

Chapter E 346

RIGID METAL CONDUIT

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|----------|---------------------------------|----------|--------------------------|
| E 346.01 | Use | E 346.08 | Bushings |
| E 346.02 | Other chapters | E 346.09 | Couplings |
| E 346.03 | Cinder fill | E 346.10 | Bends; how made |
| E 346.04 | Wet locations | E 346.11 | Bends; number in one run |
| E 346.05 | Minimum size | E 346.12 | Boxes and fittings |
| E 346.06 | Number of conductors in conduit | E 346.13 | General |
| E 346.07 | Reaming | | |

E 346.01 Use. Rigid metal conduit may be used under all atmospheric conditions and occupancies, except that ferrous raceways and fittings protected from corrosion solely by enamel may be used only indoors and in occupancies not subject to severe corrosive influences. Conduits and fittings exposed to severe corrosive influences shall be of corrosion-resistant material suitable for the conditions. Where practicable, the use of dissimilar metals in contact anywhere in the system shall be avoided to eliminate the possibility of galvanic action.

Note: Meat-packing plants, tanneries, hide cellars, casing rooms, glue houses, fertilizer rooms, salt storage, some chemical works, metal refineries, pulp and paper mills, sugar mills, roundhouses, textile bleacheries, plants producing synthetic staples, some stables, and similar locations are judged to be occupancies where severe corrosive conditions are likely to be present.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.02 Other chapters. Installations of rigid metal conduit shall comply with the provisions of the applicable rules of chapter E 300.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

A. INSTALLATION

E 346.03 Cinder fill. Conduit, unless of corrosion-resistant material suitable for the purpose shall not be used in or under cinder fill where subject to permanent moisture unless protected on all sides by a layer of non-cinder concrete at least 2 inches thick or unless the conduit is at least 18 inches under the fill.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.04 Wet locations. (1) In portions of dairies, laundries, canneries, and other wet locations, and in locations where walls are frequently washed, the entire conduit system, including all boxes and fittings used therewith, shall be so installed and equipped as to prevent water from entering the conduit and the conduit shall be mounted so that there is at least $\frac{1}{4}$ inch air space between the conduit and the wall or other supporting surface.

(2) All supports, bolts, straps, screws, etc., shall be of corrosion-resistant materials or protected against corrosion by approved corrosion-resistant materials.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.05 Minimum size. No conduit smaller than $\frac{1}{2}$ inch, electrical trade size, shall be used, except as provided for underplaster extensions in chapter E 344, and for enclosing the leads of motors as permitted in subsection E 430.145 (2).

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.06 Number of conductors in conduit. The number of conductors permitted in a single conduit shall be as follows:

(1) NEW WORK: (a) Where conductors are all the same size, use tables 1 and 2 of chapter E 900.

(b) Where conductors are of various sizes to be used in combination, use tables 3 and 4 of chapter E 900 and the dimensions of rubber-covered conductors from table 5 of chapter E 900.

(c) For bare conductors, use actual areas from table 8 of chapter E 900.

(2) REWIRING EXISTING CONDUITS: For rewiring existing conduits, the allowable fill may be determined from tables 3 and 4 of chapter E 900, using the dimensions from table 5 of chapter E 900.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.07 Reaming. All cut ends of conduits shall be reamed to remove rough edges.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.08 Bushings. Where a conduit enters a box or other fitting, a bushing shall be provided to protect the wire from abrasion unless the design of the box or fitting is such as to afford equivalent protection. See subsection E 373.06 (2) for the protection of conductors at bushings.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.09 Couplings. (1) Threadless couplings and connectors used with conduit shall be made tight. Where installed in wet places or where buried in masonry, concrete or fill shall be of a type to prevent water from entering the conduit.

(2) Running threads shall not be used on conduit for connection at couplings.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.10 Bends; how made. Bends of rigid conduit shall be so made that the conduit will not be injured, and that the internal diameter of the conduit will not be effectively reduced. The radius of the curve of the inner edge of any field bend shall not be less than shown in table E 346.10.

**TABLE E 346.10
RADIUS OF CONDUIT BENDS**

| Size of Conduit | Conductors Without Lead Sheath | Conductors With Lead Sheath |
|-------------------------|--------------------------------|-----------------------------|
| $\frac{1}{2}$ in.----- | 4 in. | 6 in. |
| $\frac{3}{4}$ in.----- | 5 in. | 8 in. |
| 1 in.----- | 6 in. | 11 in. |
| $1\frac{1}{4}$ in.----- | 8 in. | 14 in. |
| $1\frac{1}{2}$ in.----- | 10 in. | 16 in. |
| 2 in.----- | 12 in. | 21 in. |
| $2\frac{1}{2}$ in.----- | 15 in. | 25 in. |
| 3 in.----- | 18 in. | 31 in. |
| $3\frac{1}{2}$ in.----- | 21 in. | 36 in. |
| 4 in.----- | 24 in. | 40 in. |
| 5 in.----- | 30 in. | 50 in. |
| 6 in.----- | 36 in. | 61 in. |

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.11 Bends; number in one run. A run of conduit between outlet and outlet, between fitting and fitting, or between outlet and fitting shall not contain more than the equivalent of 4 quarter bends (360 degrees, total), including those bends located immediately at the outlet or fitting.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 346.12 Boxes and fittings. See chapter E 370.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

B. CONSTRUCTION SPECIFICATIONS

E 346.13 General. Rigid metal conduit shall conform to the following:

(1) Rigid conduit as shipped shall be in standard lengths of 10 feet including coupling, one coupling to be furnished with each length. Each length shall be reamed and threaded on each end.

(2) Steel conduit shall have an interior coating of a character and appearance so as to readily distinguish it from ordinary pipe commonly used for other than electrical purposes.

(3) Non-ferrous conduit of corrosion-resistant material shall have suitable markings.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.