

SECTION 16020

CONDUIT WORK

1. All the wiring proposed for installation within the building or structures shall be installed in PVC schedule 40 plastic conduit, except where otherwise EMT conduit, rigid galvanized steel conduit, or metal raceway are deemed required as shown in the drawings. All exposed conduits shall consist of heavy-walled rigid galvanized steel of the size indicated in the drawings. The use of flexible non-metallic conduit (ENT) is not allowed. Exposed conduits above roof shall consist of PVC schedule 80.
2. Where noted in the drawings, all the underground wiring shall be installed in PVC schedule 40 plastic conduit and encased in concrete as noted. Wherever plastic conduit is installed, the contractor will be required to provide an additional wire of green insulation in every section of conduit for grounding purposes only. This wire, as well as the proposed live and neutral wires, and wires for other purposes shall be as described in the CONDUCTORS section of these specifications. The size and general procedures for the installation of these conductors shall follow the descriptions in the Article 250 of the NEC latest edition.
3. The route of the conduits shown in the layouts will be schematic and intended to indicate interconnections between outlets. The exact routing shall be determined at the work site to conform to its structural conditions.
4. The sizes of the conduits or tubing shall be as noted in the drawings and in accordance with the NEC latest edition. Except where otherwise indicated, the minimum size of the conduits shall be three-quarters of an inch ($\frac{3}{4}$ ").
5. All conduits, outlets, etc., shall be run in a concealed manner, except where otherwise noted in the drawings.
6. In those cases where the conduits are run exposed, they shall be installed in a neat and workman-like manner at right angles and parallel to the walls and partitions. Threaded conduit fittings shall be used with the outlet boxes in all such cases.
7. If the conduits cannot be run in furred ceilings or floor fill, they shall be installed in the neutral axis of the concrete beams or concrete floor construction.
8. All conduits shall be securely fastened to the outlet boxes and panels with approved locknuts and bushings. Special attention shall be given to the full number of threads projecting through the conduit to allow the bushing to butt up tight against the end of the threads. After that, the locknut shall be screwed up to bring the bushing into a firm contact with the box. All joints shall be made with an approved conduit coupling in such a manner that the ends of the conduit shall butt together to make all the joints watertight throughout the system.
9. The conduit run to all panels shall be installed with the fewest possible number of crossings in a straight line between the outlets; bends shall be avoided whenever possible.
10. All bends and offsets in conduits measuring up to $\frac{3}{4}$ " can be performed at the work site if they are made with an approved hickey or conduit-bending machine. In the case of conduits measuring 1" or

more, the elbows or offsets made by the manufacturer shall be used unless the contractor in authorized by the architect or engineer to make them at the work site using a conduit-bending machine that will not deform, crush or damage the conduits. The inside and outside parts of all bends and offsets shall be smooth and free from irregularities. The minimum radius of the bends shall be six times the radius of the conduits.

11. All conduits shall be cut with a hacksaw, and the ends shall be reamed and squared. All threads shall be cut and cleaned before reaming.
12. The maximum length of any conduit run between two outlets, boxes or cabinets shall not exceed 150 ft., including two (2) 90° bends.
13. All conduits shall be provided with metallic bushings in the panel boards, junction boxes, outlet boxes, etc.
14. The bushings for conduits larger than 1" shall be of the metallic and plastic type, with an insulating ring where the conductors touch the bushing. These bushings shall be of the grounded type and shall be grounded.
15. The contractor shall take all possible precautions to prevent the accumulation of dirt, mortar, concrete or any foreign matter within the conduits. Any accumulation of matter shall be properly cleaned before the wiring work is done. If it cannot be cleaned, the conduit shall be replaced at the contractor's expense.
16. To prevent the accumulation of debris, water, and foreign particles, all installed conduits shall be suitably plugged with bushings capped with a metal disk, a plastic cap or any other device approved by the architect or engineer. Paper, tape, wood or concrete plugs will not be permitted. All conduits shall be free of water after the wiring.
17. At the motor terminals and other electrical devices where so required, the contractor shall furnish and install a piece of flexible seal-tight conduit of not less than 24" in length to be connected between the conduit and the motor or device terminals.
18. All exposed conduits shall be properly secured at not more than 5' - 0" centers.
19. The expansion fittings shall be provided in the conduits system where required by the structural conditions.
20. Concrete and watertight conduit fittings shall be used for all EMT conduits.
21. Unless otherwise indicated in the drawings, all exposed conduits below the hung-ceiling level shall consist of heavy-walled, rigid, galvanized steel of the size indicated in the drawings.
22. Unless otherwise indicated in the drawings, all exposed conduits above hung ceiling level shall be EMT type. The use of plastic conduits is not allowed in this area.
23. The openings for conduits and cables crossing through fire-rated wall must be fire-sealed to avoid any possible spread of fire.

END OF SECTION