CHAPTER 14

ELECTRICITY

SECTION 1401

ELECTRICITY

1401.1 Objective

The objective of this section is to provide for the installation of electrical services and equipment in a manner that minimizes the risk of shock or electrocution to people and minimizes the possibility that such systems or equipment will start a fire.

1401.2 Functional statement

The installation of electrical services and equipment should follow strict procedures in order for the services to operate safely. These procedures were developed to ensure that safeguards against shock, electrocution, and fire hazards are in place.

1401.3 Performance requirements

Shock hazards are frequently associated with accidental contact with energized parts of electrical equipment, or situations in which such parts come in contact with conductive building elements, which then become electrically charged. Live parts of electrical services and equipment are generally isolated from accidental contact by being enclosed in insulation or grounding conductive materials.

Fire hazards usually involve faults or failures that result in excessive current creating heat or sparks that ignite nearby combustibles. Protection against such faults is usually provided by properly rated over-current protective devices on distribution circuits and in equipment. Protection against sparks is provided by enclosures.

Electrical equipment generally produces heat as a byproduct of normal operation. Such equipment is provided with installation and safe operating instructions that communicate the need for ventilation so as to prevent excessive heat buildup that can lead to fire. Also, using appliances that require a higher current than is available will result in resistance heating, which can be a potential source of ignition.

Electrical equipment installed in locations containing flammable or explosive materials requires special design and certification to prevent fires or explosions. Generally, the prescriptive code, NEC, would require specifically classified electrical equipment within certain areas.

The operation of some electrical services and equipment are themselves directly related to life-safety. Examples include systems that provide life support to patients in hospitals or power to fire-safety systems. Such systems often require continuous or essential power systems that provide the needed reliability in the event of an interruption of the primary system.

Electrical installations must follow practices that maintain the integrity of grounding systems and overcurrent protection that begin with the systems provided by the utility.

ACCEPTABLE METHODS

With adherence to the provisions of recognized electrical codes such as NFPA 70: *National Electrical Code* and industry practices, work performed by licensed practitioners, permitting and inspections, and adherence to installation and use instructions are usually sufficient to ensure electrical safety.