

## SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

### 1.01 SUMMARY:

- A. **Basic Function:** The identification of the electrical system components is intended for clear reference to items. The identification, which shall be installed on each component of the electrical system, shall be used in all drawings, specifications and software generated reports and visual displays.
- B. **Scope:** This <sup>A9</sup>Section <sup>A9</sup> contains the performance specifications for furnishing and installing, at each <sup>A9</sup>lock complex <sup>A9</sup>, identification for electrical rooms, major equipment and other components of the electrical system, for each component of the electrical cabling system, and electrical circuits.

### 1.02 REFERENCE STANDARDS:

Not used.

### 1.03 REQUIREMENTS:

- A. **General:** The electrical system components at each <sup>A9</sup>lock complex <sup>A9</sup> shall be provided with a numbering system consisting of a combination of capital letters and numbers that will clearly identify each component as to its location and function. The numbering system for one <sup>A9</sup>lock complex <sup>A9</sup> shall be similar to the numbering system for the other <sup>A9</sup>lock complex, <sup>A9</sup> and similar to the numbering system of the existing locks. The identification numbers shall be unique, to avoid misunderstandings with other electrical system components at the <sup>A9</sup>lock complexes <sup>A9</sup> or at the existing locks. The numbering system selected shall be used to identify components at the Locks as well as in all electrical drawings, including: design drawings, shop drawings, control drawings, as-built drawings, and in software generated reports and visual displays.
- B. **Identification System:** The electrical system at each <sup>A9</sup>lock complex <sup>A9</sup> shall be provided with a means of identification for each major component of the electrical system.
- C. **Durability:** The labels and tags shall be of the highest quality, durable, heavy duty, designed and manufactured to withstand UV deterioration and weathering. Labels and tags shall be firmly attached to the equipment or cables, with heavy duty means of attachment.
- D. **Visibility:** The labels and tags shall be of a size that will be readily visible. Letters and numbers shall be readable from a distance of 1.5 m.
- E. **Intended Use:** The identification system shall allow quickly locating and identifying of any single component for troubleshooting, replacement or maintenance.

<sup>A16</sup>F. **Reserved** <sup>A16</sup>

### 1.04 SYSTEM DESCRIPTION AND PERFORMANCE:

- A. **Electrical Rooms:** The electrical room and corresponding battery room shall have an identification number corresponding to the building nomenclature specified in Section 01 81 36 (*O&M Buildings and Facilities – Program*) and Section 01 81 29 (*Electrical and Lighting Systems*).

- B. **Major Components:** Each major component of the electrical system including switchgear, motor control center, medium voltage transformer, dry-type transformer, variable frequency drive, generator set, electric motor, panelboard, high mast pole, chamber light, safety switch or enclosed circuit breaker shall have a sequential identification number that will identify its location in the system and its physical location.
1. **Switchgear:** The numbering system for the medium-voltage switchgear furnished under Section 26 13 00 (*Medium Voltage Switchgear*) shall be numerically similar to the numbering system for the high-voltage room where the switchgear is installed. Bus sections, loops, individual cubicles, and circuit breakers including tie breakers shall be identified with a numbering system.
  2. **Motor Control Center:** The numbering system for the motor control centers furnished under Section 26 24 19 (*Motor Control Center*) shall be numerically similar to the numbering system for the high-voltage room where the motor control center is installed. Bus sections, loops, individual compartments, and circuit breakers including tie breakers shall be identified with a numbering system.
  3. **Medium Voltage Transformers:** The numbering system for liquid-filled medium voltage transformers furnished under Section 26 12 19 (*Pad Mounted Liquid Filled Medium Voltage Transformer*) shall be numerically similar to the numbering system for the high-voltage room where the transformer connects to its power source.
  4. **Dry Type Transformers:** The numbering system for dry type transformers furnished under Section 26 22 00 (*Dry Type Transformer*) shall be numerically similar to the numbering system for the high-voltage room where the transformer connects to its power source.
  5. **Variable Frequency Drive:** The numbering system for variable frequency drive furnished under Section 26 29 23 (*Variable Frequency Drive*) shall be numerically similar to the numbering system for the high-voltage room where the equipment connects to its power source.
  - A166. **Reserved** A16
  7. **Electric Motor:** The numbering system for the two electric motors for each rolling gate electric motor shall identify the rolling gate number as well as one motor from the other (could be North vs. South). The numbering system for auxiliary motors shall identify the rolling gate number. The numbering system for other motors shall identify the number of the equipment it operates.
  8. **Motor Disconnecting Means and Motor Starter:** The numbering system for each motor disconnecting means and, motor starter shall indicate the numbering of the electric motor controlled.
  9. **Panelboards.** The numbering system for panelboards furnished under Section 26 20 00 (*Electrical Low Voltage Distribution Work*) shall identify its voltage and whether it is a three-phase or single-phase panelboard, and shall identify its room or location in the locks.
  10. **Poles:** The numbering system for the high mast light poles furnished under Section 26 50 00 (*Lighting Systems*) shall identify whether the pole is in the east

or west wall, and shall have a sequential numbering from north to south, and shall identify its location in the locks.

11. <sup>A16</sup>**Chamber Lights:** The numbering system for the chamber lights design furnished under Section 26 50 00 (*Lighting Systems*) shall identify whether the light is in the East or West wall, in the upper, middle or lower chamber, and shall have a sequential numbering from north to south, and shall identify its location in the locks. <sup>A16</sup>
12. **Safety Switch or Enclosed Circuit Breaker:** The numbering system for the safety switches or enclosed circuit breakers furnished under Section 26 20 00 (*Electrical Low Voltage Distribution Work*) shall identify its voltage and whether it is a three-phase or single-phase equipment and shall identify its location in the system.

C. **Electrical Cabling System:**

1. **Manholes:** Each manhole shall be clearly and sequentially numbered. Inside each manhole, each underground duct or raceway furnished under Section 26 05 43 (*Underground Ducts and Raceways for Electrical Systems*) entering or exiting the manhole shall indicate the numbering of the manhole at the other end of the duct, or the numbering of the component at the other end of the raceway.
  2. **Electrical Cables:** The identification tag for electrical cables shall indicate both the source and the load connected to the cable. In addition, in the case of single phase conductor, the tag shall indicate the voltage and phase of the circuit. The identification number shall indicate if the cable is medium voltage, low voltage electrical distribution, direct current, control, fiber optic, telephone, data, CCTV, etc. In the case of control cables, the tag shall indicate the equipment that it controls.
    - a. **Cables Installed inside Ducts and Manholes:** Each electrical cable inside a manhole shall be tagged at the point where the cable enters an underground duct or raceway.
    - b. **Electrical Cables Installed In Cable Trays:** Each electrical cable installed in cable trays shall be tagged at each exit of the cable tray and every 10 meters along its entire length. The tag shall be located where it is visible without having to move the cables.
- <sup>A16</sup>c. **Main Feeders:** Main feeders from existing substations will use the equipment number and feeder number established by the Employer's Representative. <sup>A16</sup>

D. **Electrical Circuits:** Each electrical circuit including panelboard circuit breaker, feeder or circuit conductors, fixed electrical utilization equipment, and wiring devices shall have a sequential identification number that will identify its location in the system and its physical location.

1. **Panelboards.** The circuit directory of the panelboards furnished under Section 26 20 00 (*Electrical Low Voltage Distribution Work*) shall be completely and correctly filled, to identify which electrical load is connected to each panelboard circuit protective device.
2. **Electrical Equipment Feeders:** Feeder cables of electrical equipment, furnished under Section 26 05 13 (*Medium Voltage Cables*) or Section 26 20 00 (*Electrical*

*Low Voltage Distribution Work*) shall be individually identified as to the panelboard identification and corresponding circuit number, the voltage and number of phases.

3. **Circuit Conductors:** Electrical conductors feeding fixed electrical utilization equipment or wiring devices shall be individually identified as to the panelboard identification and corresponding circuit number, the voltage and number of phases.
4. **Wiring Devices:** Each wiring device furnished under Section 26 20 00 (*Electrical Low Voltage Distribution Work*) shall be marked on its wall plate, with the panelboard identification and corresponding circuit number.
5. **Terminal Strips:** Each terminal strip internal to equipment shall be permanently marked with a terminal strip identification number designation. Each terminal block in a terminal strip shall be sequentially numbered.

**1.05 SUBMITTALS:** Shall be in accordance with Section 01 33 00 (*Submittal Procedures*).

**A. Before Design:**

1. **Identification Numbering System:** Submit a plan describing in detail the identification numbering system that will be used for each type of electrical equipment or cable.
2. **Use:** Use the numbering system in all preliminary design drawings, final design drawings, shop drawings, and “As-Built” drawings.
3. **Drawings:** Schematic and connection diagrams shall include the identification numbering system designations to each wire and terminal block. Each internal terminal block connecting to an external equipment terminal block shall be marked with the corresponding equipment identification and terminal block point designation.

**B. Before Installation:**

1. **Descriptive Data:** The Contractor shall submit descriptive data and samples for review, of the following items:
  - a. Identification numbering system
  - b. Major components labeling system
  - c. Cable tags

<sup>A16</sup>C. **Reserved** <sup>A16</sup>

**1.06 QUALITY ASSURANCE:** Shall comply with Section 01 44 00 (*Quality Requirements*).

- A. Preliminary Field Inspection:** The Contractor shall perform preliminary field inspections of each individual identification system to verify proper installation. Deficiencies and non-conformances shall be corrected before proceeding with the <sup>A9</sup>final field inspection. <sup>A9</sup>

**B. Final Field Inspection:**

**1. General:**

- a. After preliminary inspection, the Contractor shall perform final field inspection accompanied by the Employer's Representative, to verify the correctness of all labeling and tagging.
- b. The Contractor shall furnish materials, equipment, instruments, and trained personnel required for the inspection.

**2. System:** The identification system shall be demonstrated to operate in accordance with the requirements of this specification and the manufacturer's specifications.

**3. Documentation:**

- a. All inspection reports shall be prepared by the <sup>A9</sup>Contractor's <sup>A9</sup> qualified engineer or technician. The report shall include, but not be limited, to the following:
  - 1) A complete list of all equipment and cable identification labels and tags, including verified location.
  - 2) Indication that all identification numbers are installed and function in accordance with these specifications.
- b. Both <sup>A9</sup>parties <sup>A9</sup> shall approve each inspection and sign off after successful completion.
- c. Both <sup>A9</sup>parties <sup>A9</sup> shall report and sign off specific failures, if any. After the Contractor has corrected all discrepancies, both <sup>A9</sup>Parties <sup>A9</sup> shall re-inspect with sign offs as appropriate.
- d. In addition to inspection reports, the Contractor shall furnish all quality control and corrective action records.

**4. Trial Period:** The system shall operate for the duration of the Maintenance Period as specified in Section 01 93 00 (*Maintenance Services*) without any detectable miss-numbering or faulty identification. If during this period, any detectable miss-numbering or faulty identification has been found, the Contractor shall readjust or replace the applicable device(s) at no additional cost to the Employer.

**END OF SECTION**

**THIS PAGE NOT USED**