SECTION 26 05 36
WIREWAYS FOR RADIOLOGY EQUIPMENT

PART 1- GENERAL

1.1 DESCRIPTION

A. This section specifies the furnishing, installation, and connection of wireway systems for the radiology equipment.

B. Radiology equipment and high voltage cables will be furnished by the Government.

1.2 RELATED WORK

A. Section 13 49 00, RADIATION PROTECTION: Requirements for lead radiation shielding.

B. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS: General electrical requirements that are common to more than one section of Division 26.

C. Section 26 05 33, RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.

D. Section 26 05 39, UNDERFLOOR RACEWAYS FOR ELECTRICAL SYSTEMS: Under-floor raceway systems.

1.3 QUALITY ASSURANCE

A. Refer to Paragraph, QUALIFICATIONS, in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1.4 SUBMITTALS

A. Submit in accordance with Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

B. Shop Drawings:

1. Clearly present sufficient information to determine compliance with the drawings and specifications.
2. Show size and location of wireway components, feeders, panels and pullboxes, ductwork, and equipment provided by other trades, and radiology equipment items. Carefully coordinate with manufacturer’s shop drawings. Shop drawing approval is required by the radiology equipment manufacturer’s technical representative prior to fabrication and installation of the wireway.

C. Certifications: Two weeks prior to final inspection, submit four copies of the following to the COTR:
   1. Certification that the materials are in accordance with the drawings and specifications.
   2. Certification by the contractor that the complete installation has been properly installed and tested.
   3. Certification by the contractor that the radiology equipment manufacturer's representative has approved the complete wireway installation.

1.5 APPLICABLE PUBLICATIONS

Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.

A. National Fire Protection Association (NFPA):
   70-08 .....National Electrical Code (NEC)
   99-2005 .....Health Care Facilities

B. Underwriters Laboratories, Inc. (UL):
   884-2005 .....Underfloor Raceways and Fittings

PART 2 - PRODUCTS

2.1 WIREWAY

A. General
   1. Factory fabricate, assemble, and fit.
   2. Material shall be steel.
   3. Size shall be 12 in [305 mm] x 3.5 in [90 mm].
   4. Coordinate dimensions of the straight lengths, elbows, junction boxes, and other components.
   5. Hot-dipped galvanized steel connections joiner plates on floor and ceiling cable wireway.
   6. Wireway bushings:
      a. Cast aluminum.
      b. Install when the radiology equipment is installed.
      c. Split ring-type bushed nipples for the high voltage cables.
      d. Smooth edges of the openings in the wireways for the bushings.

7. Provide chase nipples, dividers, elbows, tees, conduit entry fittings, and other accessories, fittings, and components, as required for a complete installation.
8. Protect cables at their egress from the wireways by mechanically securing them with fittings to the wireways.
9. Provide 45 degrees sweep e1bow at every 90 degrees change in direction. Elbows shall have partitions.
10. Where gasketed openings are required in floor wall or ceiling wireways, provide split covers with fastening devices on both sides of the cover.

2.2 FLOOR WIREWAY

A. Wireways recessed in the floors or surface-mounted on the floors shall be watertight in accordance with UL 884.
B. Sides and bottoms, 0.0747 in [2 mm] minimum thickness.
C. Covers, 0.25 in [6 mm] minimum thickness. Covers shall be bare, carpet-insert, or tile-insert to match the floor covering.
D. Wireway covers shall be fully gasketed with screw fasteners.

2.3 WALL WIREWAY

A. Wall wireway shall be recessed in the walls or surface-mounted on the walls, as required.
B. Provide flange-mounted covers with screw fasteners for flush-mounted installation.
C. Provide surface-mounted covers with screw fasteners for surface-mounted installations.
D. Sides, bottoms, and covers for renovations shall be 0.747 in [2 mm] minimum thickness.

2.4 CEILING WIREWAY

A. Provide wireway with support rods to permit inspection of cables above ceiling.

PART 3 - EXECUTION

3.1 SYSTEM INSTALLATION

A. Provide the wireways, barriers, boxes, and other equipment for the radiology equipment and the final connections to the equipment in accordance with the details shown on the drawings, as required by the NEC, NFPA 99, and the manufacturer’s shop drawings. The radiology equipment and the high voltage cables will be furnished by the Government. The Government will furnish the services of a manufacturer's representative to technically supervise the installation, connection, adjustment, and testing of the equipment.

B. Coordinate the wireway systems with the floor, wall, and ceiling structural supports for the radiology equipment, the locations of the radiology equipment and its auxiliaries, and with the lead shielding in the walls, floors and ceilings.
   1. Prior to fabrication of the raceway systems, obtain detailed layout information from the COTR for the radiology equipment and high-voltage cables.
   2. Install wireway with a minimum of bends in the shortest practical distance considering equipment and building layout. Individual wireway runs shall not exceed the radiology equipment manufacturer's specified maximum distances.
   3. Wireways, boxes, and devices recessed into or penetrating through lead-shielded walls, floors, and ceilings:
      a. Line or clad surfaces of the boxes and devices with the equivalent thickness of lead shielding shown for the room, except the removable cover.
      b. Line or clad wireway surfaces with the equivalent thickness of lead shielding shown for the room.
      c. Overlap the lead shielding on boxes, devices, and wireways with the lead shielding for walls, floors, and ceilings by not less than 1 in [25 mm].
      d. Arrange the installations such that radiation within the rooms will not penetrate the wireway paths through the lead-shielded walls, floors, and ceilings.

C. Equipment Grounding Conductors:
   1. Install a continuous equipment grounding conductor in each wireway, from the source electrical equipment to the load served. The conductor shall be copper, sized as shown, and shall have green insulation. The conductor size shall at a minimum be equal to the size of the largest current-carrying conductor present at that point.
   2. Bond all of the equipment grounding conductors in each enclosure.
   3. Trough-type wireway sections shall be made electrically continuous by short bonding jumpers between adjacent sections. Jumpers shall be exothermically bonded to each raceway section. Jumpers shall be sized per radiology equipment manufacturer's requirements.
   4. Provide not less than one 10 ft [3 M] equipment grounding conductor pigtail at each box or junction point where an item of equipment is connected.

D. Where conductors of different types share a common wireway component, install protective barriers between the high-voltage power cables, the low-voltage power conductors, and medical systems conductors.

E. Install cables and conductors as required for the radiology equipment. Provide 10 ft [3 M] pigtails on the wires at all connection points to radiology equipment. Wiring shall be tagged and identified at each end.

F. Fit and preserve fill-in pieces of floor covering for the wireways. Install the fill-in pieces after the cables and conductors have been installed in the wireways.

G. In existing facilities where it is not feasible to provide radiology wireways as specified above:

1. Install point-to-point conduit and conductor systems for the radiology equipment.
2. Run the wireways for the high voltage cables in the shortest practicable manner as approved by the COTR and the equipment manufacturer.
3. Line holes in the floors, walls, and ceilings for conduit penetrations with equivalent thickness of curved or offset lead sleeves, caulked and flanged for adequate shielding, such that x-rays will not penetrate the floors, walls and ceilings.

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