

**Approved  
Meeting Minutes  
National Electrical Safety Code  
Subcommittee 7  
Underground Lines**

**October 19, 1998  
IEEE  
Piscataway, NJ**

Name	Organization	10/19
Bill Koch	AEIC	x
Les Shankland	APPA	x*
George Pristach	APTA	x
Dennis Henry	ATIS	a
Keku Mistry	Bellcore	x
Larry Clemons	EEI	x
Warren Haug	EEI	a
Robert Thiede (Alternate)	EEI	a
Rafael Fernandez	EIA	a
Jim Tomaseski	IBEW	x
Tim Robeson	IEEE	a
David Bouchard	IEEE	a
O. L. Davis	NECA	x
Charles Forsberg	NEMA	a
Harvey Bowles	RUS	x**
Charles Bleakley	SEEX	x
Mickey Gunter (Alternate)	SEEX	x
James Mars	Self	x
Chuck Amrhyn	Self	x

\*Departed 4:00  
\*\*Departed 4:15

X=present  
A=absent

**Rule 313A5  
CP 2340**

**Subcommittee Recommendation: Accept.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Rule 314B**  
**CP 2155**

**Subcommittee Recommendation: Reject.**

**Subcommittee Comment:** See action taken by SC2 on CPS 2284 and 2283 and 2298. SC7 does not see any benefit to moving present grounding rules to one location in Part 3.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 314B**  
**CP 2156**

**Subcommittee Recommendation: Accept.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**IR 503**  
**Definition of Effectively Grounded**

**Subcommittee Recommendation: No action required.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 320B5**  
**CP 2107**

**Subcommittee Recommendation: Accept as modified.**

5. Gas and Other Fuel Lines

Conduit should have sufficient separation from gas and other fuel lines to permit the use of pipe maintenance equipment. Conduit shall not enter the same manhole, handhole or vault with gas or other fuel lines.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Daviss, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Explanation of Vote:**

**Rule 320A3**

**CP 2108**

**Subcommittee Recommendation: Accept in principle.**

3. Highways and Streets

When conduit must be installed longitudinally under the roadway, it should be installed in the shoulder or, if this is not practical, within the limits of one lane of traffic to the extent practical.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 320A1c**

**CP 2109**

**Subcommittee Recommendation: Reject.**

**Subcommittee Comment: See CP 2393.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative: Bouchard

Abstention:

**Explanation of Vote:**

Bouchard: I believe the recommendation adds relevant safety value. It seeks to reduce possibility of cable insulation damage rendering cable unsafe.

**Rule 320A1c**

**CP 2393**

**Subcommittee Recommendation: Delete recommendation in Rule 320A1c.**

**Subcommittee Comment: Wording in recommendation is design-oriented.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Explanation of Vote:**

**Rule 320A1c**

**CP 2380**

**Subcommittee Recommendation: Accept in principle. See CP 2393.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Explanation of Vote:**

**Rule 320A4**

**CP 2381**

**Subcommittee Recommendation: Reject.**

**Subcommittee Comment:** See IR 383 for a description of “tunnel”. SC7 feels there is no change required in this rule.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Explanation of Vote:**

**Rule 321C**

**CP 2106**

**Subcommittee Recommendation:** Accept in principle. Refer to Subcommittee 8 for action.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 323E3**  
**CP 2104**

**Subcommittee Recommendation: Accept as modified.**

Add a second sentence to Rule 323E3:

When vaults and utility tunnels contain exposed live parts, a prominent safety sign shall be posted where visable before entering the vault.

NOTE: ANSI Z535.1-1991, ANSI Z535.2-1991, ANSI Z535.3-1991, ANSI Z535.4-1991, and ANSI Z535.5-1991 contain information regarding safety signs.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Explanation of Vote:**

**Rule 323C5**  
**CP 2105**

**Subcommittee Recommendation: Accept as modified.**

Any manhole greater than 1.25 m (4 ft) in depth shall be designed so it can be entered by means of a ladder or other suitable climbing device. In no case shall equipment, cable, or hangers be used for climbing into or out of a manhole.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Explanation of Vote:**

**Rule 330E**  
**CP 2207**

**Subcommittee Recommendation: Reject.**

**Subcommittee Comment:** Present code wording adequately covers the situation.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Rule 341A6**  
**CP 2158**

**Subcommittee Recommendation: Accept as modified.**

Revise Rule 341A6 to read as follows.

Supply cables shall not be installed in the same duct with communication or control cables unless *all* of the cables are operated and maintained by the same utility.

Add new rule 341A7:

Communication cables and/or control cables may be installed in the same duct provided all utilities involved are in agreement.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Rule 341B3b**  
**CP 2159**

**Subcommittee Recommendation: Reject.**

**Subcommittee Comment:** The present rule is adequate.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Rule 344A1**  
**IR 480**

**Subcommittee Recommendation: No action required.**

**Vote on Subcommittee Recommendation:**

Affirmative:

Negative:  
Abstention:

**TIA 97-1**  
**Rule 344A**

**Subcommittee Recommendation: Accept TIA 97-1. See SC4 CP 2387.**

The Exception to Rule 344 is for the whole rule, and the indentation should be corrected to go under Rule 344 (not 6). TIA 97-1 changes 400V to 90V, also remove a but not wording; replace 1 through 6 with A through F.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Rule 344**  
**CP 2373**

**Subcommittee Recommendation:** Refer to WG 4.8, requesting they bring their recommendation back to this subcommittee so action may be taken prior to publication of the Preprint.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Rule 350F**  
**CP 2192**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Rule 350H**  
**CP 2193**

**Subcommittee Recommendation:** Accept as modified.

New Rule 350H:

The rules in this section also apply to direct buried supply and communication cables installed in duct that is not part of a conduit system.

Add to Note at beginning of Section 32 – For cables installed in a single duct not part of a conduit system, the rules in Section 35 apply.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**IR 490**

**Direct buried cable, general**

**Subcommittee Recommendation:** No action required.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 350F**

**CP 2271**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** See IR 490.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 350F**

**CP 2296**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** See Subcommittee Recommendation on CP 2271.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Rule 350G**  
**CP 2353**

**Subcommittee Recommendation:** Reject. Color striping was rejected by the WG as a viable marking system based upon the cable industry’s recommendation.

**Subcommittee Comment:** Additional striping or markings on the cable is permissible provided this rule is met. The rule does not prohibit the added marking on the cable or duct.

**Subcommittee Action:**  
This rule became effective for cable installed.....

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Pristach, Shankland, Tomaseski  
Negative: Mistry  
Abstention:

**IR471**  
**Markings on direct buried cable**

**Subcommittee Recommendation:** No action required.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Maximum diameter of buried coaxial cable**  
**IR499**

**Subcommittee Recommendation:** No action required.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
Negative:  
Abstention:

**Rule 351A1**

**CP 2194**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 352B1**

**CP 2195**

**Subcommittee Recommendation:** Accept as modified.

**Subcommittee Comment:**

.....limit the liklihood of transferring a.....

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 352**

**CP 2196**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 353**

**CP 2197**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 353D2**  
**CP 2198**

**Subcommittee Recommendation:** Accept.

(Note to Secretary: Relocate newly numbered table 352-1 closer to rule text).

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Table 353-1, Exception**  
**CP 2199**

**Subcommittee Recommendation:** Accept as modified.

<sup>1</sup>Street and area lighting cables operating at not more than 150 V to ground may be buried at a depth not less than 450 mm (18 in).

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Rule 353D**  
**CP 2272**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** Supporting documentation for burial depths is not in agreement with today's accepted standards. From a safety standpoint, communications cables depths are not as important as supply cables.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski

Negative:

Abstention:

**Explanation of Vote:**

**Rule 354E**  
**CP 2130**

**Subcommittee Recommendation:** Accept in principle. See CP 2201.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
 Negative:  
 Abstention:

**Rule 354D4**  
**CP 2157**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** Communication cable/supply cable should not be installed in the same duct. The rule is adequate and the proposal confuses the issue.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bowles, Clemons, Davis, Koch, Mars, Mistry, Pristach, Shankland, Tomaseski  
 Negative:  
 Abstention:

**Rule 354A1g, D3c**  
**CP 2160**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** The grounding required in Rule 354D3c is to reacquire the grounding lost due to the insulating jacket on the cable. The proposed change to Rule 354D1g requires unnecessary numbers of grounding electrodes.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Clemons, Davis, Koch, Mars, Mistry, Pristach, Tomaseski  
 Negative:  
 Abstention:

**Rule 354**  
**CP 2200**

**Subcommittee Recommendation:** Accept as modified.

354. Random Separation ~~Additional Requirements~~—Separation Less Than 300 mm (12 in) from Underground Structures or Other Cables

- A. General
  - 1. These rules apply to a radial separation of supply and communication cables or conductors from each other and from other underground structures when the radial separation between them will be less than 300 mm (12 in). Separation from steam lines, gas, and other fuel lines shall meet Rule 352.

2. Supply circuits operating above 300 V to ground or 600 V between conductors shall be so constructed, operated, and maintained that when faulted, they shall be promptly de-energized initially or following subsequent protective device operation (phase-to-ground faults for grounded circuits, phase-to-phase faults for ungrounded circuit.
3. Communication cables and conductors, and supply cables and conductors buried in random separation may be treated as one system when considering separation from other underground structures or facilities.
4. Supply or communication cables or conductors may be installed with less than 300 mm (12 in) radial separation from other underground structures provided all parties involved are in agreement and the applicable rules in 354D1 are met and either Rule 354D2 or 354D3 is met.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Clemons, Davis, Koch, Mars, Mistry, Pristach, Tomaseski

Negative:

Abstention:

**Rule 354D**  
**CP 2201**

**Subcommittee Recommendation: Accept as modified.**

D. Supply and Communication Cables or Conductors

Supply cables or conductors and communication cables or conductors may be buried together at the same depth with no deliberate separation between facilities, provided all parties involved are in agreement and the applicable rules in 354D1 are met and either Rule 354D2 or 354D3 is met.

EXCEPTION: Entirely dielectric fiber-optic communication cables may be buried together at the same depth with no deliberate separation from supply cables or conductors provided all parties involved are in agreement and Rules 354D1a, b, c, and d are met.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Clemons, Davis, Koch, Mars, Mistry, Pristach, Tomaseski

Negative:

Abstention:

**Explanation of Vote:**

**Rule 354A2**  
**CP 2217**

**Subcommittee Recommendation:** Accept as modified. No action required for Rule 354A2.

De-energized. Disconnected ~~removed~~ from all known sources....

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Clemons, Davis, Koch, Mars, Mistry, Pristach, Tomaseski

Negative:

Abstention:

Subcommittee Comment: See action taken by SC1 (CP 2217).

**Rule 360D**  
**CP 2237**

**Subcommittee Recommendation:** This CP should be referred to Subcommittee 4.

**Rule 380D**  
**CP 2341**

**Subcommittee Recommendation: Accept.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Clemons, Davis, Koch, Mars, Mistry, Pristach, Tomaseski

Negative:

Abstention:

**Rule 381G**  
**CP 2342**

**Subcommittee Recommendation: Accept as modified.**

381G. Pad-Mounted Equipment and Supply Pedestals

1. Pad-mounted equipment and supply pedestals shall have an enclosure that is either locked or otherwise secured against unauthorized entry.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Clemons, Davis, Koch, Mars, Mistry, Pristach, Tomaseski

Negative:

Abstention:

**Definition, Vault**  
**CP 2313**

**Subcommittee Recommendation: Accept.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Clemons, Davis, Koch, Mars, Mistry, Pristach, Tomaseski

Negative:

Abstention:

**Explanation of Vote:**

**IR 475**

**Random separation of supply and communication cables**

Subcommittee Recommendation: No action required.