

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates and labels.
- C. Wire and cable markers.
- D. Voltage markers.
- E. Floor marking tape and floor clearance markers.

1.2 RELATED REQUIREMENTS

- A. Section 09 91 00 - Painting.
- B. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables (600 Volts and Below): Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.
- C. Section 26 27 26 - Wiring Devices: Device and wall plate finishes; factory pre-marked wall plates.

1.3 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. NFPA 70E - Standard for Electrical Safety in the Workplace; 2009.

1.4 SUBMITTALS

- A. See Section 01 33 23 - Shop Drawings, Product Data, and Samples.
- B. Submit all product data and samples concurrently.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets for:
 - 1. Cable and Wire Markers.
 - 2. Voltage Markers, indicate size and text height.
 - 3. Floor Markings.
- D. Samples:
 - 1. Identification Nameplates: One of each type and color specified.
 - 2. Identification Labels: One of each type and color specified.
 - 3. Cable and Wire Markers.

PART 2 - PRODUCTS

2.1 IDENTIFICATION REQUIREMENTS

- A. Existing Work: Unless specifically excluded, identify existing elements to remain that are not already identified in accordance with specified requirements.
- B. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
 - a. Panelboards:
 - 1) Equipment identification nameplate:
 - (a) Include equipment identification name.
 - (b) Include voltage and phase.
 - (c) Include ampere interrupting capacity (AIC) or short circuit current rating (SCCR).
 - (d) Include power source and circuit number. Include location when not within sight of equipment.
 - 2) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
 - 3) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Circuit directory shall be installed in the appropriate panelboard sleeve. Identify spares and spaces.
 - 4) For power distribution panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Identify spares and spaces.
 - 5) For disconnecting means, use identification nameplate to indicate description and power source; i.e.
STEAM PRESS AGITATOR 402-7-6A9
SOURCE MCC-7A6
 - 6) Use identification label inside door of fusible switch assemblies to identify fuse class installed.
 - 7) Field Painting: Provide field painting to match existing Government installations. In 1" block lettering, paint the panelboard system voltage, configuration, and feeder

conductor sizes in black or red respective to normal or emergency power. This shall be on the outside of the cover.

(a) Exceptions: do not use the term "EMERGENCY". Use terms:

"EMERGENCY - LIFE SAFETY"; and

"EMERGENCY - CRITICAL"

2. Emergency System Equipment:

- a. Use identification nameplate or voltage marker to identify emergency system equipment in accordance with NFPA 70.
- b. Use identification nameplate at each piece of service equipment to identify type and location of on-site emergency power sources.
- c.

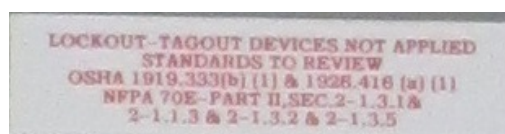
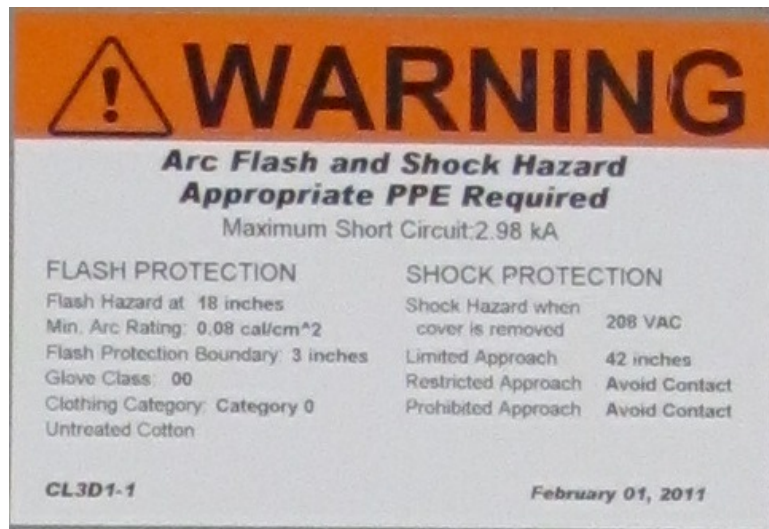
3. Fire Alarm Equipment:

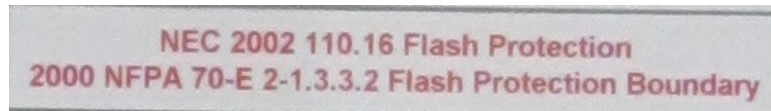
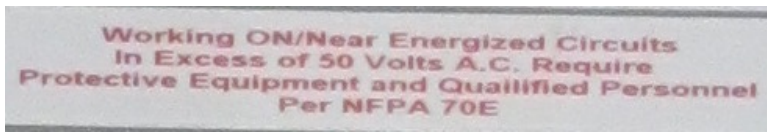
- a. Comply with Section 28 31 00 Fire Detection and Alarm.
- b. Use identification nameplate to identify fire alarm control equipment.
- c. Use identification nameplate to identify fire alarm power supplies.
- d. Include equipment identification name.
- e. Include power source and circuit number. Include location.

4. Arc Flash Hazard Warning Labels: Use warning labels to identify arc flash hazards for electrical equipment, such as panelboards, and industrial control panels that are likely to require examination, adjustment, servicing, or maintenance while energized.

- a. Legend: Provide custom legend in accordance with NFPA 70E based on equipment-specific data:
 - 1) Include orange header that reads "WARNING" where calculated incident energy is less than 40 calories per square cm.
 - (a) Include the text "Arc Flash and Shock Hazard; Appropriate PPE Required" beneath header.
 - 2) Include red header that reads "DANGER" where calculated incident energy is 40 calories per square cm or greater.
 - (a) Include the text "NO SAFE PPE EXISTS ENERGIZED WORK PROHIBITED" beneath header.

- 3) Include the following information:
- (a) Available fault current: Initial RMS 3 Phase bolted fault.
 - (1) Worst case scenario (High Isc).
 - (b) Arc flash protection boundary.
 - (c) Incident energy: Minimum arc rating.
 - (d) Hazard/risk category.
 - (e) PPE (personnel protective equipment) requirements.
 - (f) Nominal voltage.
 - (g) Shock hazard boundaries:
 - (1) Limited approach boundary.
 - (2) Restricted approach boundary.
 - (3) Prohibited approach boundary.
 - (h) Equipment identification.
 - (i) Date calculations were performed.
- b. At locations where a new panel replaces an existing panel;
existing feeder and source remains in original state: Populate
values on labels to match existing label.
- c. Images of Existing Labels:





5. In addition to the requirements of the NEC, install an identification sign which clearly indicates information required for use and maintenance of items such as switchboards and switchgear, panelboards, cabinets, motor controllers (starters), fused and non-fused safety switches, automatic transfer switches, separately enclosed circuit breakers, individual breakers and controllers in switchboards, switchgear and motor control assemblies, control devices and other significant equipment.
- C. Identification for Conductors and Cables:
1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 05 21.
 2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
 3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
 - a. At each source and load connection.
 - b. Within boxes.
- D. Identification for Conduit:
1. Definitions:
 - a. Accessible spaces: Spaces above accessible ceiling tile, spaces with access panels, accessible void spaces, accessible attic spaces.
 - b. Finished spaces: Normally occupied spaces that are not defined as unfinished spaces.
 - c. Unfinished spaces: Mechanical rooms, shop spaces, bulk storage, shell space for future construction.

- d. Concealed: Not visible from within a finished space.
 - e. Exposed: Surface installed, visible.
- 2. Use color-coded conduits to identify different systems.
 - a. Fire alarm system: RED
 - b. BAS: GREEN
 - c. 13,800 volt electrical: ORANGE
- 3. Use identification labels or plastic marker tags to identify spare conduits at each end. Identify purpose and termination location.
- E. Identification for Boxes:
 - 1. Use voltage markers to identify highest voltage present.
 - 2. Use identification labels to identify circuits enclosed.
- F. Identification for Devices:
 - 1. Use identification label to identify fire alarm devices. Comply with Section 28 31 00 Fire Detection and Alarm.
 - 2. Wiring Device and Wall plate Finishes: Comply with Section 26 27 26.
 - 3. Use identification label to identify fire alarm system devices.
 - 4. Use identification label to identify receptacles protected by upstream GFI protection, where permitted.
- G. Identification for Luminaires: Use permanent red dot on luminaire frame to identify luminaires connected to emergency power system.
- H. Identification for lighting circuit load transfer switches:
 - 1. Lighting system load transfer switches automatically transfer selected lights from normal to life safety or critical branches of the essential electrical system when the devices sense loss of normal power. These load transfer switches also bypass local switching when the device senses loss of normal power.
 - 2. Provide identification labels on transfer devices to indicate "THIS DEVICE IS CONNECTED TO MORE THAN ONE SOURCE. NORMAL: PANELBOARD _____ EMERGENCY: _____." Identify warning label with normal and emergency panelboard and circuit information.

2.2 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 - 1. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.
 - b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.

2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
 3. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.
 4. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
 5. Text height: 3/16 inches minimum.
 6. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.
- B. Identification Labels:
1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Equipment Identification:
1. Minimum Size: 1 inch by 2.5 inches.
 2. Legend:
 - a. System designation where applicable:
 - b. Equipment designation or other approved description.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height:
 - a. System Designation: 1 inch.
 - b. Equipment Designation: 1/2 inch.
 5. Color:
 - a. Normal Power System: White text on black background.
 - b. Emergency Power System:
 - 1) Life Safety Branch: White text on red background.
 - 2) Critical Branch: White text on red background.
 - 3) Equipment Branch: White text on red background.
 - c. Fire Alarm System: White text on red background.
- D. Format for General Information and Operating Instructions:
1. Minimum Size: 1 inch by 2.5 inches.
 2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
 3. Text: All capitalized unless otherwise indicated.

4. Minimum Text Height: 1/4 inch.
 5. Color: Black text on white background unless otherwise indicated.
- E. Format for Caution and Warning Messages:
1. Minimum Size: 2 inches by 4 inches.
 2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height: 1/2 inch.
 5. Color: Black text on yellow background unless otherwise indicated.
- F. Format for Receptacle Identification:
1. Minimum Size: 1/4 inch by 1.5 inches.
 2. Legend: Power source and circuit number and/or other designation indicated.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height: 3/16 inch.
 5. Colors: Refer to Section 26 27 26 WIRING DEVICES.
- G. Format for Control Device Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
 2. Legend: Load controlled and/or other designation indicated.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height: 3/16 inch.
 5. Color: Refer to Section 26 27 26 WIRING DEVICES.

2.3 WIRE AND CABLE MARKERS

- A. Markers for Branch Circuit Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.
- B. Markers for Feeder Conductors and Cables: Use metal tags on each circuit cables and wires to clearly designate their circuit identification and voltage.
- C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- D. Legend: Power source and circuit number or other designation indicated.

- E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
- F. Minimum Text Height: 1/8 inch.
- G. Color: Black text on white background unless otherwise indicated.

2.4 VOLTAGE MARKERS

- A. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.
- B. Minimum Size:
 - 1. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches.
 - 2. Markers for Junction Boxes: 1/2 by 2 1/4 inches.
- C. Legend:
 - 1. Markers for Voltage Identification: Highest voltage present.
 - 2. Markers for System Identification:
 - a. Emergency System - Life Safety Branch: Text "LIFE SAFETY".
 - b. Emergency System - Critical Branch: Text "CRITICAL".
 - c. Equipment System: Text "EQUIPMENT".
- D. Color: Black text on orange background unless otherwise indicated.

2.5 FLOOR MARKINGS: NOT USED.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
 - 1. Surface-Mounted Equipment: Enclosure front.
 - 2. Flush-Mounted Equipment: Inside of equipment door.
 - 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
 - 4. Elevated Equipment: Legible from the floor or working platform.
 - 5. Branch Devices: Adjacent to device.
 - 6. Interior Components: Legible from the point of access.
 - 7. Boxes: Outside face of cover.
 - 8. Conductors and Cables: Legible from the point of access.
 - 9. Devices: Outside face of cover.

- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using stainless steel screws.
 - 1. Do not use adhesives except where substrate cannot be penetrated.
- E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
- F. Install arc flash hazard warning labels on electrical equipment.
 - 1. Panelboards with a door: Install on inside surface of door.
 - 2. Power distribution panels with a door: Install inside panel near mains, visible with door open.

3.3 FIELD QUALITY CONTROL

- A. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

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