

SECTION 27 05 29

HANGERS AND SUPPORTS FOR COMMUNICATIONS SYSTEMS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General Provisions and Supplementary Conditions, Specification Sections, apply to this and the other sections of Division 27.
- B. This section is a Division 27 BASIC section and is a part of each Division 27 section.

1.02 SUMMARY

- A. This Section includes secure support from the building structure for technology items by means of hangers, supports, anchors, sleeves, inserts, seals and associated fastenings.
- B. All support shall utilize threaded fasteners for all technology/attachments
  - 1. Exception:
    - a. Spring steel fasteners may be used in lieu of threaded fasteners only for 3/4" raceways above suspended ceilings.
- C. Types of supports, anchors, sleeves and seals specified in this section include the following:
  - 1. C-clamps
  - 2. Clevis hangers
  - 3. Conduit straps
  - 4. I-beam clamps
  - 5. Lead expansion anchors
  - 6. Riser clamps
  - 7. Round steel rods
  - 8. Toggle bolts
  - 9. Wall and floor seals
- D. Supports, anchors, sleeves and seals furnished as part of factory-fabricated equipment, are specified as part of that equipment assembly or as specified in Division 16.

1.03 SUBMITTALS

- A. Submit the following in accordance with Conditions of Contract and Supplementary Conditions Specifications Sections.
  - 1. Product Data: Submit manufacturer's data on supporting devices including catalog cuts, specifications, and installation instructions, for each type of support, anchor, sleeve and seal.
  - 2. Where multiple products are shown on one cut sheet, circle product to be used.
  - 3. Shop Drawings: Submit dimensioned drawings of fabricated products, indicating details of fabrication and materials.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in manufacture of supporting devices, of types, sizes, and ratings requires, whose products have been in satisfactory use in similar service for not less than 3 years.
- B. Contractor Qualifications: Firm shall have at least 3 years of successful installation experience with projects utilizing electronic/electrical supporting device work similar to that required for this project.
- C. NEC Compliance: Comply with NEC requirements as applicable to construction and installation of supporting devices.
- D. MSS Compliance: Comply with applicable MSS standard requirements pertaining to fabrication and installation practices for pipe hangers and supports.
- E. UL Compliance: Provide components that are UL listed and labeled.
- F. FS Compliance: Comply with Federal Specification FF-S-760 pertaining to retaining straps for conduit, pipe and cable.
- G. Components shall be listed and labeled by ETL, CSA, or other approved, nationally recognized testing and listing agency that provides third-party certification follow-up services.

#### PART 2 PRODUCTS

##### 2.01 MANUFACTURERS

- A. Major items of equipment shall have manufacturer's name, address and catalog number on a plate securely attached. All equipment or apparatus of any one system must be the product of one manufacturer or approved equivalent products of a number of manufacturer's that are suitable for use in a unified system.
- B. All materials and equipment for which Underwriter's Laboratories have established standards shall bear a UL label of approval.
- C. Where proprietary names are used, whether or not followed by the words "or as approved", they shall be subject to substitution only as approved by the Architect, Technology Consultant, and Owner.
- D. Where the Contractor proposes substitute equipment, contractor shall submit acceptable evidence to indicate compliance with all requirements of the documents, including performance rating, size and resistance to wear and deterioration equivalent to the specified item. In instances where substituted equipment requires additional material or work beyond that shown or required by the specified item, said additional material or work, shall be the responsibility of this Contractor, regardless of the trade involved.

#### PART 3 EXECUTION

##### 3.01 DELIVERY, STORAGE, AND HANDLING

- A. Provide supporting devices that comply with manufacturer's standard materials. Install in accordance with published product information, and as required for a complete installation; and

as herein specified. Where more than one type of supporting device meets indicated requirements, selection is Contractor's option.

- B. Install hangers, anchors, sleeves and seals as indicated, in accordance with manufacturer's written instructions and with recognized industry practices to insure supporting devices comply with requirements. Comply with requirements of NEC for installations of supporting devices.
  - 1. Support all technology cables a minimum of every 5ft. with J-hooks, unless other supports are available.
  - 2. Cables shall be bundled in groups of 24 cables maximum.
- C. Coordinate with the building structural system and electrical work, including raceway and wiring work, as necessary to interface installation of supporting devices with other work.
- D. Do not fasten supports to pipes, ducts, mechanical equipment and conduit.
- E. Obtain approval from the Architect before drilling or cutting structural members.
- F. Install surface-mounted cabinets and panels with minimum of four anchors.

### 3.02 MISCELLANEOUS SUPPORTS

- A. Support miscellaneous technology components as required to produce the same structural safety factors as specified for raceway supports. Install metal channel racks for mounting cabinets, panels, control enclosures, pull boxes, junction boxes and other devices.

### 3.03 FASTENING

- A. Unless otherwise indicated, fasten technology items and their supporting hardware securely to the building structure, including but not limited to conduits, raceways, cables, cable trays, cabinets, panels, boxes and control components in accordance with the following:
- B. Fasten by means of wood screws or screw-type nails on wood, toggle bolts on hollow masonry units, concrete inserts or expansion bolts on concrete or solid masonry, and machine screws, welded threaded studs, or spring-tension clamps on steel. Threaded studs driven by a powder charge and provided with lock washers and nuts may be used instead of expansion bolts and machine or wood screws. Do not weld conduit, pipe straps, or items other than threaded studs to steel structures. In partitions of light steel construction, use sheet metal screws.
- C. Holes cut into reinforced concrete beams or in concrete shall not cut reinforcing bars. If the Contractor cuts into any reinforcing bars, stop work and notify the Technology Consultant immediately. Fill all holes that are not used.
- D. Ensure that the load applied to any fastener does not exceed 25% of the proof test load. Use vibration-and shock-resistant fasteners for attachments to concrete slabs.

### 3.04 TESTS

- A. Test pull-out resistance of one of each type, size and anchorage material for the following fastener types:
- B. Expansion anchors.
  - 1. Toggle bolts.
  - 2. Powder-driven threaded studs.

- C. Provide all jacks, jigs, fixtures, and calibrated indicating scales required for reliable testing. Obtain and submit the Structural Engineer’s signed approval before transmitting loads to the structure. Test to 90% of rated proof load for fastener. If fastening fails test, revise all similar fastener installations and retest until satisfactory results are achieved.

END OF SECTION