

Section 16195

ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes electrical identification for the following:

1. Nameplates and labels
2. Wire and cable markers
3. Conduit markers
4. Cable tray markers
5. Underground warning tape
6. Warning labels

1.02 MEASUREMENT AND PAYMENT

No separate measurement or payment for work performed under this Section. Include cost of same in Contract price bid for work of which this a component part.

1.03 REFERENCES

This specification references the following publications in their current editions. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

- A. NFPA-70 - National Electrical Code (NEC)
 1. Article 110 - Requirements for Electrical Installations
 2. Article 450 - Transformers and Transformer Vaults
- B. NEMA/ANSI Z535.1: Safety Colors
- C. NEMA/ANSI Z535.2: Environmental and Facility Safety Signs
- D. NEMA/ANSI Z535.3: Criteria for Safety Symbols
- E. NEMA/ANSI Z535.4: Product Safety Signs and Labels
- F. Instrumentation, Systems, and Automation Society (ISA)
- G. OSHA 29 CFR 1910.145: Accident Prevention Tags

- H. Other applicable Codes and Standards as referenced in other Sections
- I. Underwriters Laboratories. U.L. Standards No. 224: Safety Extruded Insulated Tubing

1.04 SUBMITTALS

- A. Submit the following under the provisions of Section 01330 – “Submittal Procedures.”
 - 1. Manufacturer's cut sheets and catalog data
 - 2. Description of materials used
 - 3. Label or nameplate dimensions
 - 4. Engraving or imprint legends
 - 5. Instruction for handling and storage
 - 6. Installation instructions
 - 7. Acknowledgement that products submitted meet requirements of standards referenced.

1.05 RELATED REQUIREMENTS

- A. Section 01330 – “Submittal Procedures”

1.06-1.07 (NOT USED)

1.08 DELIVERY, STORAGE AND HANDLING

- A. Pack materials to permit ease of handling and to provide protection from damage during shipping, handling and storage.

1.09-1.13 (NOT USED)

PART 2 PRODUCTS

2.01 MANUFACTURER(S)

- A. Almetek Industries Incorporated
- B. Brady U.S.A. Incorporated
- C. Ideal Electric Company
- D. Raychem Corporation
- E. 3M Electrical Products Division

F. Thomas & Betts

G. Tyton Corporation

2.02 MATERIALS AND/OR EQUIPMENT

A. Nameplates and Labels

1. Provide an identification nameplate for each item of electrical equipment engraved with the equipment name. Use the description shown on the Plans.
2. For nameplates, use 3-ply phenolic material engraved to show black lettering on a white background. Size the nameplates approximately 1 inch wide and 3 inches long for 3 lines of 3/16 inch - 16 letters with a 0.8 condensed factor. Attach nameplates with stainless steel screws.
3. Generally, provide large pieces of equipment with engraved nameplates; provide additional nameplates at pushbuttons and other local devices. Provide identification for all other electrical equipment, device or enclosure not furnished with readily noticeable tag, nameplates or other means of identification.
4. Install nameplates on the front cover of transformers stating the transformer service location number or identification number, the panelboard or device served, and main breaker feeding the transformer (MCC No.), and the drawing number on which the transformer schematic is shown.
5. Furnish equipment, such as motor starters, safety switches, welding receptacles and circuit breakers, with 1" x 3" plastic nameplates stating description of item served.
6. Provide nameplates for motors giving the driven equipment description, and MCC the number. Nameplates shall be mounted adjacent to motors.
7. Install nameplates on the outside and inside of doors to circuit breaker panelboards (i.e., lighting, instrument or receptacle panels). State the panelboard name, the drawing number on which the panelboard schedule shows, and the main breaker feeding the panel (MCC No. or Power Panel name).
8. Type panelboard directories and insert them inside panelboard doors.
9. Place a large nameplate approximately 3"x5" on control panels, relay panels, junction boxes and similar enclosures with electrical devices mounted inside. The large nameplates shall identify the enclosure.
10. Provide a nameplate on MCC motor starter doors duplicating motor nameplate data.

11. Provide warning label on front and inside actuator controllers in accordance with NEC. Identify controller as having two (2) sources of electric power if such is the case.
- B. Wire and Cable for Control Wiring
1. Use pre-printed tubular heat-shrink type wire and cable tags. Place a tag at each end of each wire and cable for all control wiring.
 2. Select tags manufactured so that the heat-shrink process makes the imprint permanent and solvent-resistant.
 3. Use tags that are self-extinguishing, conforming to U.L. Standard No. 224 for print performance, heat shock and flammability.
 4. Provide tag material that is flexible, radiation cross-linked polyolefin with 3 to 1 shrink ratio, rated 600 volts, and white in color.
 5. Cable in cable tray shall be marked at each end and at every cable tray drop out to a motor, control panel, or switchgear.
- C. Conduit Tags
1. Provide conduit tags made of stainless steel, approximately 2 inches x 1 inch x 19 gage
 2. Stamp the conduit number or conduit identification on the tag.
 3. Punch tags for tie fasteners. Fasten tags to the conduits with stainless steel braided wire.
- D. Underground Warning Tape
1. Provide detectable warning tape made of 4 mil thick polyolefin film, 6 inches wide, suitable for direct burial and resistant to alkalis, acids and other common soil substances.
 2. Letter height: 1 ¼ inch minimum
 3. Use red tape with black legend printed in permanent ink.
 4. Legend:
 - a. Preprinted and permanently embedded
 - b. First line: "CAUTION CAUTION CAUTION"
 - c. Second line: "BURIED ELECTRIC LINE BELOW"

5. Message continuously printed
- E. Warning Labels
1. Place OSHA safety labels on enclosures and boxes 100 cubic inches or more containing electrical equipment or terminations.
 2. Provide OSHA color codes for the labels. Use labels made from 4 mil vinyl with pressure sensitive adhesive backing.
 3. The warning label caption is DANGER - 480 VOLTS for 480 volt systems. For voltages higher than 600 volts, provide warning labels with "DANGER - HIGH VOLTAGE - KEEP OUT."
 4. Labels shall be 5 inches x 3-1/2 inches for small equipment and 10 inches x 7 inches for large equipment and electrical room doors.
- F. OSHA Danger/Warning Signs
1. Non-Metallic, made of reinforced fiberglass or durable plastic
 2. Size: As required by text
 3. Thickness: 60 mils minimum
 4. Rounded corners with drilled holes in corners with grommets
 5. Preprinted with black lettering and permanently embedded and fade resistant for a 10 year minimum outdoor durability.
 6. Background color is to be the manufacturer standard or as specified
 7. Shall meet the following OSHA standards for signs: NEMA/ANSI Z535.1, NEMA/ANSI Z535.2, NEMA/ANSI Z535.3, NEMA/ANSI Z535.4, and OSHA 29 CFR 1910.145.

2.03 – 2.04 (NOT USED)

PART 3 EXECUTION

3.01 GENERAL/MANUFACTURERS (NOT USED)

3.02 PREPARATION

- A. Degrease and clean surfaces where adhesive labels shall be applied.
- B. Drill holes for nameplates to be fastened with stainless screws.
- C. Prepare the cable ends for termination and conductor markings.

- D. Identify conduits at terminating points and select conduit tag marking as indicated on the Plans.

3.03 INSTALLATION

- A. Install nameplates and labels in accordance with the manufacturer's instructions and the Plans.
- B. All components inside MCC/panels/cabinet compartments to be clearly labeled and identified with permanent identification tag or label.
- C. Provide the following diagrams and tables on the inside door of each MCC/Panel/Cabinet Compartment:
 - 1. Elementary wiring diagram (laminated, clean, and legible)
 - 2. If, after a reasonable effort, the factory panel and design will not accommodate the laminated diagram, attached to the door, it may be placed in a document pouch designed into the panel for this purpose.
 - 3. Table of Overload Heater elements/settings with the correct settings highlighted
 - 4. Table of motor circuit protector/breaker settings with the correct settings highlighted.
- D. Apply wire and cable tags in accordance with manufacturer's instructions using a heat gun with properly sized nozzle for the application. Tag the wires and cables at both ends.
- E. Tag conduits at junction boxes, pull boxes control panels, transformers, switchgear and similar location and at other termination points.
- F. Identify cable trays at the time of installation with the alphanumeric number shown on the Plans. Label cable trays on the outside rail. Labels are to be placed at maximum intervals of 50 feet. Install "Danger" Sign with appropriate description of danger (e.g. "DANGER - 480 VOLTS")
- G. Place the tray identifier at each point where the tray designation changes and at 200 foot intervals in between, but not less than two per run.
- H. Identify underground conduits, cables or duct banks using the underground delectable warning tape. The underground grounding grid, including laterals, shall be identified with underground delectable warning tape. Install one tape per trench at 12 inches below grade or as indicated on the Plans. For wide trenches or duct banks, install one warning tape per 18-inch width.
- I. Apply the 5 inch by 3-1/2 inches warning labels to disconnect switches, panelboards, terminal boxes, and similar devices in accordance with manufacturer's instruction and

the Plans. Apply the 10 inch x 7 inch warning labels to larger control panel enclosures, motor control centers and to entrance doors to rooms containing electrical power and control equipment.

- J. Install “Danger” and/or “Warning” signs with appropriate description of danger/warning (e.g. “HIGH VOLTAGE, AUTHORIZED PERSONNEL ONLY”) at the entrances to all electrical rooms, buildings containing electrical equipment, or areas posing potentially hazardous conditions (e.g. Equipment where more than one (1) voltage source is present).

END OF SECTION