



**SPECIAL PROVISIONS
FOR
SITE ELECTRICAL**

**Polk County
EDP-PA26(003)--7Y-77**

**Effective Date
October 17, 2023**

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.

231009.A0 - LOW VOLTAGE WIRE AND CONNECTORS

231009.A1 DESCRIPTION.

A. Section Includes

1. Wire and cable for 600 volts and less.
2. Wiring connectors and connections.

B. References

1. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2006.
2. NFPA 70 - National Electrical Code; National Fire Protection Association; 2005.

231009.A2 MATERIALS.

A. Wiring Requirements

1. Above Grade Exterior Locations: Use only building wire with Type THWN insulation in raceway.
2. Underground and Below Grade Installations: Use only building wire with Type XHHW / XHHW-2 insulation in raceway.
3. Use solid conductor for feeders and branch circuits No. 12 AWG and smaller.
4. Use stranded conductor for feeders and branch circuits No. 10 AWG and larger.
5. Use stranded conductors for control circuits.

B. Wiring Connectors

1. Spring Wire Connectors: Use Spring Wire Connectors only on No. 10 AWG and smaller wiring in completely enclosed above grade applications
2. Compression Connectors: Use Insulated Copper Compression connectors, for all insulated wire below grade applications. Use Uninsulated Copper Compression connectors, for all bare copper wire below grade applications. Make all crimps with the Manufacturer specified

tool and dies using the specified number of crimps.

231009.A3 CONSTRUCTION.

- A. Install wire and cable securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Route wire and cable as required to meet project conditions.
- C. Pull all conductors into raceway at same time.
- D. Use suitable wire pulling lubricant for building wire No. 4 AWG and larger.
- E. Neatly train and lace wiring inside boxes, equipment, and supply cabinets.
- F. Clean conductor surfaces before installing lugs and connectors.
- G. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- H. Identify and color code wire and cable under the provisions for electrical identification of this special provision. Identify each conductor with its circuit number or other designation indicated.

231009.B0 – GROUNDING AND BONDING

231009.B1 DESCRIPTION.

- A. **Section Includes**
 - 1. Grounding and bonding components.
 - 2. Provide all components necessary to complete the grounding system(s) consisting of:
 - a. Rod electrodes.
 - b. Conduit bushings with Ground Lugs for all RGC conduit sections installed for lighting conduits.
 - c. Copper grounding electrode conductor.
- B. **Submittals**

Submit product data sheets for Rod electrodes, connectors, and conductor.
- C. **Performance Requirements**

Grounding System Resistance: 5 ohms maximum.

231009.B2 MATERIALS.

- A. **Electrodes**
 - 1. Rod Electrodes: Copper.
 - 2. Diameter: 5/8 inch.
 - 3. Length: 10 feet.
- B. **Connectors and Accessories**
 - 1. Mechanical Connectors: Bronze.
 - 2. Grounding Electrode Conductor: No. 6 Solid Bare copper.
 - 3. Equipment Grounding Conductor: No. 6 Stranded Bare Copper.

231009.B3 CONSTRUCTION.

- A. Install ground electrodes at each pole base and at each Electrical Supply Cabinet as indicated on the Plans.

- B. Provide insulated equipment grounding conductor for each circuit within common conduit. Insulation to be green in color.
- C. Provide grounding electrode conductor, No. 6 bare copper minimum from grounding electrodes to each adjacent pole and to each adjacent electric supply cabinet. Provide No. 6 bare copper tap on each RGC conduit section.

231009.C0 – CONDUIT AND FITTINGS

231009.C1 DESCRIPTION.

A. Section Includes

Conduit, fittings, and conduit bodies.

B. Related Sections

1. Grounding and Bonding for Electrical Systems.
2. Hangers and Supports for Electrical Systems.
3. Identification for Electrical Systems.
4. Boxes.

C. References

1. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2005.
2. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2006.
3. NECA 101 - Standard for Installing Steel Conduit (Rigid, IMC, EMT); National Electrical Contractors Association; 2006.
4. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2003.
5. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit; National Electrical Manufacturers Association; 2003.
6. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing; National Electrical Manufacturers Association; 2004.
7. NFPA 70 - National Electrical Code; National Fire Protection Association; 2005.

D. Delivery, Storage, And Handling

1. Accept conduit on site. Inspect for damage.
2. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
3. Protect PVC conduit from sunlight.

231009.C2 MATERIALS.

A. Conduit Requirements

1. Conduit Size: As shown on plans. Comply with NFPA 70.
2. The minimum bending radius of conduit for secondary (600V or less) wiring is six times the inside diameter of the conduit.

B. Nonmetallic Conduit

1. Description: NEMA TC 2; Schedule 40 PVC.
2. Fittings and Conduit Bodies: NEMA TC 3.

231009.C3 CONSTRUCTION.

- A. Install conduit securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Install nonmetallic conduit in accordance with manufacturer's instructions.

- C. Arrange supports to prevent misalignment during wiring installation.
- D. Cut conduit square using saw or pipecutter; de-burr cut ends.
- E. Bring conduit to shoulder of fittings; fasten securely.
- F. Provide suitable fittings to accommodate expansion and deflection where conduit crosses expansion joints.
- G. Provide suitable pull string in each empty conduit except sleeves and nipples.
- H. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- I. Ground and bond all RGC lighting conduit sections under provisions Grounding and Bonding.
- J. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment.
 - 1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 - 2. Where conduits are subject to earth movement by settlement or frost.

231009.D0 – ELECTRICAL PULL AND JUNCTION BOXES

231009.D1 DESCRIPTION.

- A. Section Includes**
Pull and junction boxes.
- B. References**
 - 1. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2006.
 - 2. NFPA 70 - National Electrical Code; National Fire Protection Association; 2005.
- C. Submittals**
Submit box data sheet including size, Manufacturer's testing reports, and color information.
- D. Quality Assurance**
Conform to requirements of NFPA 70.

231009.D2 MATERIALS.

In-ground pullboxes shall be pre-cast polymer concrete, open bottom, ANSI Tier 15, minimum. Gray in color. 17 inches by 30 inches by 18 inches deep, (Quazite PG1730BA18 or equivalent). With Covers, ANSI Tier 15, marked "ELECTRIC", to fit boxes provided, (Quazite PG1730HH00, or equivalent), Gray in color. Installed in accordance with the Manufacturer's directions and the plans.

231009.D3 CONSTRUCTION.

- A. Installation**
 - 1. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1.
 - 2. Install in locations as shown on plans, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.
- B. Adjusting**
Adjust boxes flush with finished grade.

231009.E0 – ELECTRICAL IDENTIFICATION

231009.E1 DESCRIPTION.**A. Section Includes**

1. Nameplates and labels.
2. Wire and cable markers.
3. Locator wire

B. Submittals

Submit material and installation data for nameplates and warning tape.

231009.E2 MATERIALS.**A. Nameplates and Labels**

1. Nameplates: Engraved three-layer laminated plastic, black letters on white background.
2. Locations: Each electrical distribution and control equipment enclosure.
3. Letter Size: Use 1/8 inch letters for identifying individual equipment and loads.

B. Wire Markers

1. Locations: Each conductor at panelboard gutters, pull boxes, outlet boxes, and junction boxes and each load connection.
2. Each lighting circuit at the load side of the fuseholder for that circuit.
3. Legend: Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.

C. Underground Warning Tape

Four inch wide plastic tape, detectable type colored red with suitable warning legend describing buried electrical lines.

D. Locator Wire

No. 12 AWG minimum. Terminated in locator access ports.

231009.E3 CONSTRUCTION.

- A. Install nameplates and labels parallel to equipment lines.
- B. Secure nameplates to equipment front using screws.
- C. Secure nameplates to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify underground conduits using underground warning tape. Install one tape per trench at 3 inches below finished grade.
- E. Place locator wire along-side all buried conduit. Provide four locator-wire access ports. Locations:
 1. Main distribution panel
 2. End of each conduit run. (NW, SW, SE)
 3. Coil locator wire within each handhole and make connections for continuous locator circuit.

231009.F0 – ELECTRICAL SERVICE**231009.F1 DESCRIPTION.**

- A. Pad mounted control cabinet.
- B. Controller pad.

231009.F2 MATERIALS.

A. Control Cabinet

Control cabinet per Article 4185.07 of the Standard Specifications.

B. Controller Pad

Structural concrete and reinforcing per Section 2403 of the Standard Specifications.

231009.F3 CONSTRUCTION.

A. Controller Pad

Install controller pad per Section 2403 of the Standard Specifications and standard road plan LI-152.

B. Control Cabinet

Install control cabinet per Article 2523.03, T of the Standard Specifications and standard road plan LI-152.

231009.04 METHOD OF MEASUREMENT.

Site Electrical Distribution is a lump sum bid item and will not be measured.

231009.05 BASIS OF PAYMENT.

- A.** Includes Low Voltage Wire and Connectors; Grounding and Bonding; Conduit and Fittings; Electrical Pull and Junction Boxes; Electrical Identification; and Electrical Service.
- B.** Contractor shall be paid the lump sum contract unit price. Payment shall be considered full compensation for all materials, equipment, and labor required to install the site electrical distribution.