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PART I
GENERAL CLAUSES AND CONDITIONS

1. The equipment furnished under this specification shall be the latest improved model in current production, as offered to commercial trade, and shall be of quality workmanship and material. The respondent represents that all equipment offered under this specification shall be new. USED, SHOPWORN, DEMONSTRATOR, PROTOTYPE, REMANUFACTURED, RECONDITIONED OR DISCONTINUED MODELS ARE NOT ACCEPTABLE.

2. Respondent should submit with the solicitation or have on file with TxDOT, Austin, Texas, the latest printed literature and detailed specifications on equipment the respondent proposes to furnish. This literature is for informational purposes only.

3. All parts not specifically mentioned which are necessary for the unit to be complete and ready for operation or which are normally furnished as standard equipment shall be furnished by the vendor. All parts shall conform in strength, quality and workmanship to the accepted standard of the industry.

4. The unit provided shall meet or exceed all Federal and state of Texas safety, health, lighting and noise regulations and standards in effect and applicable to equipment furnished at the time of manufacture.

5. It is the intent of TxDOT to purchase goods, equipment and services having the least adverse environmental impact, within the constraints of statutory purchasing requirements, TxDOT need, availability, and sound economical considerations. Suggested changes and environmental enhancements for possible inclusion in future revisions of this specification are encouraged.

PART II
SPECIFICATIONS

1. SCOPE: This specification describes a traffic control surveillance cabinet and all necessary associated electrical and mechanical devices. The cabinet will be used to house various types of traffic control surveillance equipment which may include:

   1.1. Lane control signal (LCS) controller units.
   1.2. Surveillance loop detectors termination point.

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1.3. Field telephone unit.
1.4. Local control unit (LCU).
1.5. Communication modem.
1.6. Ramp meter control panel.
1.7. Closed circuit television control receiver and fiber optic video transmitter.
1.8. Drop/insert multiplexor (D/I Muldem).
1.9. Data fiber optic transceivers.
1.10. Modular fiber distribution housing.
1.11. Subrate data multiplexor distribution panel.
1.12. Closed circuit television (CCTV) color video compression system (CVCS).

The cabinet shall meet the requirements of this specification and the surveillance cabinet plans, seven sheets. Both documents are available on the TxDOT internet home page at www.dot.state.tx.us. Specific directions for obtaining both of the documents will be included in the solicitation.

EXAMPLE: Eagle Traffic Control Systems, Model Number JBS753, Henke Enterprises, Inc. HEI Surveillance Cabinet, or TxDOT approved equal.

NOTICE TO RESPONDENTS: Any example shown is listed to show type and class of equipment desired. Respondents are cautioned to read the specification carefully, as there may be special requirements not commonly offered by the equipment manufacturer. DO NOT ASSUME YOUR STANDARD EQUIPMENT MEETS ALL OF THE DETAILED SPECIFICATION REQUIREMENTS MERELY BECAUSE IT ISListed AS AN EXAMPLE. Respondents are cautioned that any unit delivered to the FOB points which does not meet specifications in every aspect will not be accepted.

2. CABINET DESIGN REQUIREMENTS

2.1. The cabinet shall be a base mount cabinet with the following external dimensions:
   Width – 59” (1499 mm)
   Height – 75” (1905 mm)
   Depth – 26” (660 mm)
   External dimensions may be ± 2” (51 mm). If cross supports are used in the bottom of cabinet, they shall be 17” (432 mm) from sidewalls of cabinet.
2.2. The cabinet shall be constructed using unpainted sheet aluminum with a minimum thickness of 0.187” (5 mm). Material used in the cabinet shall meet National Electrical Manufacturers Association (NEMA) standards.
2.3. The cabinet shall be completely weatherproofed to prevent the entry of water. All exterior seams for cabinet and doors shall be continuously welded. All exterior welds shall be smooth. Aluminum lifting eyes or ears shall be permanently attached or built into the cabinet to permit lifting the cabinet with a sling.
2.4. Vertical shelf support channels shall be provided to permit adjustment of shelf location.
2.5. The cabinet shall be equipped with an extra set of “C” channel on either side of the front section of the cabinet to permit the mounting of additional equipment.
2.6. The cabinet shall be equipped with three adjustable, removable shelves. The shelves shall be at least 10.50” (267 mm) deep and be located in the cabinet to provide 0.50” (13 mm) clearance between the back of the shelf and the back of the cabinet.
2.7. The bottom shelf shall be fitted with a lidded, slide out work drawer. The drawer shall be 24-3/8" (619 mm) wide and shall extend a minimum of 18" (457 mm). The drawer shall be made of 0.125" (3 mm) thick aluminum, installed using heavy duty rack mount shelf guides, and shall lock in position. The drawer lid shall be attached by means of a full-length piano hinge.

2.8. The cabinet shall be equipped with two interconnection panels. Each panel shall have four 25-pair punch down terminal blocks, S66M1-50 with quick clip style 571 or TxDOT-approved equal, uniquely marked with a silk screen diagram or permanent stencil as shown on the plans. The cabinet shall also include circuit breakers, grounding bars, radio interference filters, lighting arrestors, a fan and fluorescent lighting.

2.9. The cabinet shall have two doors in front and two doors in back that will provide access to the cabinet. Each door shall have five hinges, or a full-length stainless steel piano hinge, with stainless steel pins spot welded at the top. The hinges shall be mounted so that it is not possible to remove them from the doors or cabinet without first opening the doors. A removable center support shall be placed in the middle of each set of doors to ensure cabinet rigidity.

2.10. The doors and hinges shall be braced to withstand a 100 pound per vertical foot (148 kg per vertical meter) of door height load applied vertically to the outer edge of the door when standing open. There shall be no permanent deformation or impairment of any part of the door or cabinet body when the load is removed. Two retainers, top and bottom, shall be designed to hold the door open at 90° and 180° positions.

2.11. The cabinet doors shall be fitted with Number 2 Corbin locks and aluminum or chrome plated handles with a 0.375" (9 mm) minimum drive pin and a three-point latch. The lock and latch design shall be such that the handle cannot be released until the lock is released. The handle shall have a locking ring so a padlock can be installed in addition to the Corbin lock. Two keys shall be provided for each cabinet. The lock shall be located to be clear of the arc of the handle.

2.12. A gasket shall be provided to act as a permanent dust and weather resistant seal at the cabinet door facing. The gasket material shall be of a non-absorbent material, such as rubber, and shall maintain its resiliency after exposure to the outdoor environment. The gasket shall have a minimum thickness of 0.375" (9 mm) and shall be located in a channel provided for this purpose either on the cabinet or on the door. A channel formed by an "L" bracket and the door lip is acceptable. The gasket shall show no sign of rolling or sagging and shall ensure a uniform dust and weather resistant seal around the entire door facing. The TxDOT engineer shall approve any other method.

2.13. The cabinet shall be vented and cooled by four thermostatically controlled fans. The thermostats shall be an adjustable type with an adjustment range of 70 to 110° F (21 to 43° C). A press-to-test switch shall be provided to test the operation of the fans.

2.14. The fans shall be a commercially available model with a capacity of at least 100 CFM (2.83 m³). The intake for the vent system shall be filtered with a 16" (406 mm) wide by 12" (305 mm) high by 1" (25 mm) thick washable reusable aluminum air conditioning filter. The filter shall be securely mounted so that any air entering the cabinet shall pass through the filter. The cabinet opening for intake of air shall be large enough to use the entire filter. The exhaust vent shall be screened to prevent entry of insects. The screen shall have openings no larger than 0.0125 square inch (8 mm²). The total free air opening of the vent shall be large enough to prevent excessive backpressure on the fan.

2.15. The cabinet shall be provided with a unique five digit serial number which shall be stamped directly on the cabinet or engraved on a metal or metalized Mylar, or TxDOT-approved equal, plate riveted with aluminum rivets to the cabinet. The digits shall be at least 0.50" (13 mm) in height and located on the upper right sidewall near the front of the cabinet.
2.16. Copper ground buses shall be provided for both the power supply neutral (common) and chassis ground. Each bus bar shall provide a minimum of ten unused terminals with 3-32 x 5/16" or larger screws. The alternating current (AC) neutral and chassis ground buses shall not be connected to any point. The logic ground shall be isolated from the AC neutral and terminated on a logic ground bus sufficient to accept 20 each number 20 AWG stranded wires.

2.17. Six each 20 ampere circuit breakers, equipped with solderless connectors, shall be mounted and wired on the sidewall or lower right hand side of the back panel inside the cabinet. The circuit breakers shall be Square D QOU 150 series, GE THQC 1150 L series, or TxDOT-approved equal. The circuit breakers shall be positioned so that the rating markings are visible. The circuit breakers shall be easily accessible. The circuit breakers shall be installed in order as follows, with one each circuit breaker to protect each group of equipment listed:

2.17.1. Fluorescent light, a ground fault circuit interruption (GFCI) type duplex receptacle, and fan.

2.17.2. LCS and a duplex receptacle.

2.17.3. LCU, communication modem, and a duplex receptacle.

2.17.4. Closed circuit television (CCTV) system.

2.17.5. D/I Muldem.

2.17.6. Regulated linear power supply.

2.18. The three duplex receptacles shall be a three wire grounding type which shall accept a standard two-pronged non-grounding plug. The duplex receptacles shall be wired on the load side of the 20-ampere breaker. The duplex receptacle in Paragraph 2.17.1 shall be a GFCI type. The duplex receptacles shall be installed with 4" (102 mm) minimum center to center clearance horizontally and 5" (127 mm) minimum center to center clearance vertically.

2.19. The line side of all circuit breakers shall be protected by an Edco Model ACP340 or TxDOT-approved equal, lightning arrestor. Number 10 AWG or larger wires shall be used to connect the lightning arrestor into the circuit. HESCO LF50 or TxDOT-approved equal, AC line filters shall also be supplied.

2.20. A 15 watt fluorescent light, with switch, shall be installed in the cabinet. This light shall turn on when the front cabinet door is opened, and turn off by means of a door switch when the door is closed. A switch shall also be provided to turn off any incandescent display that may be used in a controller unit or other equipment.

2.21. Except where soldered, all wires shall be provided with lugs, or other TxDOT-approved terminal fittings, for attachment to binding posts. Insulation parts and wire insulation shall be insulated for a minimum of 600 volts.

2.22. All wiring shall be placed in a neat and orderly manner and grouped together with nylon tie downs.

2.23. A 0.125" (3 mm) thick cover made from clear Lexan, or TxDOT-approved equal, shall be provided to cover the power panel and power input terminal boards. This cover shall be mounted with brackets or screws, and should not interfere with any conduit, wiring, or functional operation within the cabinet.

2.24. A regulated linear power supply shall be mounted and wired in the cabinet and shall meet the following requirements:

2.24.1. AC input: 115 VAC ± 10%, 60 Hz ± 3 Hz.
2.24.2. Regulated voltage output: 24 VDC ± 5% minimum adjustment range. Line regulation: ± 0.05% up to 10% line change. Load regulation: ± 0.05% for up to 50% load change. Output ripple: 3 MV ± 0.02% peak to peak.

2.24.3. Output current: 7.2 amperes at 122° F. (50° C).

2.24.4. Overshoot: No overshoot at turn-on, turn-off, or power failure.

2.24.5. Operating temperature range: Continuous duty from 32 to 43° F. (0 to 6° C).

2.24.6. Input and output connections: Terminal block on front of chassis shall contain all terminals for AC input, DC output and ground connections.

2.24.7. Efficiency: 60% minimum.

2.24.8. Dimensions: Shall not exceed 14” (356 mm) wide x 5” (127 mm) high x 3” (76 mm) deep.

2.24.9. Weight: Shall not exceed ten pounds (4.54 kg).

Input and output power shall be properly fused, and the unit shall have automatic short circuit, over current and over voltage protections. The unit shall be cooled convectionally with no external blower required.

2.25. The cabinet shall have two back panels, as shown on the plans, containing LCS load switches, terminal strips and permanent labeling of all connections. The back panel shall be fabricated from 0.125” (3 mm) sheet aluminum. All openings in the panel shall be neatly punched and all edges finished smooth. Terminal strips for power supply and grounding shall be located on the right side of the back panel. All exposed power terminals shall be protected by clear Lexan, or TxDOT-approved equal, covers. All markings and identification shall be silk screened on the panel and sealed with a clear acrylic sealer, or TxDOT-approved equal.

All terminal strips used in the cabinet shall be a thru panel design with 0.250” (6 mm) flat blade quick connect insulator bases. The terminal strips shall have the appropriate number of positions to minimize the number of terminal strips required for back panel fabrication.

The vendor shall provide all data, control, power and confirmation connections on the back panels, and include all LCU and lane signal harnesses. Any other harnesses necessary shall also be included.

2.26. An equipment rack shall be secured to the middle shelf as shown on the plans. The rack shall be mounted to provide 1.50” (38 mm) minimum cable clearance between the rack and the rear cabinet wall.

The equipment rack shall accommodate standard 19” (483 mm) rack mounted chassis units, e.g. CCTV equipment, D/I Muldem, CVCS, as shown on the plans. The equipment rack dimensions shall be 15” (381 mm) deep and shall provide 24” (610 mm) of vertical rack space.

The equipment rack shall include front and rear mounting rails tapped on EIA universal spacing for 10-32 bolts.

2.27. The cabinet shall be delivered on 4” (102 mm) x 4” (102 mm) runners covered with 0.50” (13 mm) plywood to facilitate handling. Runners consisting of stacked 2” (51 mm) x 2” (51 mm) boards are not acceptable.

2.28. Shop drawings of the cabinet and cabinet wiring diagrams, as described in this specification and the plans, shall be submitted for approval to the TxDOT engineer listed on the IFB. Approval by TxDOT will not exceed 15 days.

2.29. One set of manuals on commercially supplied equipment shall be provided with the order.
PART III

ACCEPTANCE AND PAYMENT

1. **ACCEPTANCE INSPECTION**: All equipment ordered will be subject to acceptance inspection and performance testing upon receipt. Acceptance inspection and performance testing will not take more than 30 days. The vendor will be notified within this time frame of any units not delivered in full compliance with the purchase order specifications. If any units are canceled for non-acceptance, the needed equipment may be purchased elsewhere and the vendor may be charged full increase, if any, in cost and handling.

2. **PAYMENT**: Payment will be made within 30 days after the acceptance inspection has been completed and TxDOT determines that the equipment delivered meets specifications or the day on which the correct invoice for the goods or materials was received, whichever is later.

PART IV

WARRANTY

1. **WARRANTY**: The equipment offered shall be warranted against defective materials, workmanship, and failures for twelve months from the date of acceptance. If the manufacturer’s standard warranty exceeds twelve months, then the standard warranty period shall apply.