

GENERAL:

The scope of this document is to provide requirements for providing requirements for low voltage (600 volts and below) electrical power raceway and boxes.

DESIGN GUIDELINES:

1. All conductors shall be installed in a raceway system to within the room or area served by the conductors. From the termination point of said raceway system MC cable may be allowed for 20 amp circuits with a maximum length under 50ft for the room or area served by the raceway system. Refer to “260519 Low Voltage Electrical Power Conductors and Cables” of the UM CPDG’s for all requirements regarding use of MC cable.
2. Indoor raceway shall be EMT, Rigid Metal Conduit, or approved surface raceway.
3. Schedule 80 PVC conduit will be utilized anywhere underground conduit emerges from concrete.
4. Rigid metal conduit or Schedule 80 PVC conduit shall be used for exterior locations. Expansion shall be considered for all exterior conduit.
5. Elbows for rigid metal conduit, 3 inches and larger, shall be either plastic coated or tape coated (for corrosion control) rigid metal conduit to prevent damage from pulling ropes. Rigid metal conduit shall be used for at least the first 5 feet of horizontal run out from the building to allow for building settling over time.
6. EMT will not be used outdoors, in wet/damp locations, or in floor crawl spaces. Exposed EMT will also not be allowed below 7 feet AFF in areas where raceway may receive physical abuse (such as hallways, mechanical rooms, storage rooms, and janitor closets), unless the conduit is 2” or larger in diameter.
7. Garages and similar areas shall be considered a wet location. Electrical rooms in a garage shall be considered a wet location. All panels and electrical devices shall be installed on unistrut in electrical rooms in garages.
8. Conduit will be supported from the building structure. Attachment to other pipes, conduits, ductwork, etc. will not be allowed.
9. No conduit will be allowed to be embedded in a concrete slab. All conduits below a slab shall be a minimum of 12” below the concrete slab.
10. All empty conduits shall contain a pull string.

11. Non-metallic conduit or boxes will not be used unless approved in writing by the Project Manager prior to construction. In cases where they are used, conduit 2" and smaller will be a minimum of Schedule 80.
12. PVC Conduit will be used for underground electric circuits less than 600 volts that are:
 - 12.1. Under paved areas and areas scheduled to be paved.
 - 12.2. Next to permanent buildings, under formal planting beds and in extremely high traffic (vehicular and pedestrian) areas that would be difficult to excavate due to regular heavy use.
 - 12.3. All other applications 277 volt or less may be direct buried if approved by the project manager.
 - 12.3.1. If direct buried, 24 inches of cover is required unless approved by the Project Manager.
 - 12.4. A red plastic tracer tape is to be buried 12" above the cable or conduit in all installations.
13. PVC conduit shall be a Schedule 40 minimum weight unless otherwise indicated, and shall be designed for the electric application with all connections solvent welded.
14. All metallic fittings will be compression type rated for ground connection.
15. All exposed conduit installed in a finished space will be painted to match the background.
16. Installation of power conductors carrying different voltages in the same raceway, shall be per the National Electrical Code (NEC).
 - 16.1. See CPDG 27 0000 and 28 3100 for restrictions regarding Telecommunications and Fire Alarm Circuits.
17. Feeders:
 - 17.1. All feeders will have a separate copper grounding conductor installed. In no case will the conduit or raceway be used as the grounding conductor, however all metallic raceway shall be electrically continuous and bonded to the grounding conductor.
 - 17.2. All conduit sizes and conductor numbers and sizes will be shown on the drawings.
 - 17.3. Conduit shall be sized at least one size above the NEC requirement of wire being installed or anticipated to be installed, with the minimum size to be 1"
18. Branch Circuits:
 - 18.1. A separate grounding conductor will be installed. Use of the conduit or raceway is not an acceptable grounding method, however all metallic raceway shall be electrically continuous and bonded to the grounding conductor.
 - 18.2. For Branch circuits, the minimum conduit size will be 3/4" except for switch legs, lighting whips (supplying a single fixture circuit), and control wiring which may be 1/2".