played near exposed current-carrying parts and in especially hazardous areas, such as high-voltage installations These signs should be large enough to be read easily and should be visible from all approaches to the danger zone They should meet American National Standard *Specifications for Accident Prevention Signs*, Z35 1

In many respects, standard machine guarding practices can be applied to electrical equipment There are, however, certain hazards peculiar to electricity which must be given consideration when the overall plant guarding program is planned

Wiring should be installed in accordance with the *National Electrical Code* unless more restrictive local requirements apply

The type of wiring that should be used in an industrial plant depends upon the type of building construction, the size and distribution of electrical load, exposure to dampness or corrosive vapors, location of equipment, and various other factors For most plant conditions, grounded rigid metal conduit is satisfactory

The various types of insulation used on electrical conductors and their application provisions are given in the *National Electrical Code*

Among wiring methods which may be used under certain circumstances are armored cable, nonmetallic sheathed cable, flexible metal conduit, raceways, open wiring and insulators, and concealed knob and tube wiring When new installations are made or existing circuits changed, applicable requirements of national and local wiring codes should be observed

Wires having insulation designed for the type of service and location should be used, but the insulation alone should not be considered sufficient protection against shock, especially in high-voltage circuits

Frequent inspection of equipment and competent supervision of maintenance crews are extremely important, and the inspectors' reports will aid the safety program considerably Often in their routine work throughout the plant, maintenance men can spot hazards before they cause injuries

Motors should be mounted so that they do not interfere with the normal movement of personnel or materials Nonenclosed motors should be in areas free from dust, moisture, and flammable or corrosive vapors In some instances, they can be isolated from personnel by being mounted on overhead supports, installed below the floor level, or placed in special motor rooms

If current-carrying parts must be exposed, they should be made inaccessible by elevating them at least 8 ft above the work area, or enclosures, barriers, or guards should be provided to prevent contact

Switches

Among the several types of switches are pushbutton switches, snap switches, knife switches, and enclosed externally operable air break switches Switches designed for controlling individual motors and machine tools and for lighting and power circuits are the enclosed type All switches must have approved voltage and ampere ratings compatible with their intended use

An open knife switch should not be used, it is hazardous because of the exposure of live parts and because of the arc formed when the switch is opened Knife switches should be enclosed in grounded metal cabinets having control levers that operate outside the cabinets A further safeguard is the safety switch whose cover must be closed before the switch can be used

A knife switch should be mounted so that the blades are dead when the switch is open and it should be installed so that gravity will not close it Knife switches installed in power switching circuits should be electrically interlocked so that they cannot be opened when the circuit is energized, unless switches are of the load-break type

Where it is necessary to use disconnect switches for high voltage, heavy current feeder circuits to test floors, or other service installations, they should be located out of normal reach and should be operated only by insulated switch sticks Where it is impractical to locate the switch out of normal reach, it must be protected against accidental contact by operating personnel, by a complete enclosure or suitable fence or barricade, the switch to be opened or closed remotely by an insulated switch stick

Pushbutton or snap switches are recommended because the live parts are enclosed Flush switches should be installed in metal