Exception c. This protection is not required where the supply conductors or cables are installed more than 2 feet horizontally from communication conductors.

Exception d. This protection is not required where supply circuits having a potential of 550 volts or less between conductors and having a total transmitted power of not in excess of 3,200 watts are laid adjacent to communication cables, if all cables are used exclusively for the operation of a railway-signal or supply system, and are maintained by the same company.

(d) *Interconnection.* At each transformer and/or pedestal installation all existing grounds should be interconnected. These include multiple ground primary neutral (if one is present), secondary neutral, power cable shield, metal duct or sheath, and telephone cable sheath.

(e) *Common grounding.* Telephone protectors, telephone service cable shields and secondary neutrals should be connected to a common ground at each customer's service entrance.

(4) SEPARATION FROM GAS FACILITIES. The separation of gas pipes from direct buried electric and/or communication facilities shall be a minimum of 6 inches of well tamped earth when they are parallel. They may be as close as 2 inches where they cross if suitably insulated.

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68.

E 129.06 Protection of conductors in duct systems and manholes. (1) PROTECTION AGAINST ARCING. A suitable fire-resisting covering should be placed on the following cables to prevent injury from arcing:

(a) Closely grouped lead-sheathed supply cables of more than 8,700 volts or of large current capacity operating at more than 750 volts a.c. or 300 volts d.c.

(b) Communication cables and supply cables of large current capacity, if occupying the same side of the manhole, or if they cross each other.

(2) BONDING. Exposed metallic cable sheaths shall be bonded at suitable intervals with a conductor of suitable size, electrolysis conditions permitting. Supply cable sheaths need not be bonded to communication cable sheaths.

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68.

E 129.07 Guarding of live parts in manholes. (1) CONDUCTOR JOINTS OR TERMINALS. Joints or terminals of conductors or cables of supply systems shall be arranged so that there are no bare ungrounded current-carrying metal parts exposed to accidental contact within manholes or handholes.

(2) APPARATUS. (a) *General.* Live parts of protective, control, or other apparatus installed and maintained in manholes should be enclosed in suitable grounded cases or in cases having no exposed metallic parts.

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68.

E 129.08 Construction at risers from underground. (1) SEPARATION BETWEEN RISERS OF COMMUNICATION AND SUPPLY SYSTEMS. The placing of risers for communication systems and risers for supply systems

on the same pole should be avoided where practicable. If it is necessary to use the same pole for the risers of both systems, they shall be placed on opposite semicircumferences of the pole where practicable. Where located on streets or highways, risers should where practicable be placed on poles so as to be in the safest available location from the point of view of traffic damage.

(2) MECHANICAL PROTECTION OF CONDUCTORS. See subsection E 103.06(3).

(3) GROUNDING OF RISER PIPES. Exposed metal riser pipes containing supply conductors shall be grounded unless such conductors are covered with a grounded metal sheath or are themselves grounded.

(4) CONDUCTOR TERMINAL CONSTRUCTION. The terminals of underground cables operating at more than 750 volts and connecting to overhead open-wire systems shall meet the following requirements:

(a) *Protection against moisture.* Protection shall be provided so that moisture will not enter the cable.

(b) *Insulation of conductors.* Conductors shall be properly insulated from the grounded metal sheath. In addition, the conductors of multiple conductor cable shall be properly separated and insulated from each other.

Note: These requirements may be fulfilled by the use of potheads or other equivalent devices, such as oil switches, if incidentally they accomplish the same purpose.

(5) CLEARANCE ABOVE GROUND FOR OPEN SUPPLY WIRING. For supply wires connecting to underground systems see section E 123.03 (3).

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68.

E 129.09 Identification of conductors. Cables shall be permanently identified by tags or otherwise at each manhole or other permanent opening of the underground system. Where the duct formation on opposite sides of the manhole is the same, the cables where practicable should be installed in corresponding ducts.

(1) Exception: This requirement does not apply where the position of a cable, in conjunction with diagrams supplied to workmen, gives sufficient identification, or where the manhole is occupied solely by the communication cables of one utility, or of 2 utility companies agreeing thereto.

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68.

E 129.10 Identification of apparatus connected in multiple. Where transformers, regulators, or other similar apparatus not located in the same manhole operate in multiple, special tags, diagrams, or other suitable means shall be used to indicate that fact.

Exception: This requirement does not apply where disconnecting devices are provided to permit cutting such equipment completely off the system.

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68.

E 129.11 Underground services. Underground services shall comply with NEC-1971 sections 230–30 through 230–33 except as changed in volume 2 (see section E 230.31) and except as otherwise provided in volume No. 1.

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68; am. Register, April, 1972, No. 196, eff. 5–1–72.