 PORT G-BIT 1
7002	1 BYTE	STATUS INDICATOR	HC 11 PORT G – BIT 3 1=ON
7000-705F	96 BYTES	CONFIG. REG.	68HC11 CONFIG REGISTRERS
7060-73FF	1K (-96)	RAM	68HC11 RAM
7400	1 BYTE	DTA MINUTES	I/O DTA READ MINUTES
740F	1 BYTE	DAT SECONDS	I/O DTA READ SECONDS
7401-740A	10 BYTES	I/O	I/O READ AND WRITE
7410-7417	8 BYTES	ACIA	SERIAL PORTS 1-4
7500-7507	8 BYTES	DPR	DUAL PORT SEMAPHORES
75FF	1 BYTE	IRQ/STAT	60 HZ. RESET AND IRQ STATUS
7600-7FFF	2K	RAM	CPU BOARD RAM
7FF8-7FFF	8 BYTES	RESERVED	RESERVED CLOCK/OPERATION CALENDAR

NOTE:

EXT JUMPER POSITION is CONFIGURATION #2 – Configuration #2 Redirects addresses 6000-6FFF to the Prom Module Slot.

(1) Module Orientation

To maintain the flow of ventilation vertically through the cabinet and controller unit, all modules within the controller unit shall be oriented on a vertical plane.

(2) Power Supply

The controller unit power supply shall be a linear power supply. Ferroresonant and switching power supplies shall be unacceptable. The power supply shall be a modular assembly within the controller unit, designed for ease of replacement. The connection of the power supply voltage to the controller unit motherboard shall be accomplished through an amply rated free floating connector with a positive lock and gold plated pins.

(3) Connector Requirements

ACIA (Asynchronous Communications Interface Adapter) Circuits

ACIA #4 shall be ported to the C40 connector located on the back of the 170E. The C40 connector shall be a DB9 connector, configured for an RS232 interface and compatible for providing communications with a laptop personal computer. Each ACIA port shall be separately addressable. Provisions to program the baud rate of each ACIA shall be provided.

(4) Connector C2 Socket Assignment (C20) (C30) (C40)

The C2 socket assignments (C20, C30, C40) shall be in conformance with Article 730.02, Materials, of this Special Provision. Chapter 2 Section of the TEES shall be amended to include the following:

Connectors C2, C20, and C30 shall have the following pin assignments:

- A. Audio in
- B. Audio in
- C. Audio out
- D. +5VDC
- E. Audio out
- F. -5VDC
- H. Carrier detect
- J. Request to send
- K. Data in (from ACIA)
- L. Data out (to ACIA)
- M. Clear to send
- N. DC ground
- P. +12VDC
- R. -12VDC

Connectors C40 shall have the following pin assignments:

- 1. Carrier detect
- 2. Data in
- 3. Data out
- 5. Ground
- 7. Request to send
- 8. Clear to send
- 9. +5 VDC

There shall be provided a 22 pin connector on the mother board to accept a second Model 400 modem within the controller chassis. This connector shall provide the means to interface a Model 400 modem to ACIA #2 and the C20 connector.

(5) Input/Output System

The controller unit's input/output system shall consist of one input module and one output module, each independently replaceable. The input module shall contain all circuitry to support the total 64 inputs

required. The output module shall contain all circuitry to support the 64 outputs required.

(6) Model 412C Program Module

The model 412D Program Module shall be in conformance with Article 730.02, Materials, of this special provision. Chapter 2 Section 4 of the TEES shall be amended as written to include the following:

- The module shall not read or write to address 000-0FFF and 5000-6FFF. All memory on the module shall be nonvolatile.

(7) Model 400 Modem Module

The modem shall be in conformance with Article 730.02, Materials, of this special provision. Chapter 2 Section 3 of the TEES shall be amended as written to include the following additional paragraph.

Each controller unit designated to have twisted pair communications shall be furnished with a Model 400 Modem Module. It shall be Revision F or newer. The modem shall have anti streaming capability. The modem shall be compatible with Wapiti W4IKS traffic software package with Protocol-90. The contractor shall supply three test modems for compatibility testing in conformance with Article 890.01 Paragraph 3.

(8) Monitor Unit

Each controller assembly shall furnished with a Model EDI 2010 ECL Conflict Monitor Unit or equal. The Monitor Unit shall be in conformance with Article 730.02, Materials, of this Special Provision. Chapter 3 Section of the TEES shall be amended as written to include the following additional paragraphs.

The unit shall be capable of monitoring and protecting against the absence of signal on any channel (Absence of Red monitoring). In addition, the unit shall provide the detection of and the protection against the following error conditions:

- Sensing of simultaneous active yellow and green inputs on a channel.
- Sensing of simultaneous active red and green inputs on a channel.
- Sensing of simultaneous active yellow and red inputs on a channel.

Absence of a 2.8 second period of an active yellow input on a channel during red to green to yellow to red sequence.

The above simultaneous channel input monitoring functions and sequence monitoring shall be enabled concurrently on a per channel basis via front panel accessible programming devices.

Should one of these conditions exist which triggers the unit, it shall cause the Output relay contacts to transfer and enable the Stop Time output to the controller. The unit shall remain in this state until it is reset by activation of the front panel control or the external reset input. An AC power interruption shall not reset the unit once it has been triggered. Upon restoration of AC power to the unit all display indicator shall return to their original state before the interruption.

When the AC+ line voltage is below the drop-out level of 93V RMS for 83msec (plus or minus 17msec) the unit shall suspend all fault monitoring functions, de-energize the Output relay, and enable the Stop Time output. The POWER indicator on the front panel shall blink to indicate the brown-out status. This condition shall be maintained for a minimum of four (4) seconds.

When the AC+ line voltage returns above the restore level of 98V RMS for 83 msec (plus or minus 17 msec) the monitor shall resume normal operation and energize the Output relay. The POWER indicator on the front panel will remain illuminated.

The unit shall have one AC Red Enable input and three DC Preemption inputs through the Red Interface

Cable to disable special functions of Red, Simultaneous Inputs Within a channel, and Sequence monitoring. If a reset command is received from either the front panel control or the External Reset input for a continuous duration of more than 120 seconds, the unit shall ignore the reset command and begin normal monitoring functions. During the reset period, all display indicators shall be illuminated.

All critical timing functions shall be accomplished by digital methods and shall utilize either the power line frequency or a quartz crystal based timer. All monitoring functions except Conflict monitoring shall have a dedicated timer unique to each channel being monitored.

The minimum display indicators required are as follows:

- Triggering of the Conflict monitoring portion of the unit.
- Triggering of the Absence of Red monitoring portion of the input.
- Triggering of the Sequence monitoring portion of the unit.
- Triggering of the Simultaneous Inputs In A Channel monitoring portion of the unit.
- Triggering of the Controller Watchdog monitoring portion of the unit. If the Controller Watchdog "muzzle" switch is enabled the indicator shall flash.
- Triggering of the +24VDC monitoring portion of the unit.
- Triggering of the Program Card monitoring portion or of the internal watchdog portion of the unit.
- Triggering of the AC Supply monitoring portion of the unit.
- Unit shall be programmable from IBM compatible lat-top or diode and enhanced cards.
- Unit shall be capable of storing at least 100 events.
- The unit shall have three indicators per channel which displays the following:
 - An active green, yellow, and red input on that channel during normal system operation. The channel indicator display shall latch when the Conflict monitoring portion of the unit triggers. If Red, Simultaneous Input, Sequence or conflict monitoring condition should occur which triggers the unit, only the channel indicator(s) in which the faulty display was present shall illuminate. Alphanumeric display for event information including time, date, temperature, and line voltage.

An AC+ power indicator shall be illuminated when AC+ line voltage is above 98V RMS and shall flash when AC+ power is below 93V RMS.

All units shall have a RS-485 jack on the front. All units supplied shall have a diode and enhanced card (if applicable) provided.

Each unit shall revert back to a standard 210 Monitor when the red cable (P20) is disconnected.

(9) Controller Adapter Unit

The controller adapter unit shall be bid as a separate bid item and will not be used in conjunction with the controller and cabinet bid to determine the lowest responsible bidder. See Figure 7 for the dimensions of the controller adapter unit. The adapter unit is used when replacing a NEMA controller cabinet with a 336S cabinet, on a pre-existing concrete pad.

890.03 Detectors and Associate Equipment

(c) TWO CHANNEL LOOP VEHICULAR DETECTORS.

This Subarticle (890.03(c)) shall be amended by deleting subarticle (c) as written and the following substituted in lieu thereof:

(c) TWO CHANNEL LOOP VEHICULAR DETECTORS.

Two channel loop detectors shall conform to the requirements for the Model 222 Two-Channel Loop Detector Sensor Units as specified in Article 730.02 Materials.

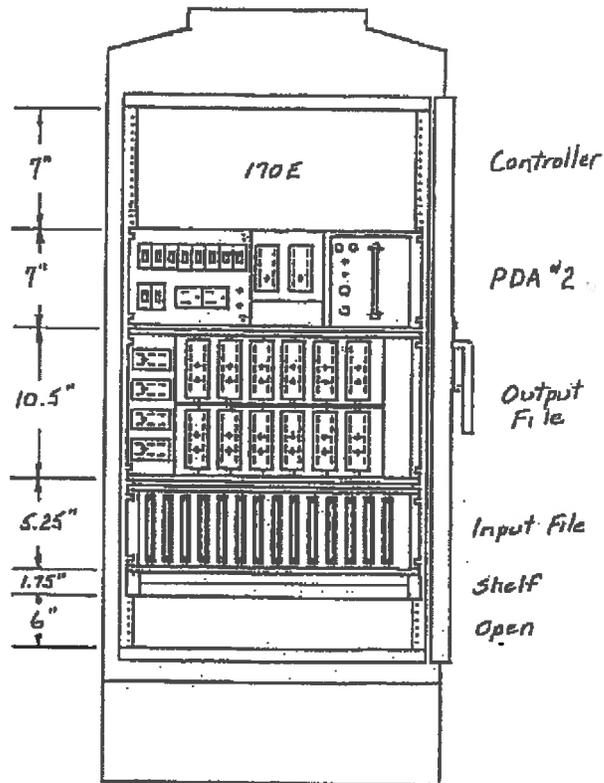


FIGURE 1
TYPE 336S CABINET

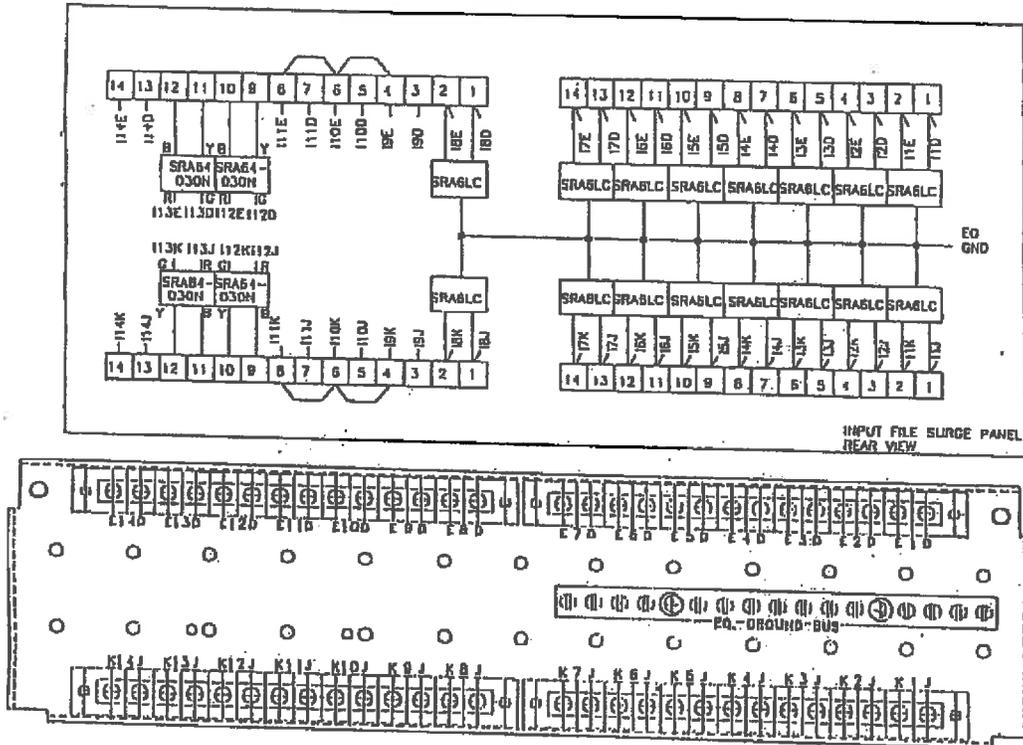


FIGURE 2
INPUT FILE SURGE PROTECTION PANEL

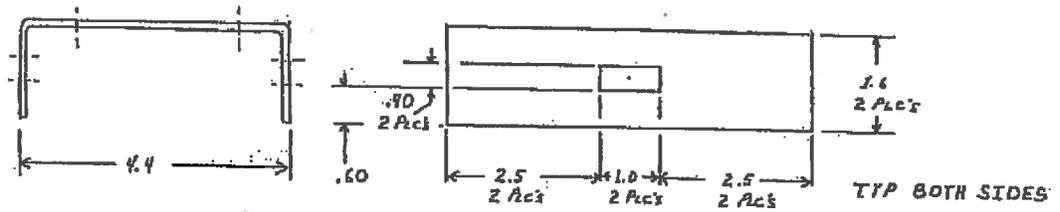
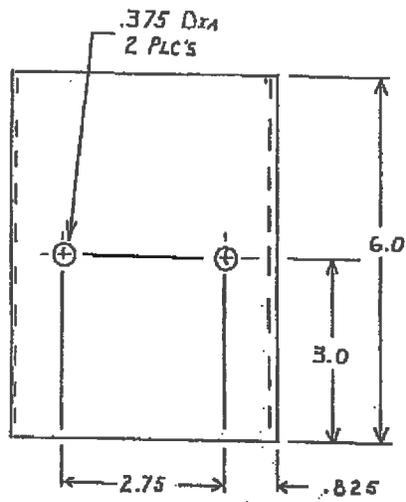


FIGURE 3
CABINET POLE MOUNTING BRACKETS

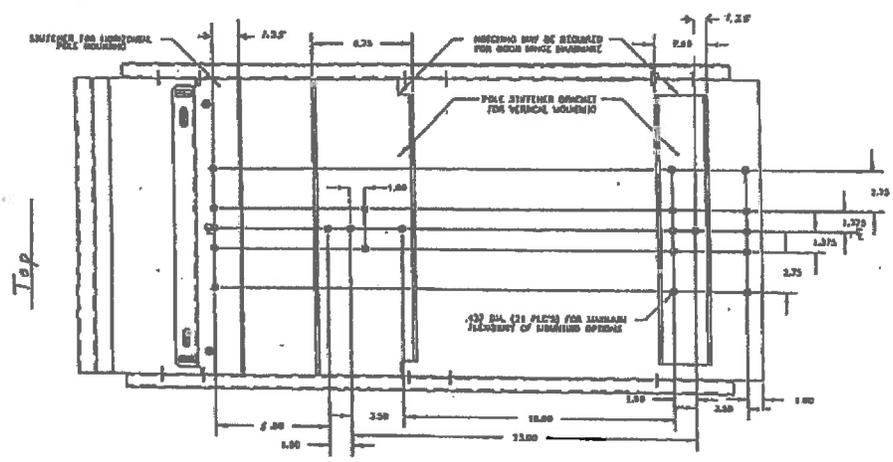


FIGURE 4
CABINET BOLT PATTERN AND STIFFENER BRACKETS

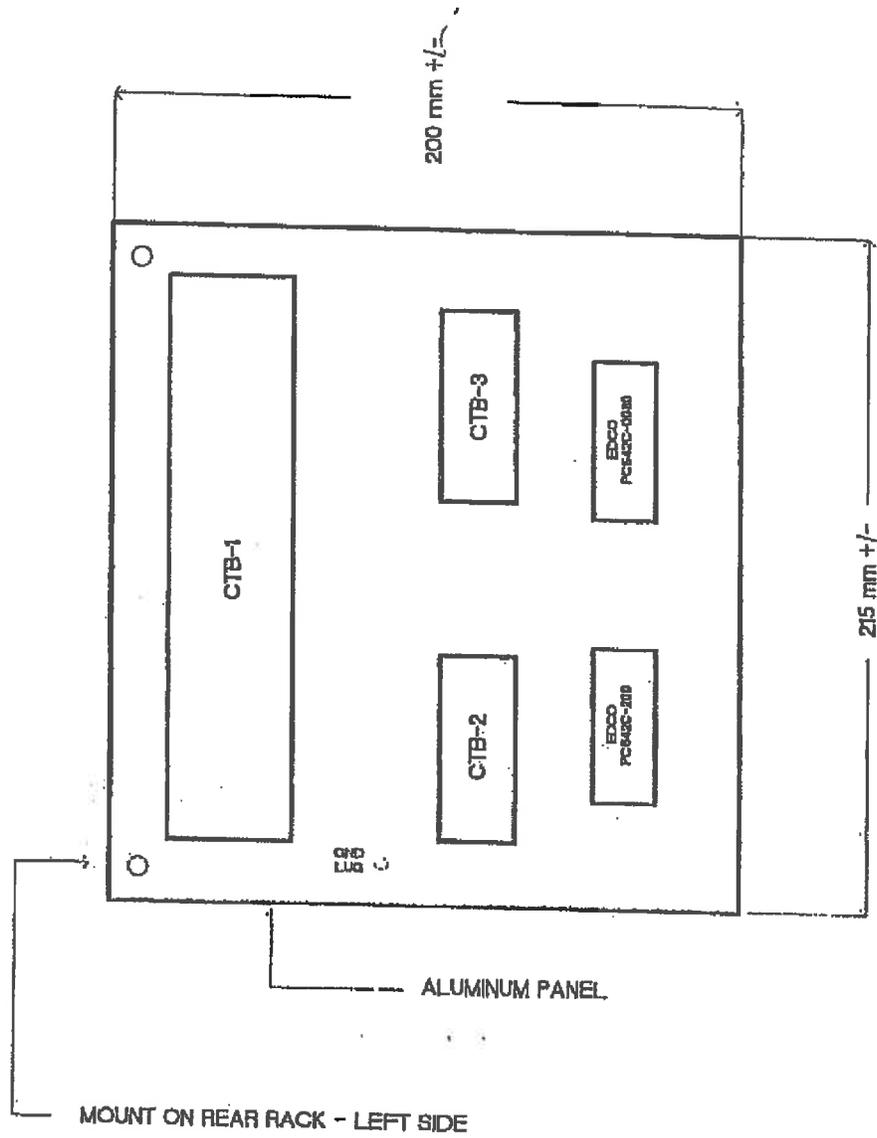


FIGURE 5
COMMUNICATIONS TERMINATION PANEL / TWISTED PAIR

Figure 6
Intentionally Deleted

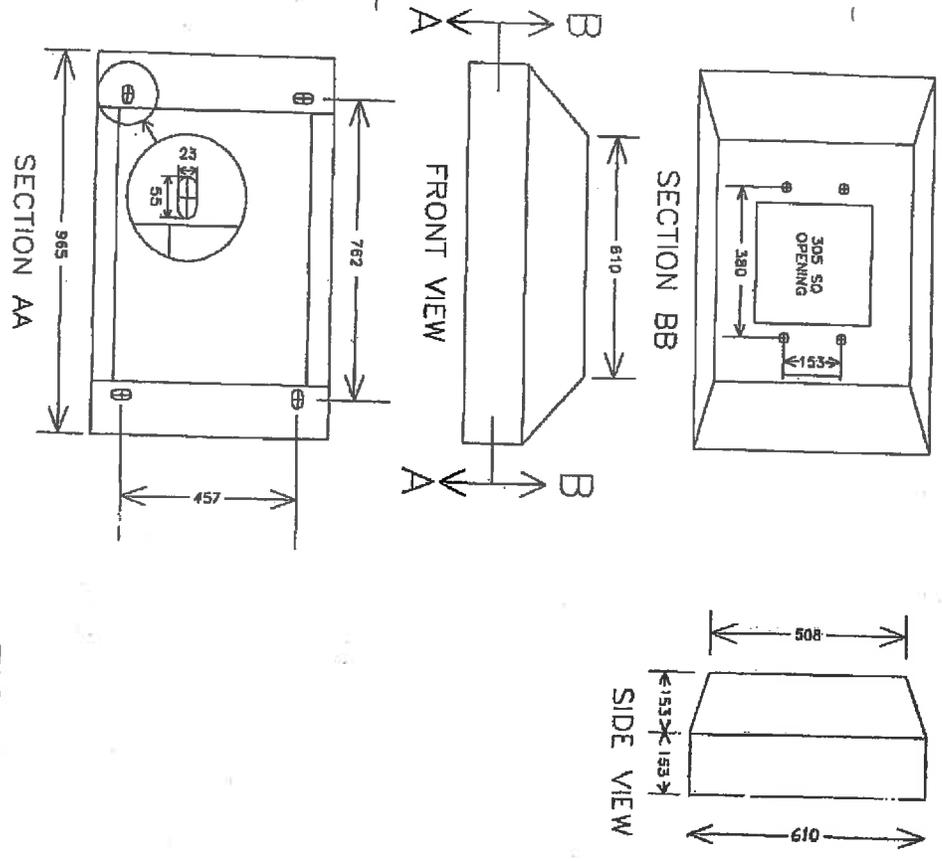


FIGURE 7
CABINET ADAPTER UNIT

COMPUTRAN SYSTEMS CORPORATION
ALL DIMENSIONS IN MILLIMETERS 6/26/97

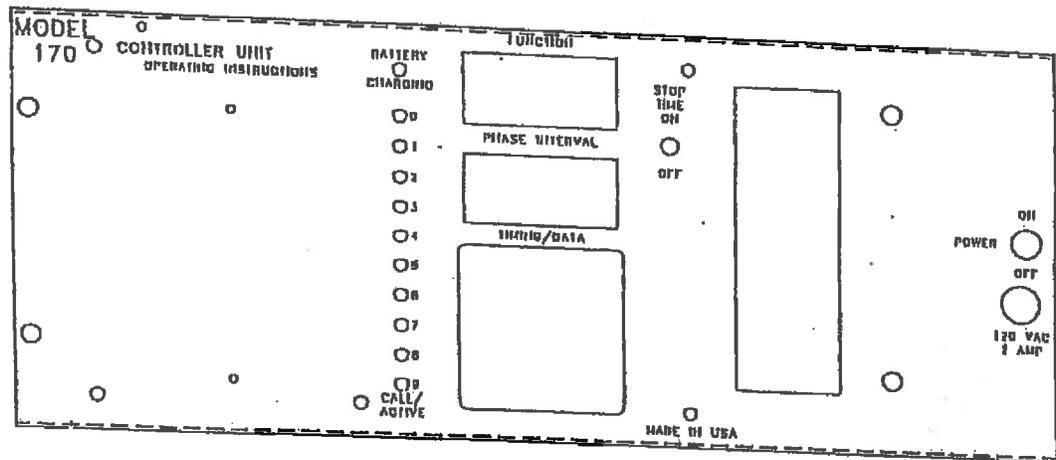


FIGURE 8
 TYPE 170E CONTROLLER UNIT

Figure 9
Intentionally Deleted

Figure 10
Intentionally Deleted

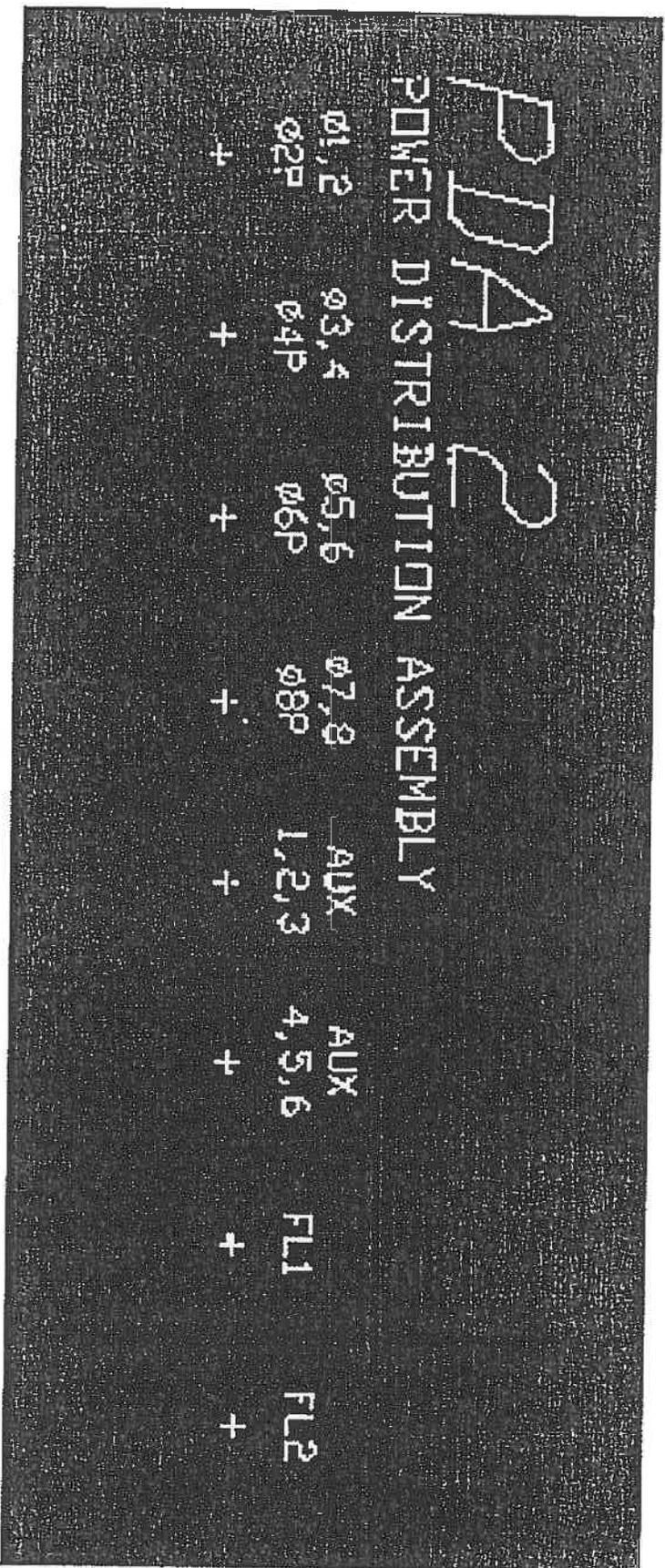
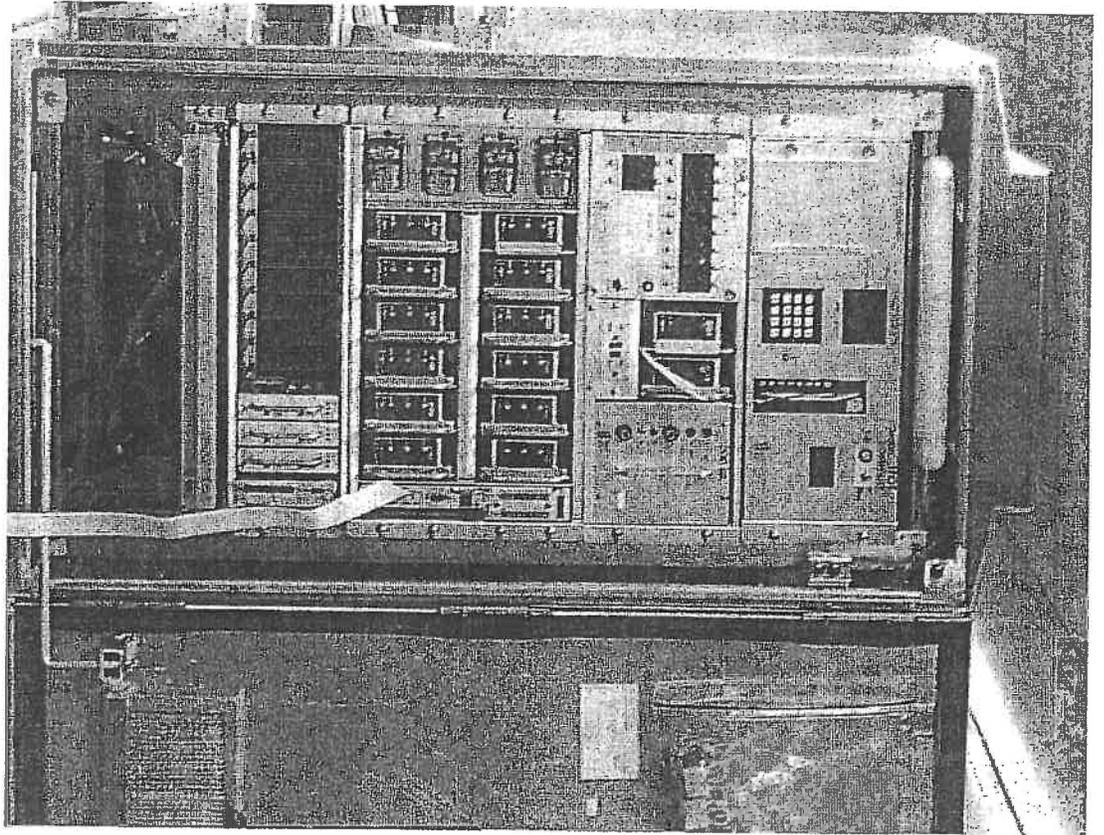
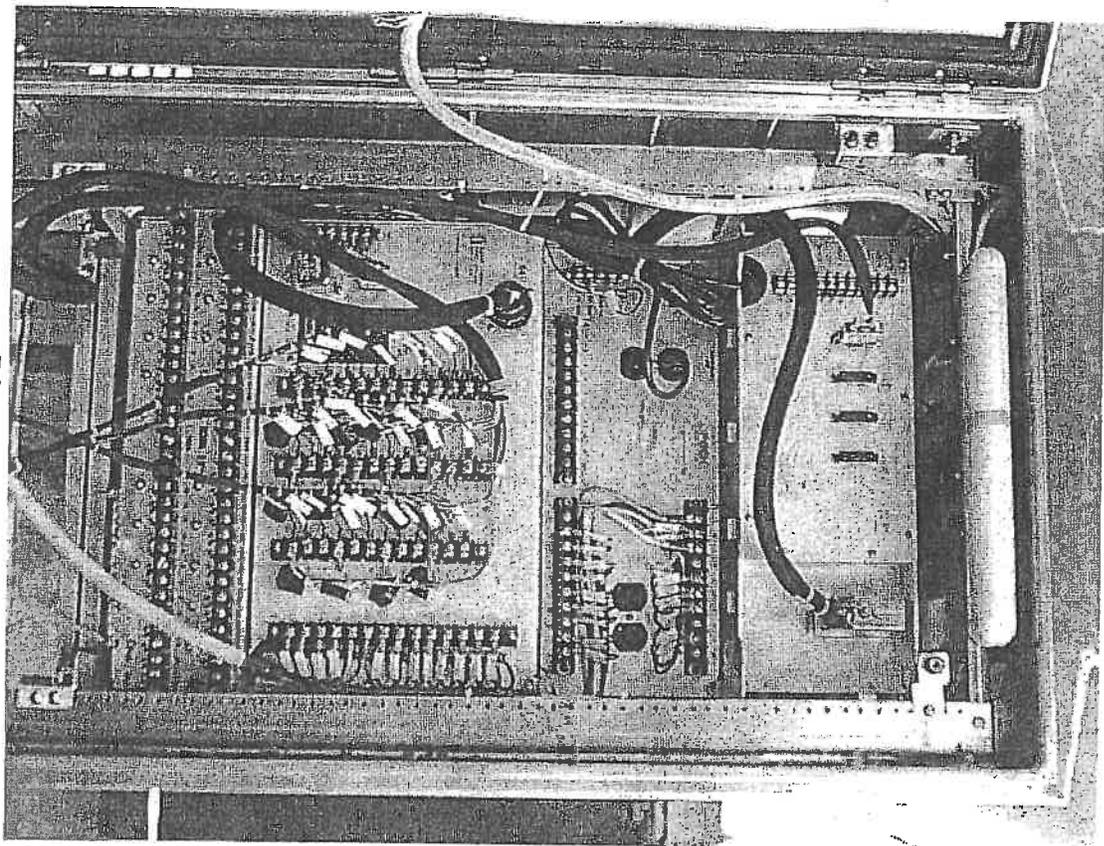


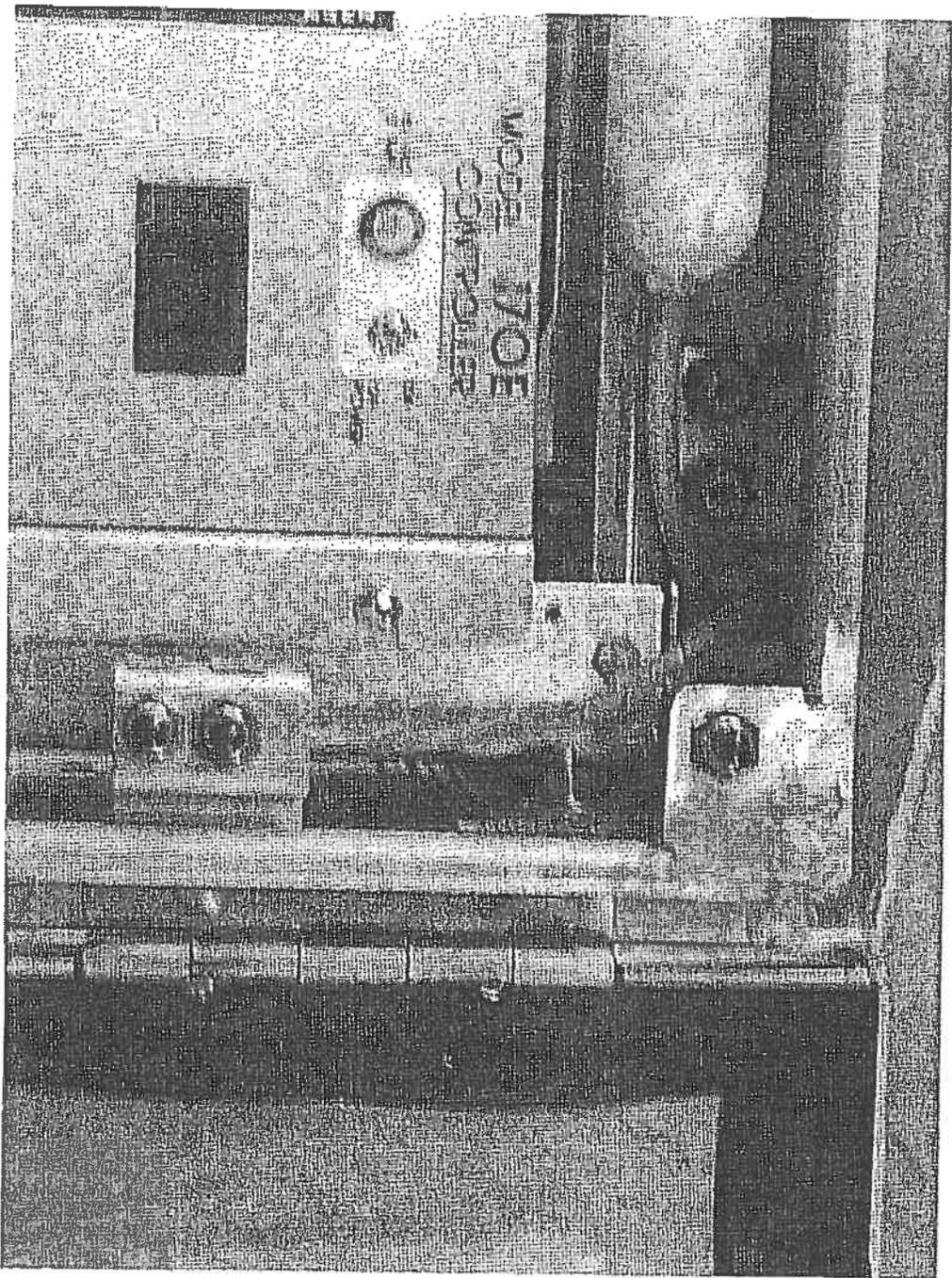
Figure 11



Picture 1
Front of Cabinet

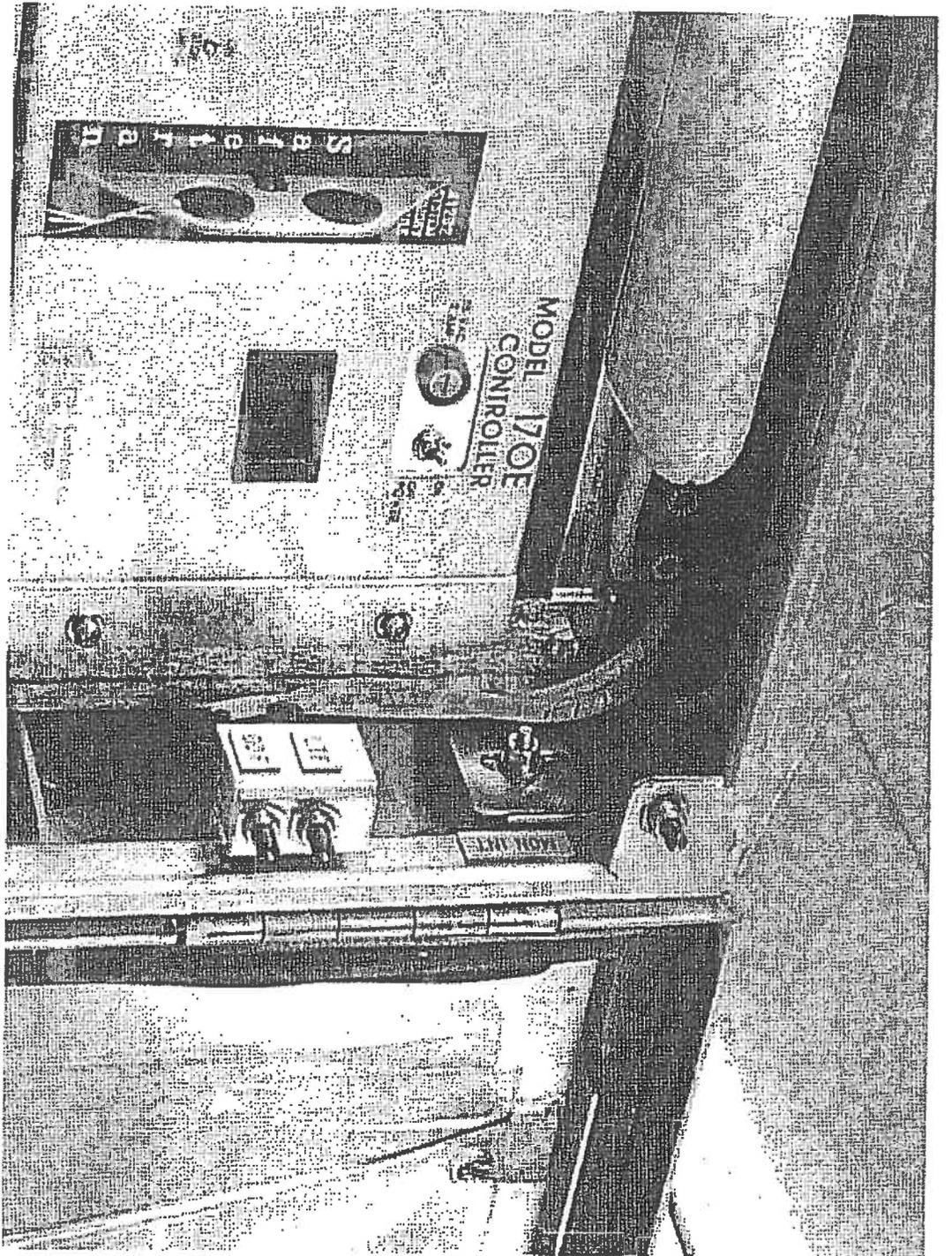


Picture 2
Back of Cabinet



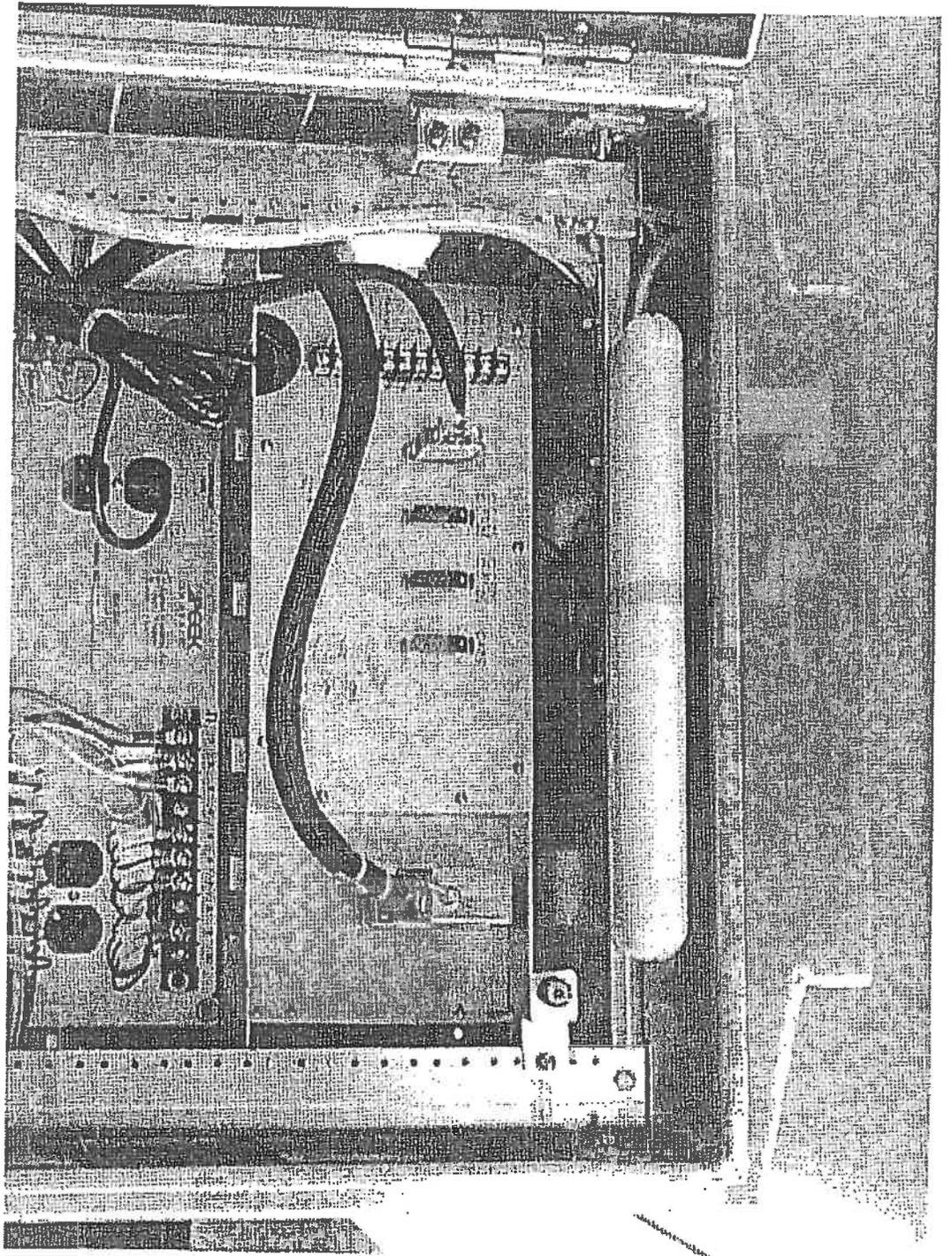
Picture 3

Front Fuses & Switches

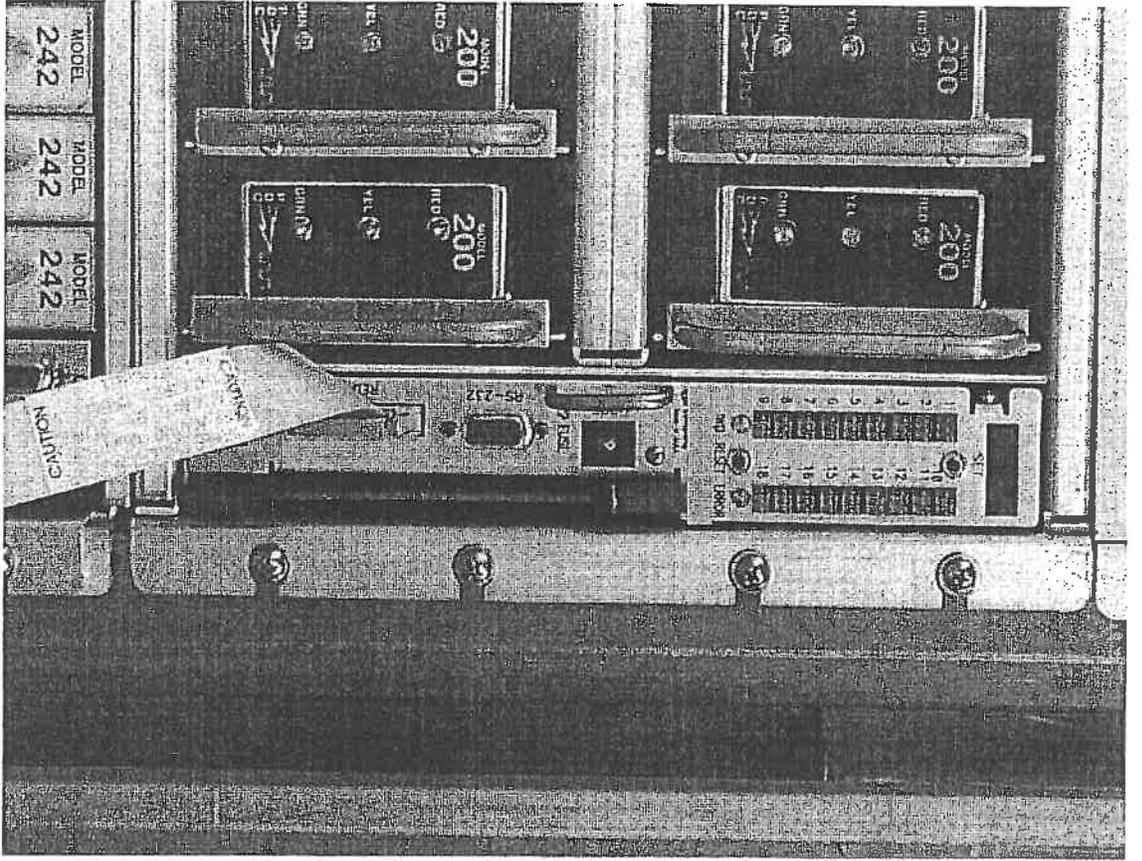


Picture 4

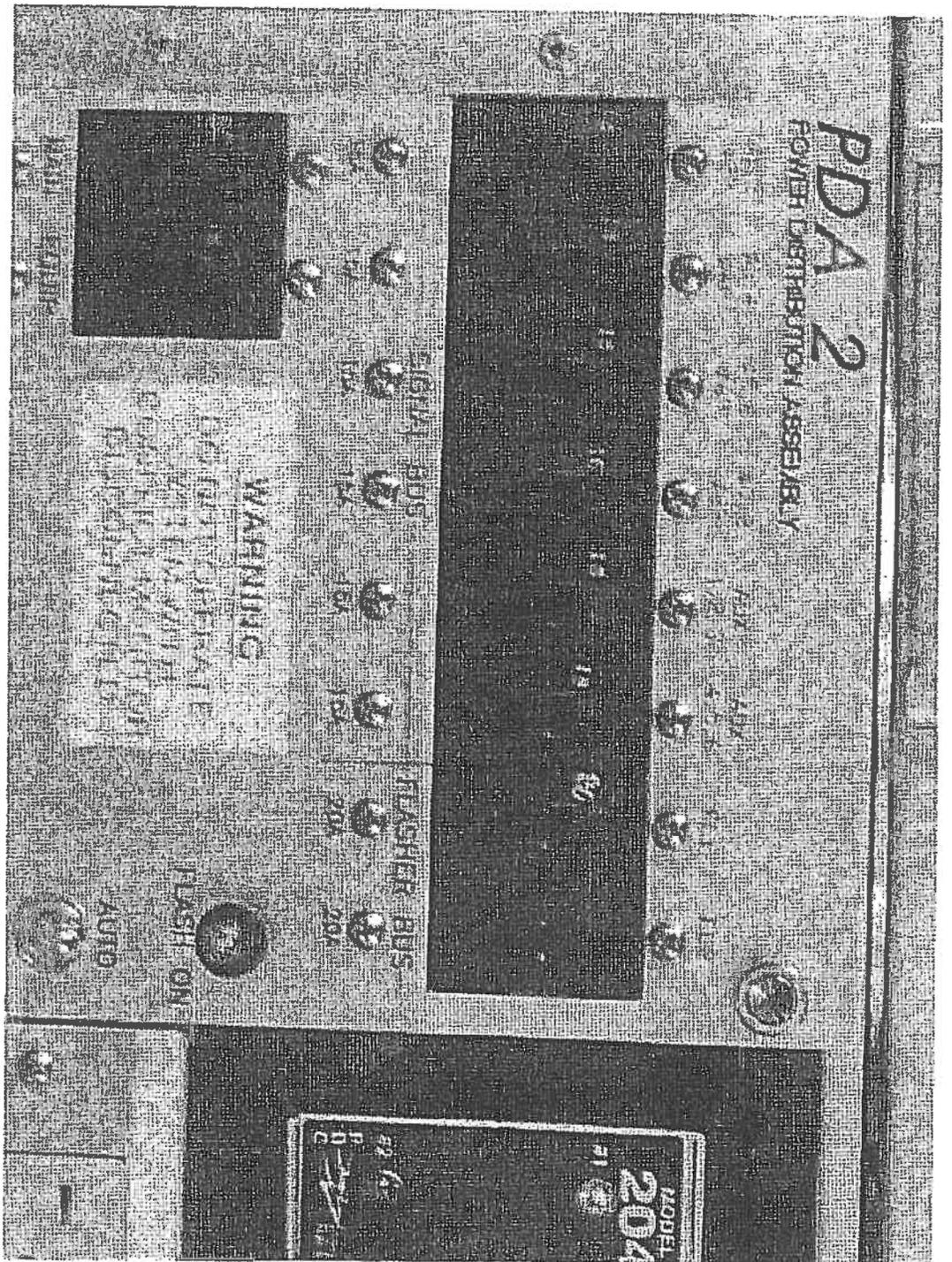
Front Fuses & Switches



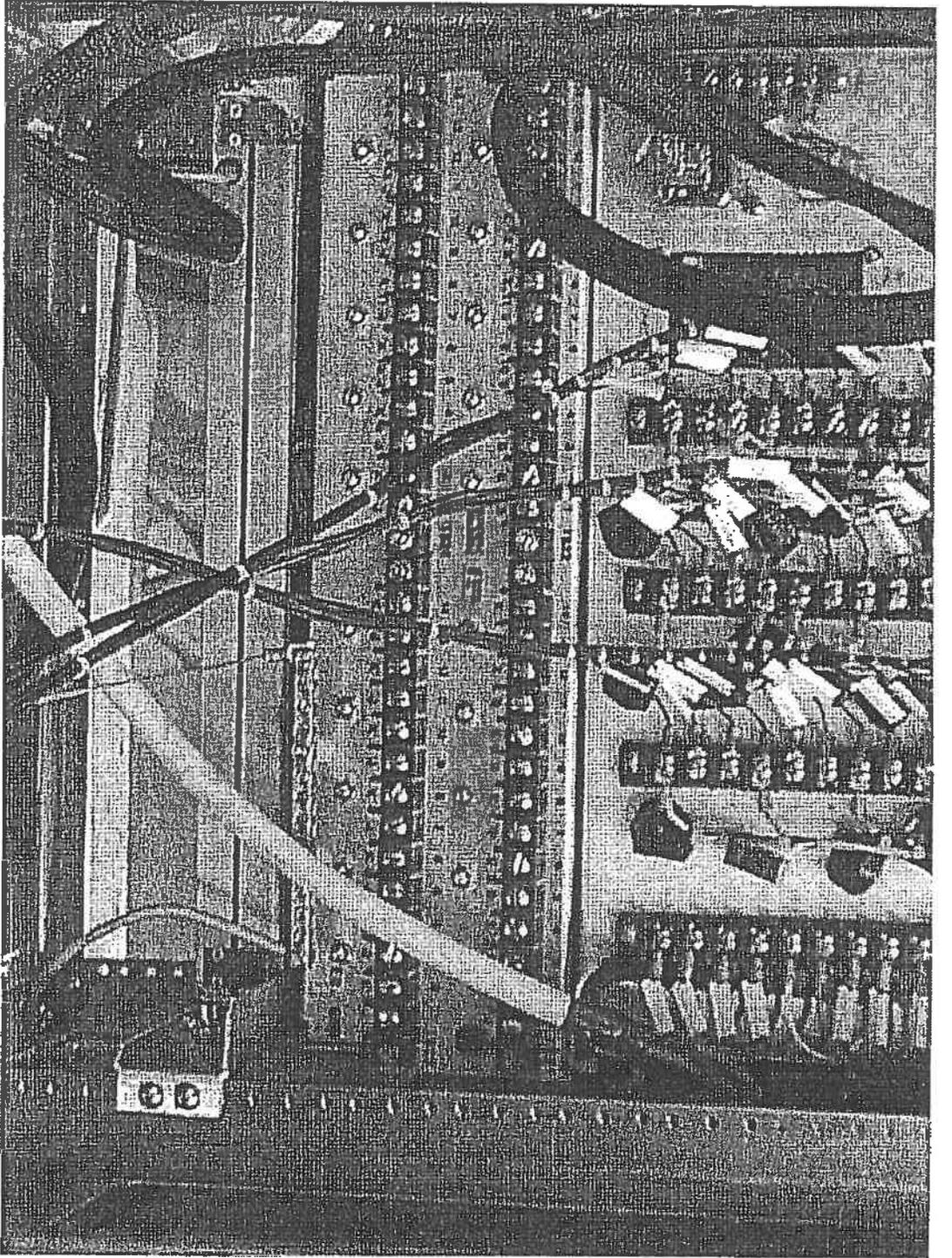
Picture 5
Back Fuse & Switches



Picture 6
Conflict Monitor

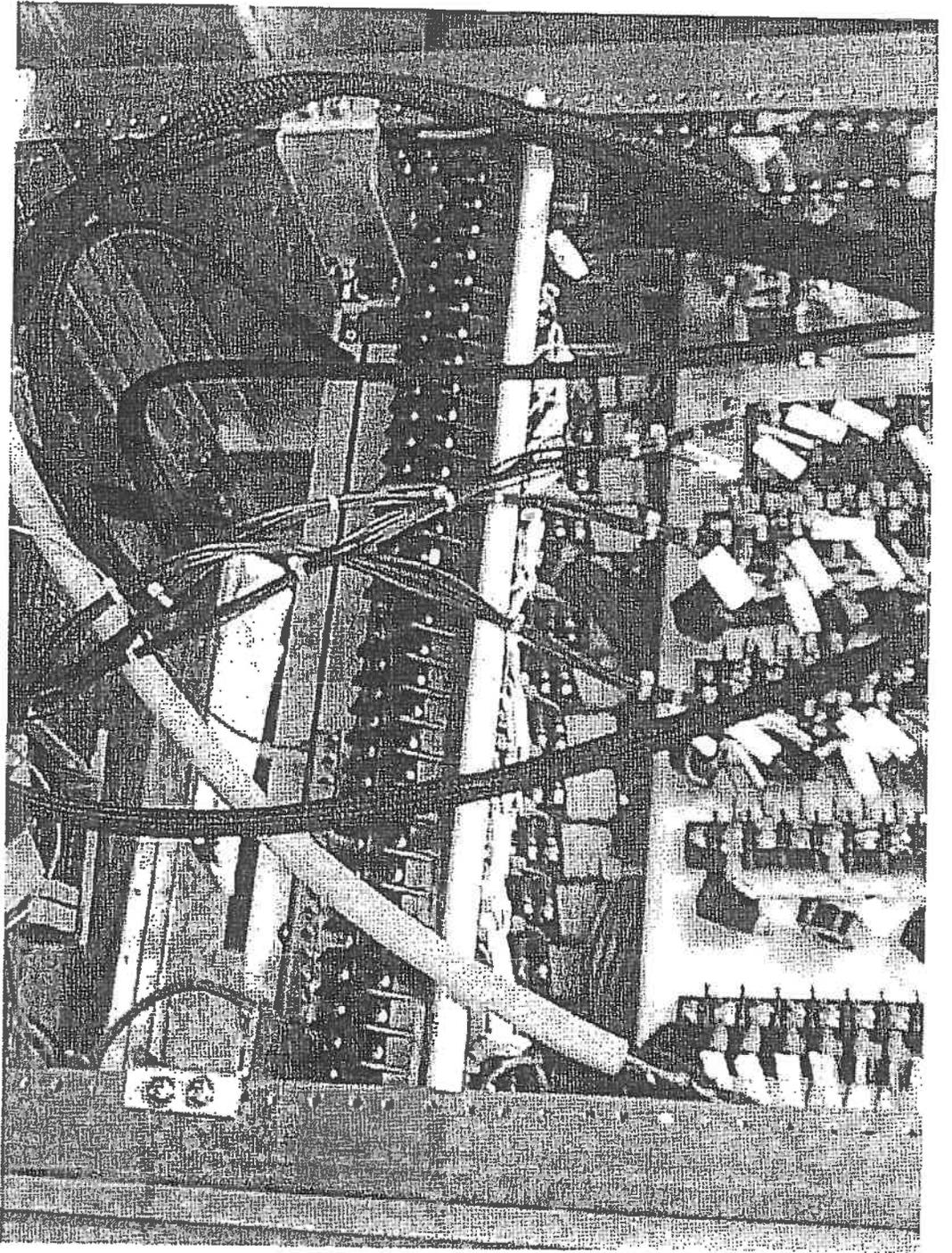


Picture 7
PDA 2



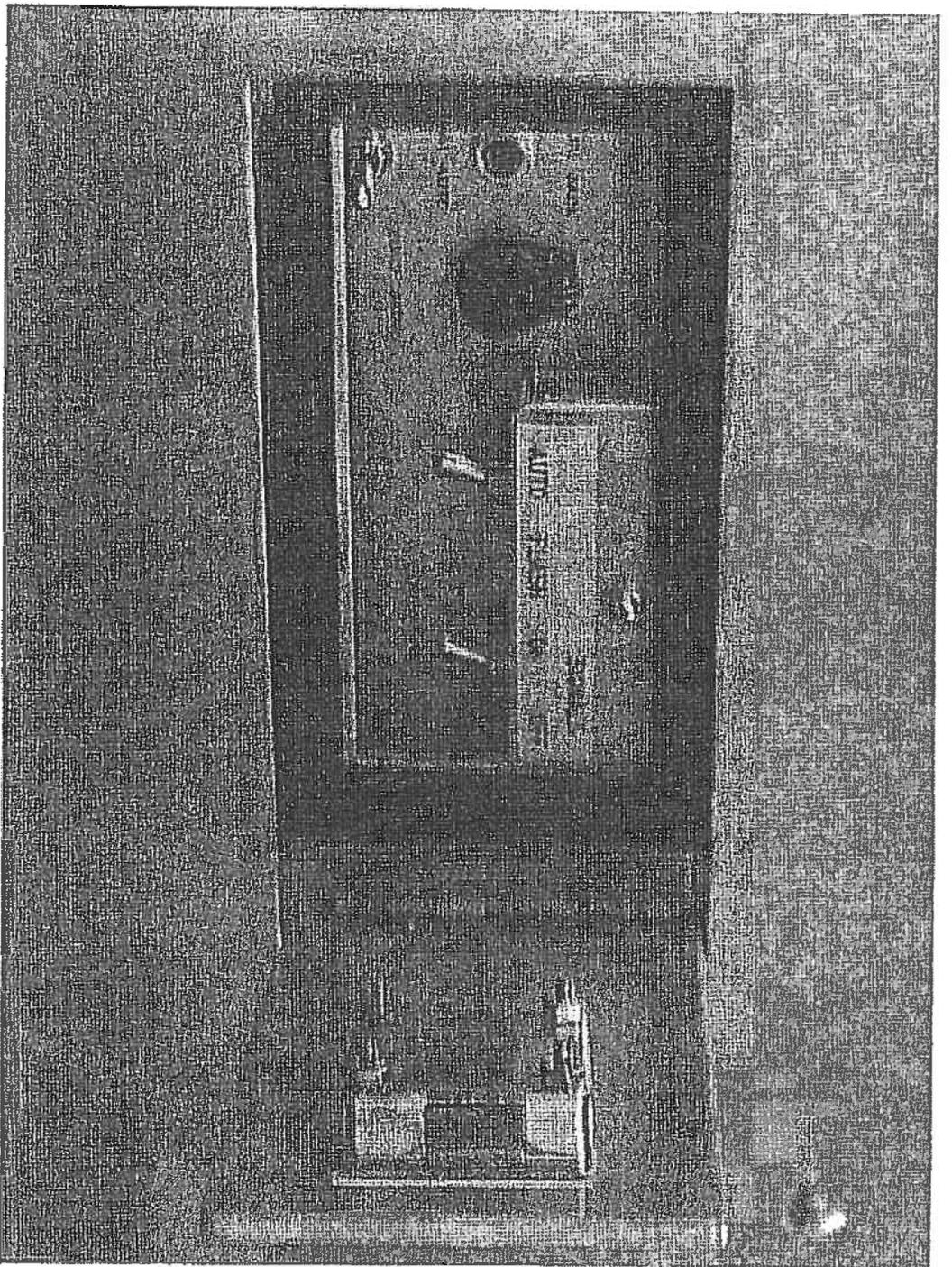
Picture 8

Lighting Protection Panel

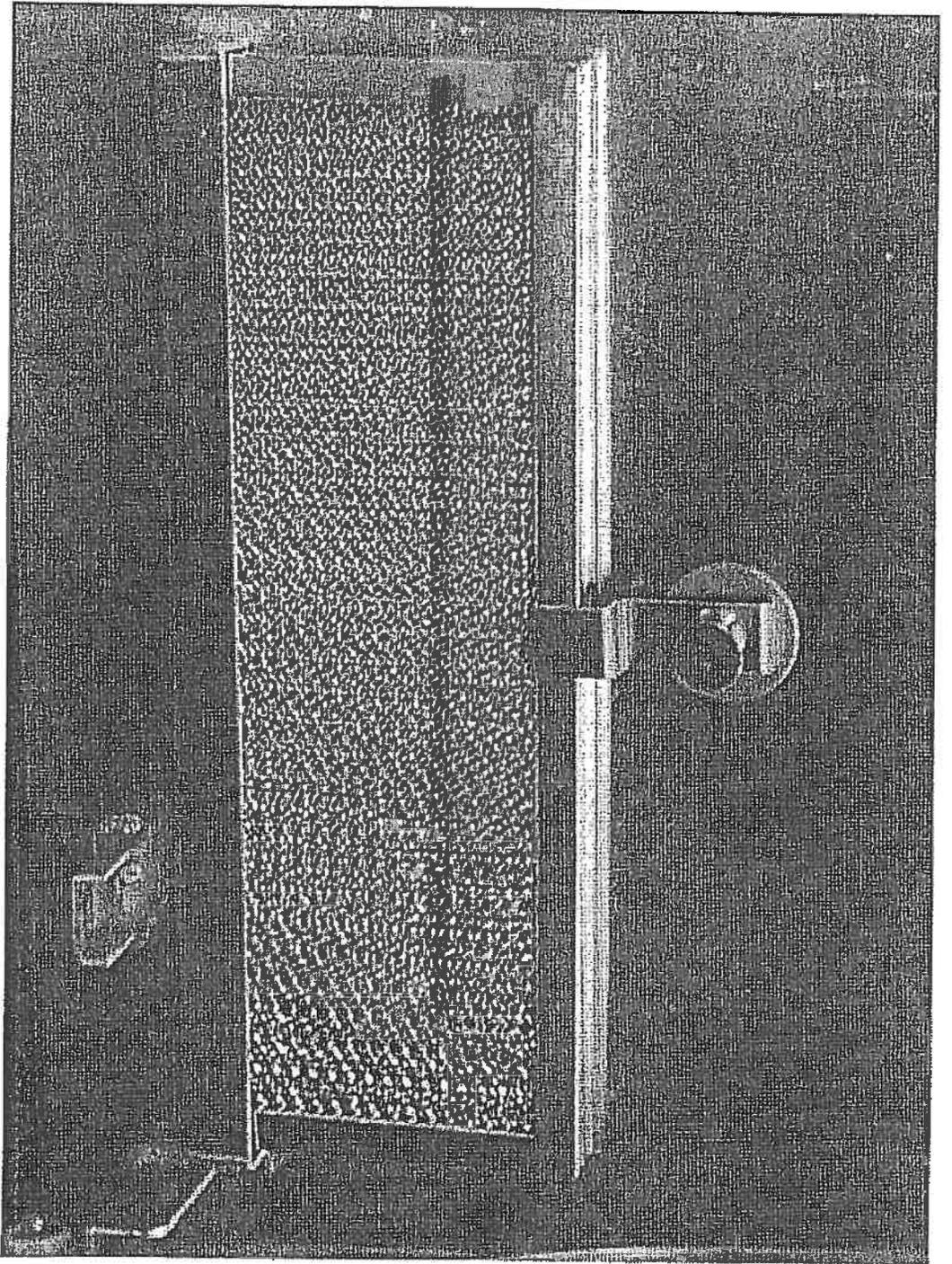


Picture 9

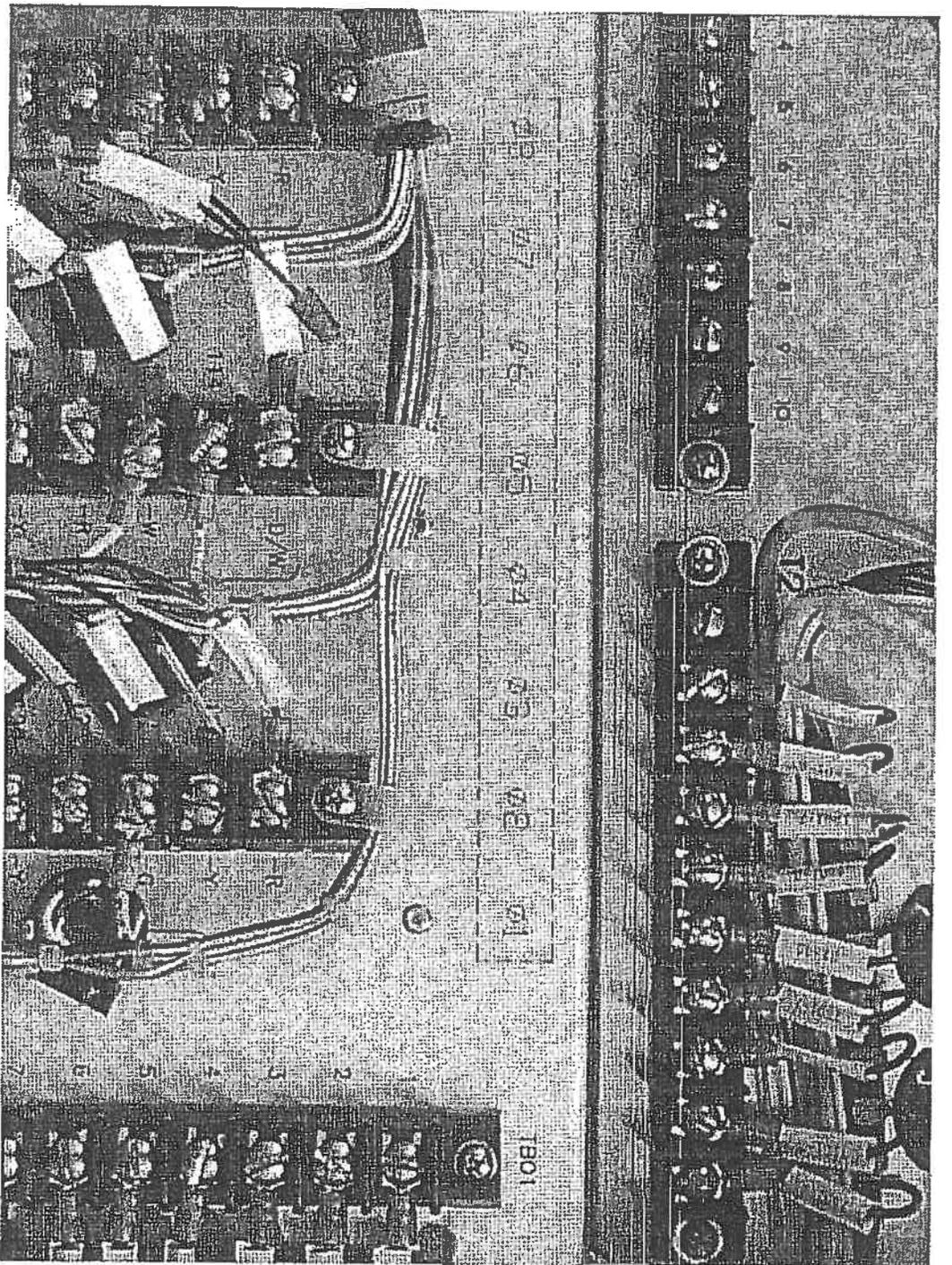
Lightning Protection Panel Flipped Down



Picture 10
Police Panel w/Voice Jack



Picture 11
Washable Filter



Picture 12

Labeling for Molex Flash Connectors

BID FORM

W. E. Caffee
 Assistant Purchasing Agent
 Birmingham, Alabama

Submitted below is my firm bid for traffic signal controllers and related parts for the City of Birmingham in accordance with your invitation to bid and specifications dated December 29, 2014. Prices quoted are F.O.B. Birmingham, Alabama delivered and I am bidding in accordance with specifications except as listed below.

Approx. Qty.	Description	Make/Model	Unit Price	Extended Total
GROUP 1				
12	Complete 336-S Cabinets with 170E Controller for Twisted Pair Communications			
12	Complete 336-S Cabinets with 170E Controller for Fiber Optic Communications			
6	336-S cabinet only for twisted pair			
6	336-S cabinet only for fiber optic			
GROUP 1 - TOTAL				\$
GROUP 2 – Optional Related Parts Pricing – Will Fit Group 2				
Approx. Qty.	Description	Make/Model & Part Number	Unit Price	Extended Total
1	170E Controller			
1	Motion Sensor, pole mounted, 200-350 ft. range, MS Sedio TC26B or equal			
1	Load Module			
1	Model 400 Modem Revision F or later			
1	AC Isolator			
1	DC Isolator			
1	222 Loop Amplifiers			
1	Flash Relays			
1	412 Memory Module			
1	Controller Adapter (Fig. 7)			
1	GDI Fiber Modem FDM2SA-2-1-0-0-0			
GROUP 2 – TOTAL				\$

BID FORM cont'd

GROUP 3 – Optional Related Parts Pricing – Brand Specific to Group 3				
Approx. Qty.	Description	Make/Model & Part Number	Unit Price	Extended Total
1	Power Supply for Brand Controller Bid			
1	Power Supply for Safetran Controller			
1	Power Supply for DTS Controller			
1	Power Supply for McCain Controller			
1	Power Supply for Brand Cabinet Bid			
1	Power Supply for Safetran Cabinet			
1	Power Supply for DTS Cabinet			
1	Power Supply for McCain Cabinet			
1	CPU Board for Brand Bid			
1	CPU Board for Safetran			
1	CPU Board for DTS			
1	CPU Board for McCain			
1	Input Board for Brand Bid			
1	Input Board for Safetran			
1	Input Board for DTS			
1	Input Board for McCain			
1	Output Board for Brand Bid			
1	Output Board for Safetran			
1	Output Board for DTS			
1	Output Board for McCain			
GROUP 3 – TOTAL				\$
GRAND TOTAL FOR GROUP 1, GROUP 2 & GROUP 3				\$

I hereby certify that we do not discriminate in employment of our personnel against any persons or persons on account of race, creed, color, sex or national origins, and acknowledge, and agree, that the City of encourages minority – and women owned business participation to the maximum extent possible. This policy includes Historically Underutilized Business Enterprises such as architectural firms, engineering firms, investment banking firms, other professional service providers, and construction contractors as part of the City's business, economic and community revitalization programs.

EXCEPTIONS TO SPECIFICATIONS:

Email Address

Tax ID Number

Name (Print or Type)

Signature

Title

Date of Bid

Company

Street Address

Post Office Box (Zip if different from street address)

City State Zip

Terms of Payment

Delivery Date

Telephone Number

Fax Number