



**SPECIAL PROVISIONS
FOR
TRAFFIC SIGNAL INSTALLATION**

**Johnson County
STP-U-1557(639)--70-52**

**Effective Date
January 17, 2018**

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

156068.01 GENERAL

The Standard Specifications as modified by these specifications, or other appropriate special provisions shall apply to this project. The installation of the traffic control signals and appurtenances shall be in conformance with the MUTCD.

2525.03 UNDERGROUND.

A. Underground.

1. Handhole.

- e. Conduit.** Add the following:
 - 4)** Cap unused conduits with duct plugs.

2. Conduit.

- a. General.** Add the following:
 - 6)** Install duct plugs in conduit ends. When duct plugs are not practical, pack conduit ends with conduit sealing compound.
 - 7)** Install pull tape in each conduit segment and secure to duct plugs at each end.

3. Wiring and Cable.

- a.** Revise to the following:

Where practical, follow color codes and ensure cables are properly labeled at the controller with durable labels, or other appropriate methods, attached to the cables. Label home runs for signal and video cables as follows: northeast corner is blue, southeast corner is orange, southwest corner is yellow, and northwest corner is green. Other Coralville cable and color codes are as follows:

Left turn signals = 1 tape
Through signals = 2 tapes
Right turn signals = 3 tapes

<u>4 Conductor Cables</u> Green ball = green Yellow ball = black Red ball = red Common = White	<u>7 Conductor Cables</u> Green ball = green Yellow ball = orange Red ball = red Green arrow = blue Yellow arrow = black Common = white and white/black
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- i. Add the following:
 - 9) Fiber to be furnished and installed by the City of Coralville Engineering Department.
- j. Add the following:
 - 4) Fiber testing shall be completed by the City of Coralville Engineering Department.
- k. Add the following:
 - Pull Tape: Pull tape shall be provided as a flat polyester pull-tape with a minimum pulling strength of 1250 pounds with permanent sequential footage markings.

C. Communications.

- 2. **Fiber Optic Hub Cabinet.** Revise to the following:
Contractor shall provide and install DIN-rail mounted Ethernet Switch within proposed traffic signal cabinets. The City of Coralville uses the ES8510-XT switch manufactured by Comtrol, Inc. The City of Coralville Engineering Department will provide fiber terminal enclosure with SC connectors. Contractor shall coordinate with City of Coralville Engineering Department for fiber optic cable connections and integration with traffic signal cabinet IP components.

4189.01 UNDERGROUND.

C. Wiring and Cable.

- 5. **Category 5E (Cat5E) Cable.** Revise to the following:
Provide outdoor use rated direct burial, sun and weather resistant cable. Cable used for video detection shall be as recommended by Iteris.

4189.02 DETECTION.

B. Pedestrian Push Button Detectors.

- 1. **Assembly.** Revise to the following:
The City of Coralville uses round Polara BullDog push buttons when non-APS push buttons are specified on the plans. Body color shall be black.
- 4. **Signs.** Revise to the following:
Furnish R10-3e signs with directional arrows as shown on the plans complying with MUTCD.

C. Video Detection Camera System.

- 1. **Video Detection System and Processors.** Revise to the following:
The City of Coralville uses the Iteris VantageNext video detection system, processors, and cameras unless otherwise specified on the plans. Provide 10 inch LCD with IP54

rating or greater for cabinet detection viewing.

4189.03 COMMUNICATIONS.

A. Traffic Monitoring System. Revise to the following:

The City of Coralville uses the Axis Q-6055-E PTZ cameras unless otherwise specified on the plans.

B. Fiber Optic Hub Cabinet. Revise to the following:

Contractor shall provide and install DIN-rail mounted Ethernet Switch within proposed traffic signal cabinets. The City of Coralville uses the ES8510-XT switch manufactured by Control, Inc. The City of Coralville Engineering Department will provide fiber fiber terminal enclosure with SC connectors. Contractor shall coordinate with City of Coralville Engineering Department for fiber optic cable connections and integration with traffic signal cabinet IP components.

4189.04 CABINET AND CONTROLLER.

A. NEMA Controller, Cabinet, and Auxiliary Equipment.

1. Controller. Revise to the following:

The City of Coralville Siemens m60 Series ATC controllers. Loaded with latest version of NTCIP with ATC communication module.

2. Cabinet. Add the following:

- j.** The City of Coralville uses P size NEMA TS2 – Type 1 traffic cabinets with 18 inch riser.
- k.** The cabinet shall contain two ventilating fans controlled by a thermostat and suitable dust filters for the capacity of the ventilating system. The filters shall be of the dry type and easily removed and replaced and be of standard dimensions commercially available.
- l.** Provide a piggy back cabinet for the battery backup system.
- m.** External surge protection to the communications cables is required. The communications cable surge protector shall meet the following requirements:
 - 1)** The unit must be a two-staged protector intended for use on data or communications pairs.
 - 2)** The peak surge current for the unit shall be 10,000 amperes.
- n.** Assure the detector card rack will accommodate necessary slots required for video detection system as well as GPS based emergency vehicle pre-emption equipment detector card rack slots. City of Coralville uses GTT Opticom GPS emergency vehicle pre-emption, Model 3100.

3. Auxiliary Equipment. Add the following:

City of Coralville uses EDI SmartMonitor malfunction management unit with IP, Model MMU2-16LE-IP.

B. Uninterruptible Power Supply Battery Backup System. Add the following:

- 5.** The City of Coralville uses Alpha Technologies battery backup system with an Ethernet interface for remote monitoring, Model FXM 1100 UPS Model w/ Universal Auto Transfer Switch (UATS).
- 6.** Batteries shall be provided with 5 year performance warranty and heater mats.
- 7.** The following Alpha modules shall be installed: Alpha Guard, Alpha Remote Maintenance and Alpha UATS bypass switch.

C. Emergency Vehicle Preemption System. Revise to the following:

The City of Coralville uses Opticom GPS System Intersection Equipment, Model 3100 GPS Radio Unit, manufactured by Global Traffic Technologies. GPS radio unit mounting bracket shall be painted to match the traffic signal pole. GPS radio unit cable shall be per manufacturer's recommendations. Contractor shall furnish and install all equipment and materials to provide a fully functional emergency vehicle preemption system.

4189.05 POLES, HEADS, AND SIGNS.

A. Vehicle Traffic Signal Head Assembly.

1. Housing.

a. Revise to the following:

Individual signal sections made of durable polycarbonate manufactured by Eagle. Color shall be black and integral to the materials composition.

7. Mounting Hardware.

a. Revise to the following:

1 1/2 inch aluminum pipe and fittings, natural aluminum finish for galvanized poles or match pole color when poles are painted. Secure vertical upright mounted heads to pole by drilling and tapped with stainless steel bolts affixed to bracket flange. Banding will not be permitted for vertical upright mounted heads. Secure mast arm mounted heads to mast arm with a minimum 5/8 inch wide stainless steel banding material.

c. Add the following:

All traffic signal heads shall be side mounted when installed on a vertical pole. Post top mounting is not allowed. Factor side mounting and minimum mounting height requirements when determining pedestal pole shaft lengths.

8. LED Modules. Revise to the following:

The City of Coralville uses LED modules manufactured by Dialight, Inc. The LED modules shall comply with current ITE standards. LED modules shall be provided with a 15 year performance warranty. See plan sheets for model numbers.

B. Pedestrian Traffic Signal Head Assembly.

1. Housing.

a. Revise to the following:

Made of a durable polycarbonate. Color shall be black and integral to the materials composition.

2. Visor.

a. Revise to the following:

Egg crate type visor attached to the housing door.

3. LED Modules. Add the following:

c. LED modules shall be provided with a 15 year performance warranty.

d. Pedestrian traffic signal head shall be one combined 16 inch LED light with "Walk" / "Flashing Don't Walk" / on left and count down on right side.

C. Traffic Signal Poles and Mast Arms.

1. General. Add the following:

i. Pole Finish: The signal supports to include poles, mast arms and luminaire arms, pedestal poles, push button poles/posts, and all bases shall be finish coated with smooth powder coat, color matching Lumec Black, over galvanizing. Prior to the application of the powder coat, the surfaces shall be prepared by removing rolled-in mill scale, impurities, and non-metallic foreign materials. After assembly, all weld flux shall be

mechanically removed. Iron or steel surfaces shall then be degreased by immersion in an agitated 4.5% to 6% concentrated caustic solution elevated to a temperature ranging from 150°F to 180°F. The product shall then be pickled by immersion in a heated sulfuric acid solution of 6% to 13% concentration, controlling the temperature at 150°F. The product shall then be rinsed clean of any residual effects of the caustic or acid solutions by immersion in a circulating fresh water bath. The product shall then be immersed in a concentrated zinc ammonium chloride flux solution heated to 130°F. The solution's acidity content shall be maintained between 4.5 to 5.0 pH. The product shall be air dried prior to zinc coating. Next, the product shall be hot-dip galvanized to the requirements of either ASTM A 123 or ASTM A 153 by immersion in a molten bath of prime western grade zinc maintained between 810°F to 850°F. Maximum aluminum content of the bath shall be 0.01% and the flux ash shall be skimmed from the bath surface prior to immersion and extraction. Galvanized exterior surfaces visually exposed shall be coated with a Urethane or Triglycidyl Isocyanurate (TGIC) Polyester Powder to a minimum dry film thickness (DFT) of 2.0 mils. The surfaces shall be mechanically etched by brush blasting and the zinc coated substrate shall be preheated to 450°F for a minimum of 1 hour in a gas-fired convection oven. Finally, the coating shall be electrostatically applied and cured by elevating the zinc-coated substrate temperature to a minimum of 400°F in a gas-fired convection oven. To prevent damage during delivery, small poles shall be wrapped in 0.188 inch thick ultraviolet-inhibiting, plastic-backed foam and larger poles shall be cradled in a 1.0 inch rubberized foam base. If the painted surface of any equipment piece is damaged in shipping or installation, such equipment shall be retouched or repaired in a manner satisfactory to the Engineer.

D. Traffic Signal Pedestal Poles.

1. **Materials.** Add the following:
 - d. The City of Coralville uses Pelco Products for traffic signal pedestal poles and bases.

E. Pedestrian Push Button Post.

1. **Post.**
 - a. Revise to the following:
The City of Coralville uses Pelco Products for pedestrian push button posts and bases.