

SECTION 260553

ELECTRICAL IDENTIFICATION

PART 1 – GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.
- B. Requirements of the following Division 26 Sections apply to this section:
 - 1. Section 260000 - Basic Electrical Requirements.
 - 2. Section 260001 - Basic Electrical Materials and Methods.
 - 3. Section 260519 - Low Voltage Wires and Cables, for requirements for color coding of conductors for phase identification.

1.2 SUMMARY

- A. This Section includes identification of electrical materials, equipment, and installations. It includes requirements for electrical identification components including but not limited to the following:
 - 1. Identification labeling for raceways, cables, conductors and coverplates.
 - 2. Operational instruction signs.
 - 3. Warning and caution signs.
 - 4. Equipment labels and signs.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division regarding to "Painting" for related identification requirements.
- C. Refer to other Division 26 sections for additional specific electrical identification associated with specific items.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Product Data for each type of product specified.

1.4 QUALITY CONTROL

- A. Electrical Component Standard: Components and installation shall comply with NFPA 70 - National Electrical Code.

- B. ANSI Compliance: Comply with requirements of ANSI Standard A13.1, "Scheme for the Identification of Piping Systems," with regard to type and size of lettering for raceway and cable labels.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following, or equivalent manufacturer as approved by the Professional:

1. American Labelmark Co.
2. Calpico, Inc.
3. Cole-Flex Corp.
4. Emed Co., Inc.
5. George-Ingraham Corp.
6. Ideal Industries, Inc.
7. Kraftbilt
8. LEM Products, Inc.
9. Markal Corp.
10. National Band and Tag Co.
11. Panduit Corp.
12. Radar Engineers Div., EPIC Corp.
13. Seton Name Plate Co.
14. Standard Signs, Inc.
15. W.H. Brady Co.

2.2 ELECTRICAL IDENTIFICATION PRODUCTS

- A. Adhesive Marking Labels for Raceway and Metal-clad Cable: Pre-printed, flexible, self-adhesive labels with legend indicating voltage and service (Emergency, Lighting, Power, Light, Power d.c., Air Conditioning, Communications, Control, Fire).
 1. Label Size: as follows:
 - a. Raceways 1-Inch and Smaller: 1-1/8 inches high by 4 inches long.
 - b. Raceways Larger than 1-Inch: 1-1/8 inches high by 8 inches long.
 2. Color: Black legend on orange background.
- B. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape not less than 3 mils thick by 1 inch to 2 inches in width.
- C. Pretensioned Flexible Wraparound Colored Plastic Sleeves for Raceway and Cable Identification: Flexible acrylic bands sized to suit the raceway diameter and arranged to stay in place by pre-tensioned gripping action when coiled around the raceway or cable.
- D. Underground Line Marking Tape: Permanent, bright-colored, continuous-printed, plastic tape compounded for direct-burial service not less than 6 inches wide by 4 mils thick. Printed legend indicative of general type of underground line below.
- E. Wire/Cable Designation Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound, cable/conductor markers with preprinted numbers and letter.

- F. Aluminum, Wraparound, Cable Marker Bands: Bands cut from 0.014-inch thick, aluminum sheet, fitted with slots or ears for securing permanently around wire or cable jacket or around groups of conductors. Provide for legend application with stamped letters or numbers.
- G. Plasticized Card Stock Tags: Vinyl cloth with preprinted and field-printed legends to suit the application. Orange background, except as otherwise indicated, with Eyelet for fastener.
- H. Aluminum-Faced Card Stock Tags: Weather-resistant, 18-point minimum card stock faced on both sides with embossable aluminum sheet, 0.002 inches thick, and laminated with moisture-resistant acrylic adhesive. Pre-print legend to suit the application, and punch for tie fastener.
- I. Brass or Aluminum Tags: Metal tags with stamped legend, punched for fastener. Dimensions: 2 inches by 2 inches by 19 gauge.
- J. Engraved, Plastic-Laminated Labels, Signs, and Instruction Plates: Engraving stock melamine plastic laminate, 1/16-inch minimum thick for signs up to 20 square inches, or 8 inches in length; 1/8-inch thick for larger sizes. Engraved legend in white letters on black face and punched for mechanical fasteners, generally. Emergency equipment shall utilize red face.
- K. Baked-Enamel Warning and Caution Signs for Interior Use: Preprinted aluminum signs, punched for fasteners, with colors, legend, and size appropriate to the location.
- L. Exterior Metal-Backed Butyrate Warning and Caution Signs: Weather-resistant, nonfading, preprinted cellulose acetate butyrate signs with 20-gage, galvanized steel backing, with colors, legend, and size appropriate to the location. Provide 1/4-inch grommets in corners for mounting.
- M. Fasteners for Plastic-Laminated and Metal Signs: Self-tapping stainless steel screws or number 10/32 stainless steel machine screws with nuts and flat and lock washers.
- N. Cable Ties: Fungus-inert, self-extinguishing, one-piece, self-locking nylon cable ties, 0.18-inch minimum width, 50-lb minimum tensile strength, and suitable for a temperature range from minus 50 deg F to 350 deg F. Provide ties in specified colors when used for color coding.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Lettering and Graphics: Coordinate names, abbreviations, colors, and other designations used in electrical identification work with corresponding designations specified or indicated. Install numbers, lettering, and colors as approved in submittals and as required by code.
- B. Install identification devices in accordance with manufacturer's written instructions and requirements of NEC.
- C. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work.
- D. Conduit Identification:

1. Identify each new exposed and concealed raceway shown on the single line riser diagram every 20 feet with the installed conductor operating voltage and distribution system designation using stencil and enamel spray paint. Use red paint for emergency feeders, black paint for normal feeders and orange paint for each side of medium voltage cable tray. (i.e., 208 VOLT LIFE SAFETY, 460 VOLT GENERAL, 208 VOLT NORMAL, 277 VOLT EMERGENCY, etc.).
 - a. The following areas shall be identified:
 - (1) On wall surfaces directly external to conduits run concealed within wall.
 - (2) On all accessible surfaces of concrete envelope around conduits in vertical shafts, exposed at ceilings or concealed above suspended ceilings.
 - (3) On entire surface of exposed conduits.
 - b. Apply identification to areas as follows:
 - (1) Clean surface of dust, loose material, and oily films before painting.
 - (2) Prime surfaces: For galvanized metal, use single-component acrylic vehicle coating formulated for galvanized surfaces. For concrete masonry units, use heavy-duty acrylic resin block filler. For concrete surfaces, use clear alkali-resistant alkyd binder-type sealer.
 - (3) Apply one intermediate and one finish coat of orange silicone alkyd enamel.
 - (4) Apply primer and finish materials in accordance with manufacturer's instructions.
- E. Device Coverplate Identification: Engrave with 1/8-inch high black capital letters designating as follows:
 1. Other than NEMA 5-15R and 5-20R receptacles shall be engraved with the following:
 - a. Voltage
 - b. Number of phases.
 - c. Current rating.
 - d. Example: "208/3P/50A"
 2. Receptacles protected upstream on associated branch circuit by a ground fault circuit I interrupter device shall be engraved "GFCI PROTECTED".
 3. Special systems/communication systems devices (ie. firephone receptacles) shall be engraved designating device (ie. FIREPHONE, DATA, EKG, TEL, TV, etc.)
 4. All receptacle cover plates, including multi-outlet raceway receptacles, shall be identified as to panel and circuit number; this information shall be identified on the cover plate exterior by means of a printed label. Label shall be translucent or clear polyester, waterproof, and scratchproof.
 5. All lighting switches shall be identified as to panel and circuit number; this information shall be identified on the cover plate interior by means of a printed label. Label shall be translucent or clear polyester, waterproof, and scratchproof.
- F. Limit use of line markers to direct-burial cables.
- G. Install line marker for underground wiring, both direct-buried and in raceway.
- H. Power Circuit Identification: Securely fasten identifying metal tags of aluminum wraparound marker bands to cables, feeders, and power circuits in vaults, pull boxes, junction boxes, manholes, and switchboard rooms with 1/4-inch steel letter and number stamps with legend to correspond with designations on Drawings. If metal tags are provided, attach them with approximately 55-lb test monofilament line or one-piece self-locking nylon cable ties.
- I. Tag or label conductors as follows:

1. Future Connections: Conductors indicated to be for future connection or connection under another contract with identification indicating source and circuit numbers.
 2. Multiple Circuits: Where multiple branch circuits or control wiring or communications/signal conductors are present in the same box or enclosure (except for three-circuit, four-wire home runs), label each conductor or cable. Provide legend indicating source, voltage, circuit number, and phase for branch circuit wiring. Phase and voltage of branch circuit wiring may be indicated by means of coded color of conductor insulation. For control and communications/signal wiring, use color coding or wire/cable marking tape at terminations and at intermediate locations where conductors appear in wiring boxes, troughs, and control cabinets. Use consistent letter/number conductor designations throughout on wire/cable marking tapes.
 3. Match identification markings with designations used in panelboards shop drawings, Contract Documents, and similar previously established identification schemes for the facility's electrical installations.
- J. Apply warning, caution, and instruction signs and stencils as follows:
1. Install warning, caution, or instruction signs where required by NEC, where indicated, or where reasonably required to assure safe operation and maintenance of electrical systems and of the items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions or explanations are needed for system or equipment operation. Install butyrate signs with metal backing for outdoor items.
 2. Emergency Operating Signs: Install engraved laminate signs with white legend on red background with minimum 3/8-inch high lettering for emergency instructions on power transfer, load shedding, or other emergency operations.
- K. Install equipment/system circuit/device identification as follows:
- L. Apply equipment identification labels of engraved plastic-laminate on each major unit of electrical equipment in building, including central or master unit of each electrical system. This includes communication/signal/alarm systems, unless unit is specified with its own self-explanatory identification. Except as otherwise indicated, provide single line of text, with 1/2-inch-high lettering on 1-1/2-inch-high label (2-inch-high where two lines are required), white lettering in black field. Utilize red field for equipment connected to an emergency source. Text shall match terminology and numbering of the Contract Documents and shop drawings. Apply labels with screws for each unit of the following categories of electrical equipment.
1. Panelboards, electrical cabinets, and enclosures.
 2. Access doors and panels for concealed electrical items.
 3. Motor starters.
 4. Pushbutton stations.
 5. Contactors.
 6. Control devices.
 7. Telephone switching equipment.
 8. Clock/program master equipment.
 9. TV/audio monitoring master station.
 10. Fire alarm control panel.
 11. Security monitoring master station or control panel.
 12. Spare fuse cabinets.
 13. Battery chargers.
 14. Communication systems backboards and cabinets.

- M. Apply circuit/control/item designation labels of engraved plastic laminate for disconnect switches, breakers, pushbuttons, pilot lights, motor control centers, and similar items for power distribution and control components above, except panelboards and alarm/signal components, where labeling is specified elsewhere. For panelboards, provide framed, typed circuit schedules with explicit description and identification of items controlled by each individual breaker.
- N. Install labels at locations indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment.

END OF SECTION 260553