

Chapter 17 Station Wiring

17-1. General

The reliability of the entire electrical installation will be only as good as that of the wiring by which the various items of power supply, power distribution, control, and utilization equipment are interconnected. Selection of proper materials and methods of construction for the wiring system are therefore a matter of prime importance. The following basic principles should be observed in design of pump station wiring systems.

17-2. Conduit

For the mechanical protection of wiring and for the safety of operating personnel, all station wiring should be enclosed. Rigid galvanized steel conduit is the most commonly used material for raceways and is suitable for all locations where wiring is required within a pumping station. If it is necessary to run conduits exposed below the operating floor, consideration should be given to polyvinyl chloride (PVC) coated rigid galvanized steel or PVC conduit. All ferrous conduit fittings should be zinc-coated or otherwise suitably plated to resist corrosion due to moisture and fumes common to pumping stations. In

large stations where extensive cabling is required, the usage of cable trays should be considered. If conduits are to be embedded, the use of nonmetallic conduits should be considered.

17-3. Conductors

Wire and cable for pumping stations should be furnished with moisture- and heat-resisting insulation. Details of cable construction and insulation can be found in CW 16120, Insulated Wire and Cable (for Hydraulic Structures). Sizes of conductors should be in accordance with the National Electrical Code (NFPA-70) for motor feeders and branch circuits.

17-4. Conductor Joints

The most common causes of trouble in completed wiring installations are imperfect joints and terminations of conductors that permit entrance of moisture under protective sheaths. The procedures to be followed in terminating conductors should be made a part of the installation contract specifications. No splicing of circuits of 480 volts or greater should be allowed in the contract specifications. This important detail of electrical construction should receive proper consideration by both designers and field inspectors.