



# Division 260530

# Conduit

## DESIGN GUIDE

## 1 General

### 1.1 Introduction

- A. This section applies to the following:
  - 1. Metal conduit
  - 2. Electrical metallic tubing (EMT)
  - 3. Flexible metal conduit
  - 4. Liquidtight flexible conduit
  - 5. Rigid plastic conduit
  - 6. Fiberglass conduit sweeps
  - 7. Fittings & conduit bodies

## 2 Materials

### 2.1 Materials not allowed

- A. Metal-clad cable or Armored cable.
- B. Flexible plastic tubing or ENT.
- C. Rigid aluminum conduit.
- D. Condulets or Conduit bodies.



## 2.2 Metal Conduit

- A. Rigid steel conduit (ANSI C80.1).
- B. Fittings shall be threaded with nylon insulated throats on bushings.

## 2.3 Electrical Metallic Tubing (EMT)

- A. Galvanized steel tubing (ANSI C80.3).
- B. Fittings shall be steel compression connectors and couplings for conduit sized 2" or smaller. Steel set screw fittings shall be utilized for conduit sized larger than 2".
- C. Fittings located outdoors shall be raintight.
- D. Connectors shall be provided with nylon insulated throats.

## 2.4 Flexible Metal Conduit

- A. Interlocked, galvanized steel construction.
- B. Fittings shall be steel compression connectors and couplings for conduit sized 2" or smaller. Steel set screw fittings shall be utilized for conduit sized larger than 2".
- C. Connectors shall be provided with nylon insulated throats.

## 2.5 Liquidtight Flexible Conduit

- A. Interlocked, galvanized steel construction with PVC jacket.
- B. Fittings shall be specifically designed for the purpose.

## 2.6 Rigid Plastic Conduit

- A. NEMA TC 2, Schedule 40 PVC.
- B. Fittings and conduit bodies shall be NEMA TC 3.



## 2.7 Fiberglass Conduit Sweeps

- A. NEMA TC 14, Fiberglass reinforced epoxy suitable for below grade installation.

# 3 Execution

## 3.1 General Installation

- A. Primary service and secondary service entrance conduit types shall be any combination of the following:
  - 1. Rigid metal conduit for exposed, concealed, underground or underslab runs.
  - 2. Rigid nonmetallic conduit with a separate ground wire for underground, or underslab on grade, runs.
- B. Feeder conduit types shall be as follows:
  - 1. Rigid metal conduit for exposed, underground or underslab on grade runs.
  - 2. Electrical metallic tubing with separate ground wire in above grade non-masonry/concrete walls or above ceilings, except for runs in hazardous locations.
  - 3. Rigid nonmetallic conduit with a separate ground wire for underground or under slab on grade runs, except runs in hazardous locations.
- C. Branch circuit conduit types shall be as follows:
  - 1. Rigid metal conduit for exposed runs up to 4 feet 6 inches above the finished floor in sheltered spaces, for exposed runs subject to the weather, for runs in hazardous locations and for underground or underslab runs.
  - 2. Electrical metallic tubing in above grade non-masonry/concrete walls or above ceilings, and for exposed runs more than 4 feet 6 inches above the finished floor in sheltered spaces, except runs in hazardous locations.



3. Liquid-tight flexible steel conduit for connections to transformers, motors and other vibrating equipment in damp and wet areas or where exposed to the weather.
  4. Flexible steel conduit for connections to transformers, motors and other vibrating equipment in dry, sheltered areas.
  5. Rigid nonmetallic conduit with a separate ground wire for underground, under slab on grade runs or runs within a suspended slab.
- D. Minimum conduit size:  $\frac{3}{4}$ " for branch wiring and 1" for home runs for power and lighting circuits.
  - E. The radius of the inner edge of any field bend shall not be less than 6 times the conduit size.
  - F. Provide a polyethylene pull rope rated at 250 pounds (minimum) tensile strength in each conduit left empty for future use.

### **3.2 Special Underground Requirements**

- A. Where PVC conduit is installed beneath concrete slabs on grade, it shall be buried a minimum of 6 inches below top of sub-surface beneath floor slab. Minimum size of PVC used shall be  $\frac{3}{4}$  inch.
- B. Transitions from below grade rigid nonmetallic conduit to above grade conduits shall be made with fiberglass sweeps for conduits 1-1/4" and larger. Rigid nonmetallic conduit shall not be installed above grade.
- C. Underground horizontal and vertical 90 degree sweeps shall be made with fiberglass conduit for conduits 1-1/4" and larger. Horizontal 90 degree sweeps shall be large radius sweeps with a minimum radius of 48". Vertical 90 degree sweeps shall have a minimum radius of 24" for conduits smaller than 3" and shall have a minimum radius of 48" for conduits 3" and larger.
- D. Rigid steel metallic conduits installed underground shall be painted with two coats of asphaltic compound or wrapped with one half-lapped layer of Hunt's Wrap Process No. 3.
- E. Transitions from below grade to above grade shall be stubbed out a minimum of 3" above finished floor.



### 3.3 Special Above Ground Requirements

- A. Conduits shall be concealed in the building construction except in electrical rooms, mechanical rooms and where exposed runs are indicated. Exposed conduits shall be run parallel to walls and ceilings and at the ceiling wherever possible.
- B. Where conduit is installed in above grade suspended concrete slabs, it shall be PVC. Junction boxes in suspended concrete slabs shall be located such that they will be accessible after construction. Locating junction boxes above other building systems such as duct work, piping or cable tray is not permitted.
- C. Rigid steel conduit shall be used at roof penetrations.
- D. Provide color coding of conduit in unfinished spaces and accessible ceilings as follows:
  - 1. Voltage
    - a. 120/208v, silver
    - b. 277/480v, yellow
  - 2. Comm, blue
  - 3. FA, red

## 4 Appendix

### 4.1 Reserved for future.

