

SECTION 26 05 39
UNDERFLOOR RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the furnishing, installation, and connection of the underfloor raceways to form a complete, coordinated, grounded raceway system.

1.2 RELATED WORK

- A. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS:
Requirements that apply to all sections of Division 26.
- B. Section 26 05 21, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES:
Low-voltage conductors.
- C. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS:
Requirements for personnel safety and to provide a low impedance path to ground for possible ground fault currents.
- D. Section 26 27 26, WIRING DEVICES: Wiring devices installed as part of the underfloor raceway system.

1.3 QUALITY ASSURANCE

- A. Refer to Paragraph, QUALIFICATIONS (PRODUCTS AND SERVICES), in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1.4 SUBMITTALS

- A. Submit six copies of the following in accordance with Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.
 - 1. Shop Drawings:
 - a. Submit sufficient information to demonstrate compliance with drawings and specifications.
 - b. Provide plan drawings, section drawings, and details.
 - c. Identify components and accessories such as expansion-joint assemblies, straight raceway lengths, inserts, junction boxes, and service fittings.
 - d. Provide dimensions locating raceway components. Include spacing between preset inserts and between preset inserts and ends of raceway runs, walls, and columns.
 - e. Show connections between raceways and adjacent structural and architectural elements including slab reinforcement, floor finish work, permanent partitions, and pre-tensioning or post-tensioning components.

- f. Indicate height of preset inserts, junction boxes, and raceways coordinated with depth of concrete slab.
 - g. Indicate required floor slab thickness for encasement of raceways.
 - h. Show details of connections of underfloor raceways to conduits.
2. Manuals:
- a. Submit, simultaneously with the shop drawings, companion copies of complete maintenance and operating manuals, including technical data sheets and information for ordering replacement parts.
 - b. Manuals shall include information on locating and installing preset and afterset inserts.
 - c. If changes have been made to the maintenance and operating manuals originally submitted, submit updated maintenance and operating manuals two weeks prior to the final inspection.
3. As-built Drawings:
- a. Deliver drawings to the //Resident Engineer// //COTR// showing the exact location of all underfloor ducts and junction boxes dimensioned from the centerline of building columns.
 - b. Show the location and circuiting of all power outlet fittings.
 - c. Show the location of all telecommunications fittings.
4. Certifications: Two weeks prior to final inspection, submit the following.
- a. Certification by the manufacturer that the underfloor raceways conform to the requirements of the drawings and specifications.
 - b. Certification by the Contractor that the underfloor raceways have been properly installed and adjusted.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. Underwriters Laboratories, Inc. (UL):
884-11.....Underfloor Raceways and Fittings
- C. National Fire Protection Association (NFPA):
70-11.....National Electrical Code (NEC)

SPEC WRITER NOTE: Delete between // ----
// if not applicable to project. Also

delete any other item or paragraph not applicable to the section and renumber the paragraphs.

PART 2 - PRODUCTS

2.1 RACEWAYS

A. Raceways shall comply with NFPA, UL, and as shown on the drawings.

B. Raceways:

SPEC WRITER NOTE: Specify the physical size of the underfloor raceway.

1. The raceway shall have minimum outside dimensions of //79 mm x 32 mm (3-1/8 inches x 1-1/4 inches)// //165 mm x 38 mm (6-1/2 inches x 1-1/2 inches) // // //.
2. Preset inserts shall be spaced 600 mm (24 inches) on centers and shall not be less than 58 mm (2-1/4 inches) in diameter.
3. Raceways shall not be less than No. 16 gauge steel, continuously welded, with corrosion resistant coating, inside and outside.
4. Raceway covers shall be minimum 6mm (1/4 inch) thick steel, with //tile// //carpet// trim.
5. Shall have rounded corners.
6. Raceways shall have vertical 90 degree elbows as required.
7. Raceways shall have horizontal 90 degree and 45 degree elbows and tees as required.
8. Raceways shall have all fittings and accessories for a complete installation, such as adjustable supports, connectors, end closures, panel risers, covers, tile and carpet trims, etc.
9. Power and telecommunications raceways shall be separate.
10. Raceways shall provide a 50 mm (2 inch) minimum bending radius for telecommunication cables.

C. Junction Boxes:

1. Shall be cast metal or formed steel, with corner conduit adapters.
2. Each box shall have four screws for adjustment and leveling after installation.
3. Boxes shall have adjustable covers.
4. Coverplates shall be removable and the proper depth for and coordinated with the floor coverings and finishes.

D. Service fittings:

1. Shall be the low compact type, satin-finished aluminum.

2. Power outlets shall have receptacles as indicated and as specified in Section 26 27 26, WIRING DEVICES.
3. Telecommunications outlets shall have dimensions which are approximately the same as the power outlets. Data, telephone and other telecommunications jacks shall be as required by the applicable specifications.
4. Include mounting, hinged cover, and trim to support and provide access to connector, jack, or receptacle devices mounted flush with floor within insert.

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PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation shall be in accordance with the NEC, manufacturers recommendations, and as shown on the drawings.
- B. Connect the raceways, boxes, and fittings so they are mechanically firm, electrically continuous, and watertight.
- C. Align, level, and make the raceways parallel to or at right angles with the building walls.
- D. Level raceways with floor slab, including height adjustments for floor finishes.
- E. Raceways shall be free from burrs, sharp edges, dents and other defects.
- F. Cap or plug unused openings with standard fittings.
- G. Fasten the junction boxes firmly in place to prevent their movement during pouring of the slabs.
- H. Raceway systems shall be supported at not more than 1500 mm (five feet) on centers.
- I. Specific methods of installing the raceways shall be demonstrated to and approved by the //Resident Engineer// //COTR// prior to performing the installation.
- J. Branch circuit wiring shall be the same as that specified for wet locations in Section 26 05 21, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
- K. Ground raceway system.

- L. Seal the raceway system, and prevent water, concrete, or other materials from entering the raceway system during floor construction.
- M. Protect underfloor raceway system from damage. Do not use the installed raceway system as working platforms or walkways. Do not allow equipment or heavy traffic over raceway during construction without first installing ramps over the raceway. Ramps shall be designed so that imposed loads are not transferred to the duct. Components of the system which are damaged during construction shall be replaced.
- N. Provide expansion fittings with suitable bonding jumper where raceway crosses building expansion joints.
- O. Install junction box tops flush and level with finished floor. Install blank closure plates or plugs to close unused junction box openings. Grout boxes in place to prevent movement during construction. Place top covers in inverted position during construction to prevent damage to surface of cover. Reinstall covers in proper position prior to final acceptance of work.

3.2 ACCEPTANCE CHECKS AND TESTS

- A. Perform manufacturer's required field checks in accordance with the manufacturer's recommendations. In addition, include the following:
 - 1. Visual Inspection and Tests:
 - a. Inspect physical and electrical condition.
 - b. Vacuum-clean raceway interior.
 - c. Clean raceway exterior.

3.3 FOLLOW-UP VERIFICATION

- A. Upon completion of acceptance checks, the Contractor shall show by demonstration in service that the raceway is in good operating condition and properly performing the intended functions.

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