

## SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Sleeves for raceways and cables.
2. Sleeve seals.
3. Grout.
4. Common electrical installation requirements.
5. Contractor arc-flash study requirements.

##### B. Types of electrical connections specified in this section include, but are not necessarily limited to, the following:

1. Distribution Equipment
2. Grounding System
3. Motors
4. Motor Starters
5. Starters for Hood fans
6. Light Fixtures
7. Fire Alarm Equipment
8. Temperature Control Wiring
9. Emergency Equipment
10. HVAC Equipment
11. Water Heaters.
12. Sprinkler and Fire Alarm System
13. Disposers

##### C. Related Work

1. HVAC work: Provide conduit for wiring for HVAC equipment in accordance with the drawings and specifications.
  - a. Refer to Division 23 Section "Instrumentation and Control Devices for HVAC" for work performed by HVAC installer.
  - b. Refer to Division 26 Section "Low Voltage Electrical Power Conductors and Cables" for wiring.
2. Temperature control work to include conduit and wiring for smoke detector. Installation in ductwork included in Division 23 Sections. Refer to Division 23 Section "Instrumentation and Control Devices for HVAC" for work performed by HVAC installer.
3. Sprinkler alarm system shall be wired complete. Provide a "lock-on" device on the circuit breaker supplying the alarm system. Identify circuit breaker with a sign reading: "FIRE ALARM - DO NOT DISCONNECT". Sprinkler/ fire alarm shall be interlocked

with HVAC control system(s) to stop the motors in the event of sprinkler-flow or fire alarm activation.

4. Premise Alarms: Provide conduits and outlet boxes for premise alarms indicated on the drawings or as required. Refer to Drawings.
5. Other conduit and wiring shown on the Drawings for energy management, refrigeration and temperature control.
6. Elevator work: Provide a set of auxiliary contacts connected to the disconnect for elevator controller required to activate battery lowering device to return elevator car to first floor to meet code.

## 1.2 SUBMITTALS

- A. Product Data: For sleeve seals.
- B. Certificates: For electrical installers, showing successful completion of an arc-flash training course.

## 1.3 QUALITY ASSURANCE

- A. Arc-Flash Qualifications: Qualify procedures and personnel according NFPA E70
  1. Electrical installers performing work on energized panelboards, switchgear, and other electrical equipment capable of a rapid release of energy due to an arcing fault shall pass an arc-flash protection training course pursuant to the requirements of OSHA 29CFR1910 332 subpart S and NFPA 70E, "Standard for Electrical Safety in the Workplace."

## PART 2 - PRODUCTS

### 2.1 SLEEVES FOR RACEWAYS AND CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Sleeves for Rectangular Openings: Galvanized sheet steel.
  1. Minimum Metal Thickness:
    - a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and no side more than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
    - b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches (1270 mm) and 1 or more sides equal to, or more than, 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

## 2.2 SLEEVE SEALS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
    - a. Advance Products & Systems, Inc.; 337-233-6116
    - b. Calpico, Inc.; 650-588-2241
    - c. Metraflex Co.; 800-621-4347
    - d. Pipeline Seal and Insulator, Inc.; 800-423-2410
  - 2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
  - 3. Pressure Plates: Carbon steel or Stainless steel. Include two for each sealing element.
  - 4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating or Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

## 2.3 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

## 2.4 ELECTRICAL CONNECTIONS FOR EQUIPMENT

- A. Manufacturers:
  - 1. AMP Products Corp.; 800-468-2023
  - 2. Burndy Corp.; 800-346-4175
  - 3. Ideal Industries, Inc. 800-435-0705
  - 4. Thomas and Betts Corp.; 800-816-7809

## 2.5 MATERIALS AND COMPONENTS FOR CONNECTIONS FOR EQUIPMENT:

- A. For each electrical connection indicated, provide a complete assembly of materials, including but not necessarily limited to, pressure connectors, terminals (lugs), electrical insulating tape, cable ties, solderless connectors and other items and accessories as needed to complete splices and terminations of the type indicated.
- B. Metal Conduit, Tubing and Fittings: Provide metal conduit, tubing and fittings of the type, grade, size and weight (wall thickness) required for each service.
  - 1. Raceways to be as specified in Division 26 Section "Raceway and Boxes."

- C. Conductors: Unless otherwise indicated, provide conductors for electrical connections as specified in Division 26 Section "Low Voltage Electrical Power Conductors and Cables."
- D. Connectors and Terminals: Provide electrical connectors and terminals as recommended by the connector and terminal manufacturer for the intended application.
- E. Electrical Connections Accessories: Provide electrical insulating tape, connectors and cable ties as recommended for the type job designated by the accessories manufacturers.

## **PART 3 - EXECUTION**

### **3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION**

- A. Fasten electrical components securely to structural support steel. Do not fasten to metal deck.
- B. Comply with NECA 1.
- C. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- D. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- E. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- F. Right of Way: Give right of way to piping systems installed at a required slope. Work shall be coordinated between trades prior to installation.
- G. General Contractor to run conduits and install control wiring between control components, switches and operator for bascart door as indicated on Drawings and Shop Drawings.

### **3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS**

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.

- F. Extend sleeves installed in floors **2 inches (50 mm)** above finished floor level.
- G. Size pipe sleeves to provide **1/4-inch (6.4-mm)** annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
  - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants."
- J. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- K. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel or cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for **1-inch (25-mm)** annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- L. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for **1-inch (25-mm)** annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

### 3.3 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

### 3.4 ARC-FLASH STUDY CONTRACTOR REQUIREMENTS

- A. General:
  - 1. The Owner will contract directly with a third party Arc-Flash Study Vendor to provide an arc-flash study based on IEEE Standard 1584 and supply hazard labels.
  - 2. The Direct Buy Electrical Equipment Supplier will supply the Arc-Flash Study Vendor data on all equipment required for the arc-flash study.
  - 3. Upon completion of the arc-flash study, the Electrical Building Subcontractor will install Owner-supplied arc-flash hazard labels to panels.
- B. New Store – Takeover / Expansion of an existing building Project
  - 1. Existing Electrical Distribution System

- a. The Electrical Building Subcontractor will collect all additional electrical data required per the Arc-Flash Study Vendor's pre-filled out data sheets and instructions. This Work will require the Electrical Building Subcontractor to investigate the existing electrical distribution system, which is expected to remain in operation upon the completion of the Project. The information, submitted on the Arc-Flash Study Vendor's electronic forms with copy to the Owner, shall include but not be limited to the following:
    - 1) Utility contact information, name, phone, email.
  - b. The data collection shall include all electrical equipment at all voltage levels down to 480 V and at 240 V and 208 V equipment fed from a single transformer greater than or equal to 125 kVA.
2. New Electrical Distribution Equipment
- a. The Electrical Building Subcontractor will collect all electrical data required per the Arc-Flash Study Vendor's pre-filled out data sheets and instructions. The information, submitted on the Arc-Flash Study Vendor's electronic forms with copy to the Owner, shall include but not be limited to the following:
    - 1) The data collected shall include the parameters for the following (if present in the facility):
      - a) Cables.
      - b) Transformers.
      - c) Busway.
      - d) Lump summed low-voltage motors (greater than or equal to 50 hp and less than 50 hp).
      - e) Low-voltage breakers.
      - f) Fuses.
      - g) Generators.
      - h) Switches.
      - i) ATSS.
      - j) Arc-flash bus types (based on gap).
    - 2) The data collection shall include all electrical equipment at all voltage levels down to 480 V and at 240 V and 208 V equipment fed from a single transformer greater than or equal to 125 kVA.

END OF SECTION 26 05 00