

DIVISION 16 - ELECTRICAL

Section 16110 - Raceways

Introduction

The general attitude on conduit systems is that in the future any area which does not have surface mounted raceways in the area at present shall not have them in the future. New conduit in an existing gypsum board wall shall be either fished with steelflex or EMT caps, or shall have wall notched and then patched for installation of new conduits. In addition it is the intent of this section that conduits being installed now shall provide for additions in the future.

Reducing washers are prohibited except where approved by the UA Electrical Engineer.

The minimum size of each conduit shall be 3/4" unless noted otherwise below.

The maximum number of circuits in a new conduit is 3. Remodels may add up to 6.

For homeruns a j-box shall be located above the lights in an accessible location to allow for future expansion. No home run shall terminate in a wall mounted device box. Use a separate J-Box.

For underground utility projects the information in section 16115 shall apply.

Do not substitute conduit fittings for pull boxes.

- 1/2" conduit shall be allowed where terminating to a one gang device box from an above ceiling J-box.
- Specific housing projects will permit 1/2" emt raceways in lieu of 3/4" but homeruns shall be 3/4".

Part 1 - General

- Provide a submittal for conduit, wireways, and fittings.
- Reducing washers are prohibited except where specifically approved by the electrical inspector. A ground bushing will be required wherever reducing bushings are authorized.
- Stud to stud supports are required in all metal framing, in order to support boxes.
- Scrap conduit shall not be used for conduit supports.

Part 2 - Products

- EMT
 - Use steel compression type fittings, and couplings.
 - Connectors shall have insulated throat.
 - No factory emt bends allowed below 1".
 - No Condulet type fittings over 1 1/2" unless approved by UA Electrical Engineer.
- Galvanized rigid steel (GRC)
 - No running threads.
 - Use one piece couplings.
 - Use Ericsons only where approved by engineer.
 - Double locknuts and threaded insulated steel bushings at all boxes.
 - Minimum 3/4".
 - No Condulet type fittings over 1 1/2" unless approved by UA Electrical Engineer.

- Steelflex
 - Minimum size $\frac{3}{8}$ " with #14 THHN wire. (For connection to an individual light fixture or with a single circuit)
 - No pre-wired raceways.
 - 1 screw compression or set screw connectors only.
 - Maximum 6' length.
 - No Aluminum flex.
 - No BX cable.
 - No MC except as noted in 16050-1 or as approved by UA Electrical Engineer.
 - Use integral insulated throat fittings.

- Liquid tight flexible conduit, steel core (LTFC)
 - Equal to Sealtight.
 - Minimum size $\frac{1}{2}$ ". (For connection to a single motor or device with less than 5#12)
 - Use insulated throat compression type steel connectors.
 - Maximum length 6'
 - All device wiring shall be field wired by the electrical contractor. Suitcase type connectors shall not be used. Submit samples for evaluation by UA Electrical Engineer.

- PVC
 - Schedule 40 minimum wall thickness.
 - Minimum size $\frac{3}{4}$ ".

- SURFACE MOUNTED RACEWAYS
 - Shall be as manufactured by Walkerdect or Wiremold.
 - Minimum size shall be equal to type 700 WM.
 - No PVC or plastic wiremold products will be permitted.
 - Utilize manufacturer's products for all transitions from conduit systems and for all bends, offsets, or otherwise appropriate situations. Minimize field modifications to the raceway.

- Conduit bodies allowed $\frac{3}{4}$ " through 1 $\frac{1}{4}$ " only with approval of the UA Electrical Engineer.

Part 3 - Execution

- Conduit system must be complete prior to pulling cables.

- EMT
 - Use in gyp board walls, surface mounted in equipment rooms, and where not subject to moisture or damage. EMT to route vertically only in walls in areas with drop ceilings. No horizontal runs through walls unless specially approved by UA Electrical Engineer.
 - Condulets shall not be used indoors in place of pull boxes.
 - Route conduit not less than 1' above drop ceilings and no higher than 36" above unless approved by PDC.

- Galvanized Rigid Steel
 - Use above grade where subject to weather.
 - Use where subject to moisture.
 - Use where subject to damage.
 - Use for all bends and offsets in underground runs or in block walls.
 - Use within 5' of building walls, if penetrating the structure, in underground runs.

- Use in all light pole bases.
- All indoor runs larger than 4" except communications or special systems.
- Underground or in concrete must be half lap wrapped with 10 mil PVC tape or painted with bitumastic compound.
- Use in tunnel
- Use at a height of 4' and below in all Electrical, Equipment and Mechanical Rooms or where subject to physical damage.

- Schedule 40 PVC
 - Use only below grade.
 - Use only with approved PVC supports.
 - Use inside of block walls, with solid grouted cells.
 - May be used as a sleeve inside of building for grounding or lightning protection wiring.
 - All bends and offsets shall be in rigid steel (GRC) elbows.
 - All stub ups shall be GRC.
 - See Section 16115 for installation requirements (dept, encasement, etc.).

- Steelflex
 - Use only where permitted by UA Electrical Engineer or for feed to lights or smoke detectors in a t-bar ceiling.
 - Use where required for fishing existing stud walls to a single device.
 - Provide sufficient length for loop at bottom of flex. (Do not draw tight).
 - Use for dropping conduit down an existing wall with limited ceiling height.

- Liquid Tight Flexible Conduit (LTFC)
 - Use only where permitted by UA Electrical Engineer.
 - Use for final connection to all equipment.
 - It shall not be used to penetrate sheet metal enclosures.
 - Provide sufficient length for loop at bottom of flex. (Do not draw tight).

- Surface mounted raceways (Wiremold or approved equal)
 - Use in renovation projects where existing walls do not allow fishing or notching of walls. All other uses shall not be permitted without the approval of the UA Electrical Engineer.
 - Must use Wall box connection when connecting to a flush mounted wall box.
 - Must use center dividers when used for more than one system.
 - File all cuts smooth prior to installation.
 - Use factory manufactured cutters.

Support all conduits from structure minimum of 5' centers and within 18" of a box; connector, coupling or factory 90° bend and at closer intervals where required by NEC.

Reference Section 16190 for means of support.

End of Section 16110