



# CONTRACT DATA SHEET

Monroe County Division of Purchasing  
200 County Office Building, Rochester NY 14614

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**TITLE:** Traffic Control Cabinet

**CONTRACT #:** 0507-07

**CONTRACT DATES:** 5/29/07-5/31/11

**BUYER:** Sharon A. Berndt  
**PHONE:** 585/753-1110  
**FAX:** 585/753-1104

**VENDOR(S):** ASKCA Inc.  
410 W. First Ave.  
Parkesburg, PA 19365  
  
ph: 610-857-2530  
fax: 610-857-3293

## TERMS AND CONDITIONS

- BID ITEM:** TRAFFIC CONTROL CABINET
- FOR:** DEPARTMENT OF TRANSPORTATION
- DEPARTMENT CONTACT:** Alan Jensen, (585) 753-7749
- DUPLICATE COPIES:** PLEASE SUBMIT YOUR BID IN DUPLICATE; THE ORIGINAL AND ONE (1) COPY.
- BID INFORMATION:** At the time of bid, the bidder shall supply detailed specifications covering the item(s) contained herein and shall clearly indicate any areas in which item or items offered do not fully comply with the specifications contained herein.
- SUBMITTAL OF FORMAL PROPOSAL:** Bid proposal must be legible and submitted in the original form, bearing an original signature. **COPIES AND FACSIMILES ARE NOT ACCEPTABLE.**
- All bidders must submit proof that they have obtained the required **Worker's Compensation** and **disability benefits** coverage or proof that they are exempt.
- SPECIFICATION ALTERATIONS:** Specifications will be construed to be complete and be considered the entire description of the goods or services upon which Monroe County is now seeking bids. **Only formal written addenda can materially alter this set of specifications.** No verbal statement made by a Monroe County employee or anyone else is binding nor shall such statement be considered an official part of this public bid proposal.
- QUANTITIES:** The quantities listed on are the estimated annual requirements and should not be construed to represent either maximum or minimum quantities to be ordered during the contract term. **Estimates are based upon actual annual usage for 2006 by County departments only.**
- BRAND REFERENCE:** References to a manufacturer's product by brand name or number are done solely to establish the minimum quality and performance characteristics required. Bidders may submit bids on alternates, but must attach two (2) copies of manufacturer specifications for any alternate at the time of the bid. Further, the bidder must demonstrate that the alternate proposed has a sufficient operating track record to show the equipment will perform per the specified brand. The acceptance of a bidder's alternate rests solely with Monroe County.
- QUALIFIED BIDDER:** Each bidder must be prepared to present satisfactory proof of his capacity and ability to perform this contract. Such proof may include, but is not limited to, an inspection of the bidder's facilities and equipment, financial statements, references and performance of similar contracts. **The Purchasing Manager reserves the right to reject any bid where the bidder cannot satisfy the County as to his ability to perform.** Monroe County reserves the right to reject any and all bids if the Monroe County Purchasing Manager deems said action to be in the best interests of Monroe County.

**METHOD OF  
AWARD:**

Monroe County intends to award the bid to the lowest responsive and responsible bidder, based on the **TOTAL. Bidder must bid on all items in order to be considered. The County reserves the right to reject any and all bids** if the Purchasing Manager deems said action to be in the best interest of the County.

**CONTRACT TERM:**

Contract will start with the date of the contract award and run through **May 31, 2008**, with the option to renew the contract up to four (4) additional twelve (12) month periods with the mutual consent of both parties.

**PRICE CHANGES:**

Price changes may be proposed by either party no later than forty-five (45) days prior to contract extension, based upon manufacturer price changes which must be supported with documentation. Should price changes not be acceptable to both parties, the contract will not be extended. Prices may change only at the time of extension.

**MINIMUM ORDER:**

No minimum order is specified for this contract. Agencies must be able to order as needed. **Political subdivisions and others authorized by law may participate in this contract.**

**DELIVERY:**

All deliveries to be F.O.B. Monroe County to agency as specified by a Purchase Order. Delivery costs must be built into the unit prices bid. Deliveries must be made within **two (2) weeks** after receipt of purchase order number. The County reserves the right to terminate the contract in the event the specified delivery time is not met.

**PURCHASE ORDER  
ISSUANCE:**

Delivery of services may be directed by the receipt of a Purchase Order only. **Items that are not part of this bid will not be paid for by Monroe County.** As to all purchase orders issued by Monroe County, exceptions may only be authorized, in writing, by the Purchasing Manager or his authorized agent prior to delivery.

**BILLING  
PROCEDURE:**

All invoices for items sold any authorized agency as a result of this contract must be billed in the following manner: Purchase Order #, Quantity, Description of Item Purchased, BP#, Item #, Extension and Total. **ALL INVOICES MUST BE MARKED WITH THE PURCHASE ORDER NUMBER. INVOICES WITHOUT THIS INFORMATION WILL NOT BE PROCESSED FOR PAYMENT.**

**WARRANTY/  
GUARANTEE:**

All warranties by manufacturer shall apply. Bidder shall, as part of its proposal, furnish its warranty/guarantee for all goods/services to be furnished hereunder. As a minimum, Bidder shall warrant all goods for a period of one (1) year from date of acceptance. Bidder shall be obligated to repair or replace all defects in material or workmanship, which are discovered or exist during said period. All labor, parts and transportation shall be at Bidder's expense.

**UNCONTEMPLATED PURCHASES:**

Monroe County reserves the right to request separate bids for such quantities of items on this contract that may be best procured via separate public bid offering and to otherwise act in furthering its own best interests.

**SUBCONTRACT:**

The Contractor shall not subcontract any work without first obtaining the written consent of the Monroe County Purchasing Manager.

**RELATED ITEMS:**

The County reserves the right to add miscellaneous related items to this contract during the contract term upon agreement by both parties as to the price. Approval must be given in writing by the Purchasing Manager or his Designee.

**REPORT OF PURCHASE:**

The Contractor must, upon request, provide the County Purchasing Manager with detailed information showing how much of each item was delivered, to any and all agencies under this contract. This includes deliveries to not only the County but any other municipality or agency which orders from this contract.

**OTHER AGENCIES:**

The Contractor(s) **must** honor the prices, terms and conditions of this contract with political subdivisions or districts located in whole or in part within Monroe County. In addition, the contractor may, but is not required to, extend the prices, terms and conditions of this contract to any political subdivision or district located in New York State. Usage of this contract by any of these other political subdivisions or districts will have to be coordinated between that subdivision or district and the contractor. Orders placed against this contract between any subdivision or district will be contracts solely between the Contractor(s) and those entities. Monroe County will not be responsible for, nor will it have any liability or other obligation for, such contract between the Contractor(s) and any third party.

**INDEMNIFICATION:**

The Contractor agrees to defend, indemnify and save harmless the County, its officers, agents, servants and employees from and against any and all liability, damages, costs or expenses, causes of action, suits, judgments, losses and claims of every name not described, including attorneys' fees and disbursements, brought against the County which may arise, be sustained, or occasioned directly or indirectly by any person, firm or corporation arising out of or resulting from the performance of the services by the Contractor, arising from any act, omission or negligence of the Contractor, its agents and employees, or arising from any breach or default by the Contractor under this Agreement. Nothing herein is intended to relieve the County from its own negligence or misfeasance or to assume any such liability for the County by the Contractor.

## SPECIFICATIONS FOR BP#0507-07, TRAFFIC CONTROL CABINET

### DESCRIPTION

The bidder shall furnish a suitable (NEMA 3r or better) weatherproof cabinet and terminal facility. Each new cabinet and terminal facility shall be provided completely wired by the manufacturer, with all internal components (such as back panels, shelves, terminal strips, harnesses, etc.) as well as all mounting hardware necessary to provide installation as described herein. Each new cabinet and terminal facility shall be fully assembled. Interconnections for the internal equipment complement shall be provided via the cabinet and terminal facility harness by means of mating "MS" type connectors as specified in the Nema TS-2 for type 2 cabinets and controllers. Wiring and cabling addition to new units in the field are expressly prohibited. "D" connector may be used as stated in the construction details.

### MATERIALS

#### **FUNCTIONAL REQUIREMENTS**

The cabinet and terminal facility shall provide a weatherproof enclosure for all internal equipment. All equipment except detectors shall be shelf mounted and all terminal and panel facilities shall be placed on the lower portion of the cabinet walls below all shelves. The manufacturer shall submit a cabinet layout for each type of cabinet for review by Monroe County. Only cabinets with approved layouts will be accepted under this project.

Cabinet components as shown below: Items 4, 5, and 6 are purchased only in quantities as required.

1	Main switch and/or breaker
2	Radio Interference Filter and Suppressor
3	Surge protection and isolation (suitable for microprocessor-based equipment)
4	Three-circuit solid-state load switches (spec. #686.802700)
5	Detector rack, a minimum of eight (8) slots for dual-channel loop detector modules, two slots for two-channel preempt cards and a rack slot for the power supply. The rack shall be wired as required to the various terminals. Loop detector modules, rack-mounted (spec. #686.802900), detector power supply (spec. # 686.802910). Preempt cards are mechanically similar to loop detector cards.
6	Two-circuit solid-state flasher (spec. #686.802500); six (6) NEMA flash transfer relays
7	Police panel (containing : auto-manual switch, auto-flash switch, manual control jack for switch)
8	Ventilation fan, continuous duty, vents and shrouded filter to create positive pressure within cabinet
9	Thermostatically-controlled heater (900 W) with integral circulator fan
10	Three (3) door-actuated switches (1 <sup>st</sup> = fans off, 2 <sup>nd</sup> = cabinet illumination, 3 <sup>rd</sup> = 'door open' alarm)

### **VENTILATION**

All cabinets shall be furnished with suitable top and bottom vents. The vents shall be designed to prohibit the entry of rain, insects and other foreign objects.

All cabinets shall be equipped with a thermostatically-controlled ventilation fan. The fan shall have a rating of (178-238CFM), be equipped with sealed ball bearings and rated for continuous operation. Replaceable air filter shall be mounted directly behind the door vent. A thermostat to control this fan shall be adjustable from 4 degrees C to 21 degrees C. Replaceable air filters shall be mounted directly behind the door vent. The fan shall have a protective grill to prevent injury to maintenance personnel.

All cabinets shall be equipped with a thermostatically controlled heater. The thermostat shall be adjustable from -17 degrees C to 15 degrees C. The heater shall be wired with appliance grade wire rated for the 900 watt heater with a low RPM circulator fan (again, with sealed ball bearings) to reduce condensation and shall be designed, positioned and protected so as to prevent harm to operating personnel.

## POLICE PANEL

All cabinets shall be furnished with a police compartment within which shall be located:

- 1) A 5/8" removable hex - head wrench handle to open the cabinet door. **One handle shall be supplied with each cabinet.**
- 2) Auto-Flash switch to cause the controller to operate the intersection in its pre-programmed flashing mode.
- 3) Auto-Manual jack (J1) which will apply a stop time command to the controller unit upon installation of the two-meter P1 plug into J1. A push-button switch will advance the controller intervals. Removal of P1 resumes normal controller timing. One (1) P1 and pushbutton two-meter cord shall be supplied for every ten (10) cabinets.
- 4) A 'Signals On-Off' switch to extinguish the signal faces and maintain controller operation.

## DOOR ACTIVATED SWITCH

The cabinet shall be provided with three door actuated, hermetically sealed micro switches. One switch shall be wired to pin 16 (door open on telemetry connector) terminals on the terminal facility and shall provide a dry contact closure across these terminals when the cabinet door is opened. The second switch shall be wired to a cabinet light. The third switch removes 120VAC from the fans. Example: Micro switch #MSBZ2RW82A2

## MANUAL FLASH OPERATION

The manual flash switch shall extinguish all signal indications except power to the yellow and red signals to permit programmable emergency flashing operations. The power supply to the controller shall not be affected and the controller shall continue to operate normally.

**As a minimum, terminal facilities shall be wired and configured for load switch Bays as listed below:**

The Sixteen (16) load bays will be assigned as follows:

Eight (8) Bays-Phases 1-8	Four (4) Bays - Peds 2,4,6,8	Four (4) Bays - overlaps A-D
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## TECH PANEL SWITCHES

There shall be four (4) toggle switches mounted on the inside portion of the main door. Each switch shall operate as follows:

1. Auto-flash switch shall command the intersection into its pre-programmed flashing mode and the controller shall operate in a normal cycle.
2. Controller On-Off switch shall remove power to the controller and conflict monitor.
3. Auto-Off-Stop Time switch shall be a single-pole double-throw with a center off position. The off position shall disable any stop time signal from inputting to the controller. The stop time position shall apply a logic true to the controller's stop time input. The AUTO position will apply a stop time to the controller whenever a fault is detected by the conflict monitor and the intersection goes to flash.
4. Signal Power ON-OFF switch shall remove the signal power only and allow the controller unit to cycle.

## LOGIC GROUND BUSS

A logic ground buss shall be mounted on the left side of the controller back panel.

## CONNECTOR "D" HARNESS

Each cabinet shall have wired, to a sub-panel, a harness two (2) meters in length that mates with the connector `D` on the controller. (Econolite ASC/2-2100). See attached controller specification # 686.802819P for the pin out for the 'D' connector.

**TELEMETRY CONNECTOR**

In addition, a 25-pin male telemetry connector is used for input of system sensor and cabinet alarm information. It is secured via spring latches (AMP p/n 745012-1). A pinout of the telemetry connector can be found at the end of this specification. A two-meter harness for this connector is required.

**The flasher relay** shall energize the flasher and transfer signal light circuits from controller unit to flasher. Flash relays shall be physically and functionally interchangeable with Midtex #136-4995 or equal. It shall be possible to disconnect the controller without interfering with the flash operation.

**MECHANICAL REQUIREMENTS**

**SIZE**

Cabinets shall be provided in the following sizes:

<u>Type/Size</u>	<u>Height (inches)</u>	<u>Width (inches)</u>	<u>Depth (inches)</u>
P - CABINETS	55 Front 54 Rear	45	23

(See Appendix "A")

Type P cabinets shall be fabricated from (minimum) .125" marine-grade reinforced aluminum. In all cases, the cabinets furnished shall have clean cut, smooth appearance. All welds, mold marks, etc., shall be ground smooth and/or sanded to affect this requirement. All County cabinets shall be a milled and polished finish.

**DOOR**

The main door of all cabinets shall include substantially the full area of the front of the cabinet. All doors shall be reinforced on the inside in such a manner as to prevent warping. The door for fabricated cabinets shall be hinged on the right-hand side by means of one (1) full length piano hinge with a 6mm (min.) stainless steel hinge pin. Alternate hinging methods will be considered for approval. A gasket bead shall be installed on the inside of the door, which together with the neoprene air-cored cabinet gasket shall form a weather-tight seal between the housing and the cabinet door. The moving bars or rods shall be Teflon coated where they make contact with other parts or bearing surfaces.

**LOUVER SLOTS and FILTER FRAME**

In-door 16" x 20" x 2" lip and frame to positively hold filter against slots. Frame must be designed for quick release for filter replacement. (16" x 20" x 2" filter).

**CABINET MOUNTING AND SHELVING**

1	2 - .125" aluminum shelves
2	Adjustable rack mounting bracket
3	Back panel support brackets, A.O.B.E.

**LOCK ASSEMBLY**

Three point lock assembly shall be used. The door handle shall be removable 5/8" hex wrench-handle.

**MAIN DOOR**

The main door for all cabinets shall be equipped with a cylinder lock keyed for a Corbin conn-1 key, with a dust cover. In fabricated cabinets, the lock shall engage a cam controlling a three-point locking system for the main door. The cam shall be activated by a cast aluminum (or approved equal) handle having an arm radius of at least 6 inches. The cam mechanism shall be designed to reduce "leverized" pressure on the lock tongue from attempts to force the handle. The handle travel shall not extend over the lock cylinder access.

Two (2) positions Door catch shall be supplied to hold the door in an open position of 135°, plus or minus ten degrees. The catch shall manually engage and hold the door open until released.

See Appendix A

## **POLICE DOOR**

All cabinets shall be furnished with full doors and a flush-mounted auxiliary door equipped with a lock for a police key and dust cover. Neoprene gasket and stainless steel hinge pins shall be provided.

## **KEYS**

One key shall be furnished for each cabinet lock, plus a police key. The lock shall be a Corbin "Conn 1".

### **Special Note:**

#### **Door handle and opening hardware**

5/8" special handle that is removable from the outside after opening or closing the door, so as to make the face of door surface flush. A protective opening cover shall cover the opening for the handle.

## **ELECTRICAL REQUIREMENTS**

### **CIRCUIT BREAKER**

The circuit breaker shall be approved and listed by Underwriters Laboratories. The operating mechanism shall be enclosed, trip free from operating handle on overload, and trip indicating. Contacts shall be silver alloy enclosed in an arc-quenching chamber. Each cabinet shall have, as a minimum, a circuit breaker rated at 15 amperes to protect the vent fan and duplex outlet. In addition, a circuit breaker rated at 20 amperes shall be furnished to protect all other equipment except at locations where otherwise specified. Circuit breakers shall be unaffected by ambient temperature range, relative humidity, applied power shock and vibration range specified in NEMA TS-2-1992. Breakers shall have a minimum interrupt capacity of 5000 amperes.

### **WIRING**

All cabinet wiring where connected to terminal strips, flasher, relays, switches, radio interference suppressor, etc., shall be identified by the use of hot stamping of the wire or approved equal, before attachment of the lug or making the connection. The wire shall carry the proper identification number so that a translating sheet will not be required. All wires shall be cut to the proper length before assembly. No wires shall be doubled back to take up slack, except for the conflict monitor. Wires shall be neatly laced into cables with nylon lacing. Cables shall be secured with nylon cable clamps. The grounded side of the electric service shall be carried throughout the cabinet without a break.

### **SPECIAL REQUIREMENTS:**

All cable harness shall have a loop of wire left in the harness, so that the main wiring panel can be lowered without disconnecting the harness from the interior cabinet. All electrical connections in the cabinet, including relays, flasher, terminal strips, etc., shall have sufficient clearance between each terminal and cabinet to provide an adequate distance to prevent a leakage path or physical contact under stress. Where these distances cannot be maintained, barriers must be provided. A clearance of 2 inches will be kept between all ground and AC Power points.

All equipment grounds shall run directly and independently to the ground buss. The lay of the interconnect cable between the components must be such that when the door is closed, it does not press against the cables or force the cabinets against the various components inside the cabinet.

Terminals used for field connections shall secure conductors by means of a #8-32 nickel or cadmium-plated brass binder head screw. Terminals used for interwiring connections, but not for field connections, shall secure conductors by means of a #6-32 nickel or cadmium-plated brass binder head screw.

As a minimum, all connections to and from the controller unit shall terminate to an interwiring type block. These blocks will act as intermediate connection points for all controller units

**DUPLEX OUTLET**

Each cabinet shall be supplied with a NEMA type 5-15R duplex receptacle equipped with integral ground fault interrupting circuit as defined in the national electrical code and a bulb outlet with switch and 100 watt bulb, wired to the 15 amp aux breaker.

**EMI and RFI protection**

A single plug-in noise filter and surge protector unit with base (i.e.: EDCO SHA - 1250). The unit will have indicators for fault conditions.

## **CHARACTERISTICS**

Peak Current (8 X 20 micro seconds) .....20,000 Amperes

Life Test           5% change  
                      (Voltage clamp before and after  
                      25 surges of 20kA waveshape)

Clamp Voltage 250 V typical @ 20kA

Response Time < 5 nano seconds

Continuous Service Current ..... 15 Amps max, 60 Hz, 120V

Operating Temperature Range .....-40 C to + 85

Noise suppression over a large frequency range at least 10db@10khz, 50db@100khz, 90db@1mhz. The surge arrestor/line filter shall be installed after the circuit breaker.

*Isolation shall be provided for field inputs, 4 pedestrian button or auxiliary detector inputs*

## **OUTLET POWER STRIP**

A six outlet power strip will be mounted in the cabinet for plugging in modems, amps and other auxiliary equipment. The power strip will be of a sturdy metal construction and meet UL standards. It will be fed from the noise filter/surge protector unit.

## **HARNES REQUIREMENTS**

All wiring containing line voltage AC shall be routed and bundled separately and/or shielded from all low voltage, i.e., control circuits. All conductors and live terminals or parts, which could be hazardous to maintenance personnel, shall be covered with suitable insulating material.

All conductors used in controller cabinet wiring shall be #22 AWG or larger with a minimum of 19 strands. Conductors shall conform to MIL SPEC #MIL-W-16878D type B or D. The insulation shall have a minimum thickness of 10 MILS. All wiring containing line voltage shall be a minimum size of #14 AWG, or the suitable size.

The AC return and equipment ground wiring shall be electrically isolated from each other and the AC + wiring by an insulation resistance of at least 10 megohms when measured at 250 VAC AC return and equipment ground wiring shall be color-coded white and green, respectively.

All inputs and outputs which are wired to a connector on a module shall be terminated at a terminal block in the controller cabinet as specified in NEMA TS-2 for a Type 2 controller.

## **TERMINAL BLOCKS**

Terminal strips located within the cabinet shall be accessible to the extent that it shall not be necessary to remove the controller from the cabinet to make an inspection or connection.

Terminal blocks shall be two position multiple pole barrier type. Shorting bars shall be provided in each of the positions provided along with an integral marking strip or equal. Terminal blocks shall be so arranged that they shall not upset the entrance, training and connection of incoming field conductors. All terminals shall be suitably identified (block and terminal numbers) by legends permanently affixed and attached or silk screened. Not more than three conductors shall be brought to any one terminal screw. No electrically alive parts shall extend beyond the protection afforded by the barriers. A majority of the terminal blocks shall be installed on a main back panel. This back panel shall be hinged on the bottom so the panel can be unbolted at the top and dropped forward, so as to allow one room enough to work on the backside of the panel.

AC return and equipment ground wiring shall terminate to buss bars. Each buss bar shall have a minimum of 20 contact points, each capable of securing at least one #10 conductor or be at least 2 inches away from any AC Power points. The bottom row of field terminal blocks and the flash yellow or red programming terminal blocks shall be installed on a hinged, angled, back panel plate that will allow the terminal blocks on the plate to be set in a 15 to 75 angle range to the front of cabinet, for the ease of flash configuration programming, installing field wiring and dropping the back panel.

## **MERCURY CONTACTOR**

A mercury contactor, rated at a minimum of 50 amperes, normally-open configuration, shall be furnished to break the feed to the signal power buss (solid state load switch power feed). This contactor shall be utilized to disconnect AC power from the signal buss when operation so requires.

## **CONNECTING HARNESESSES**

Terminal facilities shall be provided with harnesses of appropriate length, terminated to connectors of the MIL - 26482 series, to allow the placement of the controller and monitor units anywhere within the cabinet specified for the controller.

The cabinet shall have sufficient harness length to enable one to move all equipment to any shelf position.

All wiring including spare wires will be terminated to pins in connectors or terminal blocks.

## **BACK PANEL PRINTS**

Two copies of documentation of the back panel wiring shall be provided. The prints shall include diagrams of wiring to all components, as well as lists of all wiring terminations and their respective functions within the cabinet.

## **QUALITY ASSURANCE PROVISIONS - CABINETS AND TERMINAL FACILITIES**

All equipment shall meet the environmental requirements as specified in NEMA Standard Publication number TS2 - 1992 Section 2 (or latest revision).

Design approval tests shall be as specified for temperature and humidity. The bidder shall prepare test procedures and data forms for approval by the County of Monroe.

Each shipped cabinet shall include a written and signed checklist documenting functional testing.

## **METHOD OF MEASUREMENT**

Cabinets together with their *Testing Results Documentation*, associated terminal facilities, after inspection and acceptance by Monroe County will each be measured as a single unit.

## **BASIS OF PAYMENT**

Payment for each cabinet and its associated terminal facilities will be made for the measured quantity at the contract price for each. The unit price shall be full compensation for furnishing, transporting, labor, tools, materials, equipment and incidentals necessary, including racks, rack detector power supplies, detectors, load relays, load switch packs, flasher module and conflict monitor.

**Sixty-five (65) percent of the contract bid price shall be paid upon delivery.**

**Thirty-five (35) percent shall be paid upon satisfactory functional testing by Monroe County after delivery.**

Functional testing shall be performed within ninety days from delivery.

### **Telemetry Connector Pin Assignments**

<b>Pin</b>	<b>Function</b>	<b>I/O</b>
3	System Detector A1	
2	System Detector A2	
5	System Detector B1	
19	System Detector B2	
4	System Detector C1	
1	System Detector C2	
7	System Detector D1	
8	System Detector D2	
18	Local Flash	
20	Conflict Flash	

**Telemetry Connector Pin Assignments (continued)**

<b>Pin</b>	<b>Function</b>	<b>I/O</b>
16	Door Open (Maintenance Required)	I
17	Alarm 1	I
21	Alarm 2	I
14	TLM Spare 1	I
6	TLM Spare 2	I
15	External Address Enable	I
24	Receive 1	O
25	Receive 2	O
12	Transmit 1	O
13	Transmit 2	O
9	TLM Special Function 1	O
22	TLM Special Function 2	O
10	TLM Special Function 3	O
23	TLM Special Function 4	O

**BASIS OF PAYMENT**

The unit bid price for this item shall include the cost of furnishing a new traffic control cabinet and terminal facility as described herein.

Payment will be made under:

<b><u>Item No.</u></b>	<b><u>Item</u></b>	<b><u>Pay Unit</u></b>
686.808128M	Traffic control cabinet, NEMA T2-2, type 2, size P - eight phase, sixteen (16) position, fully traffic actuated	EA

**ITEM IOI.999020**  
**SPECIAL REQUIREMENTS**  
**SECTION 6- COUNTY OF MONROE SPECIFICATIONS-ELECTRONIC EQUIPMENT**

**6.0 INTRODUCTION**

The equipment specifications included in Section 6 are intended to supplement those provided in the New York State Standard Specifications for Construction and Materials. Should conflicts exist, then the provisions of these specifications shall take precedence. Should the detailed specifications herein conflict with the general specification (paragraph 6.1) then the provisions of the detailed specifications shall take precedence. All work completed under this project is to be in full conformance with the current NEMA Standard Specifications unless amended by these specifications.

All equipment supplied under this project shall require provision of manufacturer's certification that the product conforms to these specifications or is of equivalent quality as approved by Monroe County, in addition to the other acceptance requirements described herein.

**6.0.1 GUARANTEE**

A minimum guarantee of one (1) year, except where modified in individual equipment specifications (i.e. Controllers and monitors which have a multi-year period specified) starting from date of delivery and acceptance of equipment after a review of test documents and testing at Traffic Engineering. Agency inventory and use records shall be accepted for determination involving contractor's liability within specified guarantee period.

**6.0.2 REPAIR UNDER GUARANTEE**

A printed circuit board may be factory repaired not more than three (3) times during the guarantee period. A fourth failure shall result in replacement of the printed wiring board with a new one whose guarantee period shall be equivalent to the remainder of the guarantee period of the original board. Turn-around time on repairs should not exceed more than 30 days from the time the unit is received from The County of Monroe, by the unit manufacturer or his appointed repair facility.

Any printed circuit board whose lands, pads or through-hole plating becomes damaged during factory repair shall be replaced with a new board. The guarantee period on the new board shall be equivalent to the remainder of the guarantee of the original board.

Factory repairs shall be described and reported in detail.

Agency performance records of equipment shall be accepted for determinations involving questions concerning but not limited to the number of factory repairs rendered to a given unit.

**6.0.3 MANUALS**

Each unit item supplied shall be accompanied by one (1) set of manuals of operation and maintenance, until a total of ten (20) sets of manuals are received. Each shall contain the following:

Operation and Maintenance Manual(s)

- a) General Description
- b) General Specification
- c) General Characteristics
- d) Installation
- e) Adjustments

- f) Theory of operation
  - (1) Functional description (include block diagram)
  - (2) Detailed circuit description
- g) Maintenance
  - (1) Preventive Maintenance
  - (2) Field Trouble Analysis
  - (3) Bench Trouble Analysis and diagnostics.
  - (4) Troubleshooting Analysis Chart
  - (5) Voltage measurements and waveforms
  - (6) Alignment or adjustment procedures
- h) Parts list (to include circuit and board designations, component manufacturer and manufacturer's part numbers and the manufacturer and part number of any known authorized substitutions for the original part).
- i) Electrical Interconnection Drawing
- j) Complete schematic drawings and circuit board layout drawings (showing locations and identification of each component). Drawings should be legible and clear.
- k) Manual Updates: copies of updates and revisions to the relevant manuals shall be provided as they become available.

## 6.1 GENERAL EQUIPMENT SPECIFICATIONS

All electronic equipment provided for field installation shall comply with NEMA environmental standards as set forth in "NEMA Standards Publication No. TS 2-1992 (or latest revision) for Traffic Controller Assemblies, Section 2".

The following defines the general requirements that shall apply to all equipment unless the requirement is specifically deleted or amended in the section defining the specific requirements for a particular type of equipment. In cases where design tests are specified herein, if the tests were performed prior to submission of the bid to Monroe County documentation shall be provided indicating that such tests have been satisfactorily completed. In this case additional factory acceptance tests may or may not be required at the discretion of the County of Monroe.

### 6.1.1 DEFINITION OF SPECIAL TERMS

**Procuring Agency:** The term "procuring agency" is used in this Specification to mean the maintaining agency or its authorized representative.

**Contractor:** The term "Contractor" is used to mean the party that is responsible for furnishing the various items of equipment.

### 6.1.2 PARTS AND MATERIALS

In the selection of parts and materials, fulfillment of the requirements of this specification shall be of prime consideration. The equipment design shall utilize the latest available techniques, minimum number of different parts, sub-assemblies, circuits, cards and/or modules, to maximize equipment reliability.

#### 6.1.2.1 ELECTRONIC COMPONENTS

Top quality high-reliability industrial components shall be used.

No component shall be of such design, fabrication, nomenclature or other identification as to preclude the purchase of said components from any wholesale electronics distributor or from the component manufacturer. When integrated circuits are provided of such special design that they preclude the purchase of identical components from any wholesale electronics distributor or component manufacturer, the equipment manufacturer will agree to provide these parts as requisitioned by the procuring agency in the quantities specified, for a period of 5 years from time of purchase. All circuits shall be designed for reliability and maximum performance. Components shall be arranged so they are easily accessible for testing and maintenance.

All components, such as resistors, capacitors, diodes, transistors and integrated circuits, shall be individually replaceable and should be clearly marked with manufacturer's part numbers, or appropriate color codes for easy identification. Standard markings shall be used to identify component polarity, pin numbering, transistor emitter/collector identified, etc.

The electronic circuitry shall be designed to ensure a reserve in the adjustment range from normal adjustment settings of all variable components. The range of adjustment shall be of sufficient magnitude to compensate for changes which may occur due to changes in part values during the normal or specified life of the device. The range of adjustment shall also be capable of compensating for variations resulting from replacement with parts within the specified tolerances.

#### 6.1.2.1 PRINTED CIRCUIT BOARDS

The printed circuit board assembly shall be coated with a protective coating to combat mildew, moisture, and fungus. Holes which carry electrical connections from one side of the board to the other shall be completely plated through.

Operating circuit components mounted on circuit boards shall be identified by characters which shall be legible and permanently printed on the circuit boards, or a clear legible drawing showing component layout and identification must be provided. The identifying characters shall be referenced to their respective components in the schematic diagram and in the parts list.

#### 6.1.2.2 MECHANICAL COMPONENTS

##### 6.1.2.2.1 MATERIAL

All parts shall be made of corrosion-resistant material, such as plastic, stainless steel, aluminum or brass, or shall be treated with a corrosion-resistant substance such as cadmium plating or galvanizing. All materials used in construction shall be resistant to fungus growth and moisture deterioration. Dissimilar metals apt to corrode through electrolysis under the environmental operating conditions specified shall be separated by an inert material.

#### 6.1.3 ELECTRICAL CHARACTERISTICS

##### 6.1.3.1 DESIGN LIFE

All components in their normal circuit application shall be designed to operate continuously for at least 15 years unless otherwise specified in the Specific Requirements section for each equipment.

#### 6.1.3.1.2 WIRE SIZE

All wiring shall be of such size to satisfy good engineering practices and meet the requirements of the National Electric Code.

#### 6.1.3.1.11 FAIL SAFE

The equipment shall be designed such that the failure of one unit does not cause the failure of any other.

#### 6.1.3.2.2 KEYING

Modules of unlike function shall be mechanically keyed to prevent insertion into the wrong socket or connector.

#### 6.1.3.2.3 IDENTIFICATION

All modules and assemblies shall be clearly identified with name, model number, serial number and any other pertinent information required to facilitate equipment maintenance.

#### 6.1.3.2.4 MAINTENANCE PROVISIONS

All equipment shall be designed for ease of maintenance. All component parts shall be readily accessible for inspection and maintenance. The only tools required for maintenance by personnel shall be simple hand held tools.

Equipment shall be designed for easy field maintenance (isolation of malfunctions to particular unit or assemblies) by personnel working under difficult conditions.

Test points shall be provided for checking essential voltages and waveforms, for injecting signals. The equipment shall be designed so that it can be easily installed and maintained. Accessibility and serviceability features which will lead to simplified maintenance shall be a prime consideration.

#### 6.1.5 QUALITY ASSURANCE PROVISIONS

In cases where "Design Approval Tests" (section 6.1.5.3) are specified herein, documentation shall be provided with the bid proposal that such tests have been satisfactorily completed. Additionally "Factory Acceptance Tests" (section 6.1.5.1) may be required at the discretion of the County of Monroe. The contractor shall be responsible for arranging that the equipment covered by this specification shall be subjected to "Factory Acceptance Tests" as required by the County of Monroe, at the equipment manufacturer's facility. The County of Monroe reserves the right to have its representatives tour the manufacturing facility and witness all factory acceptance tests. The results of each test shall be compared with the requirements specified herein. Failure to conform to requirements for any test shall be counted as a defect and the equipment shall be subject to rejection by the County of Monroe. Rejected equipment may be offered again for retest provided all non-compliances have been corrected and retested by the contractor. Final inspection and acceptance of equipment shall be made after delivery at destination specified unless otherwise stated. Additional testing may be required in the individual specifications for each type of component. Individual tests as specified in section 6.1.5.2 shall be run at the manufacturer's facility on every component shipped.

### 6.1.5.1 FACTORY ACCEPTANCE TESTS

The contractor shall be responsible for the implementation of any factory acceptance tests required by Monroe County at the manufacturer's facility. The County of Monroe shall be advised a minimum of ten (10) calendar days before the start of tests. The County of Monroe reserves the right to witness all factory acceptance tests and to tour the manufacturing facility. The contractor shall furnish test reports, as required, showing quantitative results for all tests. The reports shall be signed by an authorized representative of the equipment manufacturer. Factory acceptance tests may consist of any or all of the specified design approval tests (see section 6.1.5.3) at the discretion of the County of Monroe.

#### 6.1.5.1.1 TEST PROCEDURES

The procedures and data forms used for conducting factory acceptance tests shall be provided by the contractor and submitted to the procuring agency for approval. The test procedures shall have approval by the procuring agency prior to submission of equipment for tests. The test procedures shall include the sequence of conducting the tests.

#### 6.1.5.1.2 CONSEQUENCES OF FACTORY ACCEPTANCE TEST FAILURE

If a unit fails to pass its factory acceptance test the unit shall be corrected or another unit substituted in its place and the test entirely repeated. If a unit has been modified as a result of an acceptance test failure a report shall be prepared and delivered to the County of Monroe prior to shipment of the unit. The report shall describe the nature of the failure and the corrective action taken. If the unit fails the acceptance test twice the unit shall be rejected.

### 6.1.5.2 INDIVIDUAL TESTS

Unless otherwise specified, each equipment item shipped shall be subjected to the individual test. The individual tests specified here are minimum requirements and a manufacturer should not lower his normal testing standards to meet this minimum. A test report detailing the status of individual tests performed shall accompany each item of equipment when received at our facility. As a minimum, each equipment item accepted shall have passed the following:

- a. Examination of Product (6.1.5.2.1)
- b. Operational Test (6.1.5.2.2)
- c. Any other individual test called for in the individual specification for a type of equipment.

#### 6.1.5.2.1 EXAMINATION OF PRODUCT

Each equipment unit shall be examined carefully to verify that the materials, design, construction, markings and workmanship comply with the requirements of this Specification.

#### 6.1.5.2.2 OPERATIONAL TEST

Each equipment unit shall be operated long enough to permit equipment temperature stabilization and to check and record an adequate number of performance characteristics to assure compliance with the requirements of the individual equipment specifications. All modes of operation and equipment functions should be verified to be working properly. Procedures for operational tests and the forms used for recording tests results, shall be submitted to the County of Monroe for approval prior to shipping the first unit under this bid.

#### 6.1.5.3 DESIGN APPROVAL TESTS

Unless otherwise specified in the individual equipment specification, design approval tests shall be conducted by the manufacturer on one or more sample equipments of the given type to determine if the design of the equipment meets the requirements of the appropriate NEMA Specification. The tests shall be conducted in accordance with the approved procedure of paragraph 6.1.5.3.1. The contractor shall furnish test reports, showing quantitative results of all tests required. The reports shall be signed by an appropriate officer of the manufacturing firm. The data obtained in conducting these tests shall be submitted by the contractor to the procuring agency with the bid proposal.

##### 6.1.5.3.1 DESIGN APPROVAL TEST PROCEDURES

Design approval tests, when required for street equipment, shall be conducted under the environmental (power, voltage, temperature, humidity, vibration, shock) test profiles as specified in NEMA Standard TS2-1992 (or latest revision) for each individual type of equipment.

**UNIT PRICE SHEET**

Cabinet (complete) \$5489.00/ea.

**MONROE COUNTY PURCHASING**  
**Vendor Performance Survey**

**Contract Title:** \_\_\_\_\_

**Contract Number:** \_\_\_\_\_

**Vendor:** \_\_\_\_\_

Please rank the vendor performing the contract specified on a scale from "1" to "10" with "1" being poor, "5" average and "10" excellent. Please include any additional comments or suggestions in the space provided below. Monroe County Purchasing appreciates your input.

	Poor				Average					Excellent
	1	2	3	4	5	6	7	8	9	10
Item(s) supplied met specifications										
Product provided value (taking into account price, quality, etc.)										
Timeliness of delivery										
Completeness and accuracy of order										
Ability to contact representatives of vendor when needed? (If unavailable was call back prompt?)										
Invoices received promptly and accurately										
Recommendations received from the vendor (i.e. product information, cost saving strategies, ideas for better use of resources, etc.)										

Survey Completed by:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Agency: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

***Please submit this survey to Monroe County Purchasing.***