



SPECIAL PROVISIONS
FOR
TRAFFIC SIGNALIZATION

Linn County

Project Number
STP-A-C057(112)--5M-57

Effective Date
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THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS,
SERIES OF 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS. THESE
ARE SPECIAL PROVISIONS AND SHALL PREVAIL OVER THOSE PUBLISHED IN
THE STANDARD SPECIFICATIONS

SPECIAL PROVISIONS – TRAFFIC SIGNALIZATION

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WIRELESS VEHICLE DETECTION SYSTEM

- A. This specification sets forth the minimum requirements for a Wireless Vehicle Detection System that provides the required vehicle detection as indicated in the plans. All work, equipment and materials to provide a properly functioning Wireless Vehicle Detection System is included. Installation shall conform to manufacturer's instructions unless modified by the Engineer in the field.
- B. The system shall be comprised of these principal items: in pavement (flush to surface) wireless sensor unit at locations where detection is required, a base station at each traffic signal controller, any required amplifier units to ensure the strength of the wireless signal at the base station, along with any associated equipment required to set up the system. The equipment shall include any required mounting brackets and cable both internal and external to the traffic signal cabinet. The system shall also include any modifications to the traffic signal controller cabinet(s) necessary to provide the wireless vehicle detection.
- C. The in-pavement wireless sensor unit and the amplifier unit shall be battery powered.
- D. The Wireless Vehicle Detection System shall comply with FCC Part 15, UL, and Public Safety (Part 70).

SERVICE PEDESTAL AND BATTERY BACK-UP SYSTEM

If set forth in the Plans, the Contractor shall supply and install a combination battery back-up, and electrical service with meter and lighting controller. Additional features must include transfer switch for generator power (lockage in use), metered disconnect for traffic signal, and metered disconnect for street lighting. The service pedestal shall be part of the continuously grounded system discussed in this specification.

- A. The underground service distribution and control pedestals shall be constructed of anodized aluminum. The system shall provide uninterrupted, conditioned power (true pure sine wave) for the Traffic Controller Cabinet to eliminate Black-outs, Brown-outs, and Spikes on the signals and the control equipment. A typical intersection with a power outage, will operate as normal for 2 hours of run time and 8 hours of flash. Upon normal power resumption, the system shall recharge to 95% within 6 hours. Batteries shall be quick, hot swap replacement with no exposed terminals. The system shall monitor and record transient events and self test the batteries, and provide local and remote data.
- B. Service pedestal will include:
- Small and low profile with no exposed fasteners.
 - Fabricated from anodized aluminum.
 - Durable all welded construction.
 - Vandal proof doors with hasp stress rated to 2,000 lbs.
 - The cabinet shall be factory wired and tested before shipment.
 - UL approved copper cable busing and control wiring.
 - Meets EUSERC requirements.
 - Shall provide both unmetered and metered circuits up to 200 Amps.
- C. Cabinets and power specifications:
- Dual Cabinets external dimensions: 20.5 inches wide x 50 inches high x 19.25 inches deep, excluding door handles.
 - Cabinet shall be fabricated from 1/8 inch anodized aluminum.
 - Internal parts shall be fabricated from 14 gauge cold rolled steel.
 - Cabinet shall be all welded construction with welding materials specifically designed for the material used.
 - All fasteners, latches, and hardware shall be of stainless steel and all hinges shall be continuous piano style.
 - There shall be no exposed nuts, bolts, screws, rivets, or other fasteners on the exterior.
 - Removable backpan shall be mounted on 4 welded 1/4 inch studs.
 - Cabinet doors shall have 2,000 lb. stress rated hasp, welded to the cabinet and door.

- Cabinets shall have fully framed side hinged outer doors with swagged close tolerance sides for flush fit with top drip lip and closed cell neoprene flange compressed gaskets.
- Base mounting detail shall be identical to existing cabinets for emergency replacement.

Deadfront Safety Door

- Distribution and control panel shall have a hinged deadfront panel with 1/4 turn latch and knurled knobs.
- Deadfront shall be hinged on the same side as the front door and shall open a minimum of 120 degrees.

Power Distribution Panel

- Main breakers shall be 1 pole, 2 pole, 3 pole, or 4 pole, as appropriate for this installation, and in accordance with the local utility.
- Provide separate metered main, unmetered lighting main, and disconnects as required.
- There shall be no plug-in circuit breakers. Circuit breakers shall be industrial grade.
- All branch circuit breakers shall be installed in a vertical position, handle up for 'On', handle down for 'Off'.
- All busing shall be U.L. approved copper THHN cable busing, fully rated.

Battery Back-Up System

- Vandal-resistant construction.
- 1400 VA, 950 Watts, Industry Standard run time 3 hours - all LED Intersection.
- Typical Intersection (700 watts) run time 2 hours, with 6-8 hours of selected flash.
- Inverter Tit-out housing for easy maintenance.
- No tools required for inverter 110 contact connections and simple slide-in installation, weights 28 lbs.
- Full power bypass and isolation switches.
- Transient voltage protection.
- Power Analyzer with triple redundant Bypass
 - Conditioned power
 - Power Conflict Monitor with isolation and transfer module
 - Watchdog timer with redundant 5ms delay and hard transfer to utility power
- Smart slot communications I/O module.

- RS 232 and USB ports for local or remote monitoring.
- Intelligent battery management system with microprocessor controlled smart battery charger, automatic self test, cell guard for longer life and faster recharge times.
- 24V - 18AH batteries AGM/VRLA (absorbed glass mat/valve regulated lead acid), compact, lightweight only 25 lbs.
- Seismically rated fixed position framed battery trays.
- Quick swap hot battery replacement system.
- Heavy duty smart safety battery connection system, 30A silver plated plugs.
- Battery Manufacturer's 2 year warranty.

Control Compartment

- All components shall match existing components in use for maintenance of spare parts and known reliability.
- The cabinet shall be completely prewired in the factory.
- All control wiring is 19 strand #14 AWG THHN.
- All terminals shall be permanently labeled.

Nameplates and Drawings

- The function of circuit breakers, switches and other components as required shall be identified by laminated engraved plastic nameplates fastened with minimum of two 1/4 inch, #4-40 machine screws.