

**SECTION 26 05 00**

**COMMON WORK RESULTS FOR ELECTRICAL**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. This section is a Division 26 Common Work Results for Electrical Section, and is a part of each Division 26 section.

**1.2 SUMMARY**

- A. This Section includes limited scope general construction materials and methods for application with electrical installations as follows:

- 1. Sleeves and Penetrations.
- 2. Fire Stopping
- 3. Access panels and doors in walls, ceilings, and floors for access to electrical materials and equipment.
- 4. Locations
- 5. Outages and Disruptions
- 6. Temporary
- 7. Scaffolding
- 8. Painting
- 9. Vibration Isolation

**1.3 SUBMITTALS**

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for the following products:
  - 1. Access panels and doors
  - 2. Joint sealers
  - 3. Firestop materials
- C. Shop drawings detailing fabrication and installation for metal fabrications and wood supports, and anchorage for electrical materials and equipment.

**1.4 QUALITY ASSURANCE**

- A. Installer Qualifications: Engage an experienced installer for the installation and application joint sealers, access panels, and doors.
- B. Qualify welding processes and welding operators in accordance with AWS

D1.1, "Structural Welding Code - Steel."

1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.
- C. Fire-resistance Ratings: Where a fire-resistance classification is indicated, provide access door assembly with panel door, frame, hinge, and latch from manufacturer listed in the UL "Building Materials Directory" for rating shown.
1. Provide UL Label on each fire-rated access door.
- D. ASTM E-814 or UL 1479 for firestop system assemblies that provide a fire rating equal to that of construction being penetrated.
- E. 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 cable labels.
- F. Electrical Component Standard: Components and installation shall comply with NFPA 70, "National Electrical Code."

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver joint sealer materials in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.
- B. Store and handle joint sealer materials in compliance with the manufacturers' recommendations to prevent their deterioration and damage.
- C. Deliver firestop materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand type, and UL label. Store materials under cover and protect from weather and damage. Comply with recommended procedure, precautions and remedies described in material data sheets.

**1.6 SEQUENCE AND SCHEDULING**

- A. Coordinate electrical equipment installation with other building components.
- B. Arrange for chases, slots, and openings in building structure during progress of construction to allow for mechanical installations.
- C. Coordinate the installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

- D. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the work. Coordinate installation of large equipment requiring positioning prior to closing in the building.
- E. Coordinate connection of electrical services with equipment provided under other sections of the specifications.
- F. Coordinate requirements for access panels and doors where items requiring access are concealed behind finished surfaces.
- G. Coordinate installation of identifying devices after completing covering and painting where devices are applied to surfaces. Install identifying devices prior to installing acoustical ceilings and similar concealment.
- H. Coordinate delivery of firestop materials with scheduled installation date to allow minimum storage at job site
- I. Coordinate the shut-off and disconnection of electrical service with the Contracting Officer Representative (COR).
- J. Notify the Contracting Officer Representative (COR) at least 5 days prior to commencing demolition operations.
- K. Perform demolition in phases as indicated. Coordinate electrical equipment installation with other building components.

## **PART 2 - PRODUCTS**

### **2.1 MISCELLANEOUS METALS**

- A. Steel plates, shapes, bars, and bar grating: ASTM A-36.
- B. Cold-formed Steel Tubing: ASTM A-500
- C. Hot-rolled Steel Tubing: ASTM A-501.
- D. Steel Pipe: ASTM A-53, Schedule 40, welded.
- E. Non-shrink, Non-metallic Grout: Premixed, factory-packaged, non-staining, non-corrosive, non-gaseous grout, recommended for interior and exterior applications.
- F. Fasteners: Zinc-coated, type, grade, and class as required.

### **2.2 MISCELLANEOUS LUMBER**

- A. Framing Materials: Standard grade, light-framing-size lumber of any species. Number 3 Common or Standard grade boards complying with WCLIB or AWPB rules, or Number 3 boards complying with SPIB rules. Lumber shall be preservative treated in accordance with AWPB LP-2, and kiln-dried to a moisture content of not more than 19 percent.

- B. Construction Panels: Plywood panels; APA C-D PLUGGED INT, with exterior glue; thickness as indicated, or if not indicated, not less than 15/32 inches.

### **2.3 JOINT SEALERS**

A. General: Joint sealers, joint fillers, and other related materials compatible with each other and with joint substrates under conditions of service and application.

B. Colors: As selected by the Contracting Officer Representative (COR) from manufacturer's standard colors.

C. Elastomeric Joint Sealers: Provide the following types:

1. One part, mildew-resistant, silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25, for uses in non-traffic areas for glass, aluminum, and non-porous joint substrates; formulated with fungicide; intended for sealing interior joints with non-porous substrates; and subject to in-service exposure to conditions of high humidity and temperature extremes.

### **2.4 FIRESTOPPING**

A. Use only that manufacturer listed in UL Fire Resistance Directory for the UL system involved.

B. All firestopping materials used on this project shall be the products of one manufacturer. Each trade shall use products of the same manufacturer.

C. Standards: The firestop systems and products shall have been tested in accordance with the procedures of U.L. 1479 (ASTM E814-81) and material shall be UL classified as Fill, Void or Cavity Materials for use in Through-Penetration Firestops. The firestop system shall comply with NEC Paragraph 300-21. All work shall comply with NFPA 101-Life Safety Code, latest edition.

### **2.5 ACCESS DOORS**

A. Steel Access Doors and Frames: Factory-fabricated and assembled units, complete with attachment devices and fasteners ready for installation. Joints and seams shall be continuously welded steel, with welds ground smooth and flush with adjacent surfaces.

B. Frames: 16-gage steel, with a 1-inch-wide exposed perimeter flange for units installed in unit masonry, pre-cast, or cast-in-place concrete, ceramic tile, or wood paneling.

1. For installation in masonry, concrete, ceramic tile: 1 inch-wide-

- exposed perimeter flange and adjustable metal masonry anchors.
2. For gypsum wallboard or plaster: perforated flanges with wallboard bead.
- C. Flush Panel Doors: 14-gage sheet steel, with concealed spring hinges or concealed continuous piano hinge set to open 175 degrees; factory-applied prime paint.
- D. Fire-Rated Units: Insulated flush panel doors, with continuous piano hinge and self-closing mechanism.
- E. Locking Devices: Flush, screwdriver-operated cam locks.
- F. Locking Devices: Where indicated, provide 5-pin or 5-disc type cylinder locks, individually keyed; provide 2 keys.

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. All construction under this contract shall be completed in a neat and craftsmanlike manner. Work that, in the judgement of the Contracting Officer Representative (COR), is not satisfactorily installed shall be removed and replaced to the Contracting Officer Representative (COR) satisfaction, at the Contractor's expense.
- B. Housekeeping: Throughout construction, all work areas and storage areas shall be kept clean. The Contractor shall keep all items clean of dirt, rust, dust and fingerprints.

#### **3.2 SLEEVES AND PENETRATIONS**

- A. Contractor shall provide sleeves where raceways pass through walls, partitions, floors, and ceilings.
- B. Sleeves in bearing and/or masonry walls and/or partitions shall be of galvanized rigid steel conduit finished with smooth edges. For other than masonry or bearing walls/partitions, sleeves shall be EMT conduit.
- C. Sleeves in masonry ceilings and floors shall be galvanized rigid steel conduit finished with smooth edges. For other than masonry ceilings and floors, sleeves shall be EMT conduit. All sleeves shall be properly installed and cemented in place.
- D. Floor sleeves shall extend 1" above finished floor, unless otherwise noted. Space between floor sleeves and piping or raceway shall be caulked with UL listed fire resistive and waterproof caulking compound as approved.

- E. Where piping or raceways pass through waterproofed floors or walls, design of sleeves shall be such that waterproofing can be flashed into and around the sleeves.
- F. Where items provided under this Contract pass through roofs this Contractor shall coordinate the installation with the Roofing Contractor and shall provide an approved penetration. The Electrical Contractor shall make provisions not to void the roof bond.
- G. Sleeves through exterior walls below grade shall be fitted with seals which have the ability to be ratcheted tight via bolts.
- H. Where sleeves pass through walls from the interior to the exterior, conduits shall be sealed on the inside with an UL approved sealant

### **3.3 FIRESTOPPING**

- A. Where conduits, conduit sleeves, wireways and other electrical raceways or cables pass through fire partitions, fire walls, fire floors, or smoke walls, the Electrical Contractor shall provide a fire or smoke stopping that provides an effective barrier against the spread of fire, smoke or gases.
- B. Installation of Fire-Stopping Materials: Install materials to fill openings around electrical services penetrating floors and walls and provide fire-stops with fire-resistance ratings indicated for floor or wall assembly in which penetration occurs. Install materials in accordance with printed instructions of the UL Fire Resistance Directory and per manufacturer's published instructions.
- C. All cables that are installed in conduit sleeves or in wireways through fire or smoke floors or partitions shall be provided with an equally rated re-enterable U.L. listed fire and smoke rated silicone RTV foam in the opening.
- D. Examine fire/smoke-stopped areas to ensure proper installation before concealing or enclosing areas.
- E. Keep areas of work accessible until inspection by applicable code authorities.

### **3.4 INSTALLATION OF ACCESS DOORS**

- A. Set frames accurately in position and securely attached to supports, with face panels plumb and level in relation to adjacent finish surfaces.
- B. Adjust hardware and panels after installation for proper operation.

### **3.5 LOCATIONS**

- A. Obtain written approval of locations of all electrical devices from the Contracting Officer Representative (COR) prior to rough-in. The Contracting Officer Representative (COR) reserves the right to move any or all electrical devices prior to rough-in, at no additional cost.
- B. Contractor shall obtain detailed and specific information regarding location of all equipment. Final locations may differ from those indicated on Drawings. Work improperly placed because of Contractor's failure to obtain this information shall be relocated and reinstalled as directed, without additional costs to the Contract.
- C. The design shall be subject to such revisions as may be necessary to overcome building obstructions. No changes shall be made in location of equipment without prior written approval.
- D. Door swings may vary from plans. Take note of actual door swings at time of rough-in. Do not install switches or other items behind the swing of any door.

### **3.6 TEMPORARY**

#### **A. Temporary Electricity:**

- 1. The Electrical Contractor shall provide temporary electric services to the construction areas at locations acceptable to all trades.
- 2. The Contractor shall provide power outlets for construction operations, branch wiring, distribution boxes. Each individual Contractor will provide flexible power cords as required.
- 3. Power required for tools and operating equipment used for the installation of equipment, that exceeds the power available, shall be temporarily installed and removed by the Contractor requiring it.
- 4. Provide wiring and connections for temporary heating equipment required for construction purposes and to prevent building freeze up.
- 5. Distribution wiring and equipment/devices used for temporary services shall not be installed as part of the permanent building distribution system.
- 6. Permanent distribution wiring and equipment/devices shall not be used for temporary services.

#### **B. Temporary Lighting:**

- 1. The Contractor shall provide temporary lights and all associated wiring as required by the project conditions.

### **3.7 SCAFFOLDING**

- A. The Contractor shall furnish, set, erect and maintain all scaffolding, aerial equipment and ladders required in the installation of this Contract work.
- B. Install temporary platforms so as to be supported only by the existing steel truss framework. Do not allow any additional loading from construction operations to transfer to suspended lath and plaster ceilings.

### **3.8 PAINTING**

- A. Except in Mechanical Rooms, Electrical Rooms, all exposed items provided or installed under this Contract shall be painted in accordance with Division 1 requirements.
- B. Unless painting is provided by others, as elsewhere specified, all painting for items furnished or installed under this Contract shall be the responsibility of this Contractor.
- C. Factory-painted equipment cabinets and trim shall not be field-painted except for touching up scratches or damage where necessary to achieve like-new finish. Touching up shall be done after equipment is in its final location.
- D. Paint for metal surfaces shall be Rust-o-leum or as approved, one prime coat and two finish coats of color selected by Architect.
- E. Items to be painted shall be cleaned and degreased and shall be free of dirt, rust and corrosion prior to application of paint. All paint shall be applied in accordance with all the manufacturer's recommendations (i.e. temperature, dew point, ventilation).
- F. All patchwork performed under this Contract shall be painted. Color shall match the color of adjacent walls, ceilings and floors in which patchwork occurs. Area to be painted shall extend a minimum of 24" all around patchwork; however, final limit shall be set by the Architect. Blend new paint work with existing painted surfaces. Where existing finish is stained or varnished woodwork, all damaged or patched surfaces shall be restored to match the existing adjacent surface, as approved. Paint, stain, varnish and method of application shall be as set out in the specifications for General Construction, or as otherwise approved. Except where painting of patchwork is provided by others, as elsewhere specified, all painting of patchwork required under this Contract shall be the responsibility of this Contractor.

### **3.9 VIBRATION ISOLATION**

- A. Isolation mounting shall be provided for all moving equipment where the energy of the vibration is of sufficient magnitude to produce perceptible vibration or structure transmitted noise in occupied areas. Isolation equipment shall be selected, installed and adjusted in accordance with manufacturer's recommendations.
- B. All equipment and material shall be installed so as to operate without objectionable noise or vibration as determined by Architect and Owner. Should such objectionable noise or vibration be produced and transmitted to occupied portions of the building by apparatus, piping or other parts of this work, any necessary changes as approved shall be made by the Contractor.
- C. All conduit terminations to noise or vibration producing equipment (i.e. motors, transformers) shall be made with a short section of liquidtight flexible metal conduit.

### **3.10 SELECTIVE DEMOLITION**

- A. Examination:
  - 1. Verify field measurements and circuiting arrangements are as shown on Drawings.
  - 2. Verify that abandoned wiring and equipment serve only abandoned facilities.
  - 3. Drawings are based on casual field observation and existing record documents. Report discrepancies to Contracting Officer Representative (COR) before disturbing existing installation.
  - 4. Beginning of demolition means installer accepts existing conditions.
- B. Preparation:
  - 1. Disconnect electrical systems in walls, floors, and ceiling scheduled for removal.
  - 2. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
  - 3. The Contractor shall maintain the operating condition of the existing Fire Alarm System until the new Fire Alarm System is operational. After the new Fire Alarm System has been installed, tested, inspected and is fully operational the Contractor shall remove the existing Fire Alarm System completely.
- C. Demolition and Extension of Existing Electrical Work:

1. Demolish and extend existing electrical work under provisions of Division 1 and this section.
2. Remove, relocate, and extend existing installations to accommodate new construction.
3. All abandoned wiring shall be disconnected at both ends and removed.
4. Remove exposed, abandoned conduit, including abandoned conduit above accessible ceilings. Cut conduit flush with walls and floors, and patch surfaces.
5. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed.
6. Disconnect and remove abandoned panelboards and distribution equipment.
7. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
8. Disconnect and remove abandoned luminaries. Remove brackets, stems, hangers, and other accessories.
9. Repair adjacent construction and finishes damaged during demolition and extension work, as approved.
10. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
11. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.
12. Maintain, restore, and provide electrical service for all receptacles, outlets, lighting fixtures and electrically operated equipment not being demolished. Intercept existing circuit, connect new circuiting into existing circuiting and extend new circuiting back to panelboard or previous "up-stream" device, which is not being removed.

D. Disposition of Equipment:

1. Unless specified, indicated or directed otherwise, all material and equipment not intended for reuse on this project that is to be dismantled or removed under this contract, shall become Contractor's property and shall be transported from the premises by him.
2. Exceptions: Contractor shall remove and transport the following items without damage to an on-site location as directed, for inspection and possible salvage by Owner:
  - a. Panel boards and Load centers

- b. Lighting Fixtures
  - c. Circuit Breakers and Safety Switches
  - d. Emergency Generator and Accessories
3. Additional Items as the Owner sees fit during demolition.
4. Any and/or all of the foregoing items that Owner may elect not to accept as salvageable materials, shall become Contractor's property and shall be removed from the premises by him.

### **3.11 OUTAGES AND DISRUPTIONS**

- A. Continuity of operation of all essential HVAC, plumbing and electrical items, including water, gas, electrical service, lighting, outlets, power and controls for heating and cooling equipment, auxiliary systems, fire alarm, emergency lighting and power, program, sound, alarms and telephones shall be provided as required for occupancy of the premises during the construction period.
- B. The schedule and timing of any interruption of electrical service or disruption of occupied areas that may affect use of the premises by the Owner and the public shall be coordinated with the Contracting Officer Representative (COR). Temporary or interim use feeders and facilities shall be provided by the Contractor, as approved and/or directed, to minimize the duration and extent of outages or interruptions.
- C. In areas where the construction work will interfere unduly with use of the premises, the Owner may direct that construction work be performed during time periods other than indicated above or on Saturdays, Sundays, or Holidays. Judgment as to whether such undue interference may exist shall rest solely with the Owner. Also, the Owner may require that temporary or interim use feeders and facilities shall be provided by the Contractor as approved and/or directed, to minimize the duration and extent of outages or interruptions.
- D. Preparatory work shall be performed as completely as possible in each instance prior to scheduled service outages.
- E. Contractor shall be responsible for any and all premium time/overtime required to perform outages and cutovers of services. Coordinate with Contracting Officer Representative (COR) .
- F. Contractor shall be responsible for any and all premium time/overtime required to complete the work in the various areas within the allotted

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time, as well as any premium/overtime required to install work through unaffected or remote areas from the work as necessary to maintain continuity of services and occupancy of the existing buildings, as required. Coordinate with Contracting Officer Representative (COR).

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