

EXHIBIT 16

ALABAMA BUILDING COMMISSION
ADMINISTRATIVE CODE

CHAPTER 170-X-2
ALABAMA STATE BUILDING CODE

TABLE OF CONTENTS

170-X-2-.01 Adopted Standard Codes
170-X-2-.02 Official "Recommendations"
170-X-2-.03 Obtaining The Adopted Codes
170-X-2-.04 Applicability Of Adopted Codes
170-X-2-.05 Precedence Of Codes
170-X-2-.06 Responsibility For Compliance
170-X-2-.07 ABC Code Supplements
Attachment

170-X-2-.01 Adopted Standard Codes.

(1) The minimum building standard codes adopted by reference and enforced by the Alabama Building Commission are all of the following:

- (a) 2006 - International Building Code.
- (b) 2006 - International Plumbing Code.
- (c) 2006 - International Fuel Gas Code.
- (d) 2006 - International Mechanical Code.
- (e) 2008 - National Electrical Code.
- (f) 2006 - International Fire Code.
- (g) 2004 - Alabama Building Energy Conservation Code.
- (h) Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities: State and Local Governments (ADAAG).
- (i) ABC Code Supplements.

(2) The requirements of the Americans with Disabilities Act Accessibility Guidelines for Buildings and

Facilities supersede the handicapped requirements contained in the Standard Building Code.

Author: Kippy Tate, Director

Statutory Authority: Code of Ala. 1975, §§21-4-3, 41-9-161, 41-9-171.

History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997. **Amended:** Filed September 18, 2001; effective October 23, 2001; operative November 1, 2001. **Amended:** Filed October 16, 2003; effective November 20, 2003. **Amended:** Filed March 14, 2005; effective April 18, 2005. **Amended:** Filed August 6, 2007; effective September 10, 2007; operative October 1, 2007. **Amended:** Filed January 4, 2008; effective February 8, 2008.

170-X-2-.02 Official "Recommendations". The Commission adopts by reference, as official "recommendations" rather than as mandated regulations, Chapter 5 of the Architectural and Transportation Barriers Compliance Board (ATBCB) publication; "Recommendations for Accessibility Standards for Children's Environments".

Author: Stedmann B. McCollough, Director

Statutory Authority: Code of Ala. 1975, §§21-4-3, 41-9-161.

History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997.

170-X-2-.03 Obtaining The Adopted Codes. The Technical Staff shall publish in the Manual of Procedures the necessary information to obtain copies of the adopted codes and official recommendations.

Author: Stedmann B. McCollough, Director

Statutory Authority: Code of Ala. 1975, §§41-9-141, 41-9-161, 41-9-171.

History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997.

170-X-2-.04 Applicability Of Adopted Codes.

(1) Except as stated in paragraphs (2) and (3), the STATE BUILDING CODE applies only to the following construction in Alabama:

(a) STATE BUILDING and CONSTRUCTION: All buildings and other structures erected or acquired by or in behalf of the State of Alabama or any of its agencies or instrumentalities.

(b) **SCHOOLHOUSES:** Any building or other structure erected or acquired by the public schools of Alabama and also shall mean any private building in which 25 or more persons are congregated regularly for the purpose of instruction in any branch of knowledge.

(c) **HOTELS:** Any public inn or lodging house of 15 or more bedrooms, in which transient guests are lodged for pay.

(d) **MOVING PICTURE THEATERS:** Any building in which moving pictures are featured regularly for charge of admission.

(2) The ALABAMA BUILDING ENERGY CONSERVATION CODE applies only to all buildings constructed or remodeled with state appropriated funds or funds from any other instrumentality of the state.

(3) The Commission's responsibility to review plans and specifications for compliance with handicapped accessibility standards prescribed by the State Fire Marshal applies only to all buildings and facilities used by the public which are constructed in whole or in part by the use of state, county, or municipal funds, or the funds of any political subdivision of the state. (See §21-4-6 for shared jurisdiction.)

Author: Stedmann B. McCollough, Director

Authority: Code of Ala. 1975, §§21-4-4, 41-9-163, 41-9-171.

History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997.

170-X-2-.05 Precedence Of Codes.

(a) In case of conflict between the State Building Code, local codes, the Life Safety Code enforced by the State Fire Marshal, or other codes, the most stringent requirements shall prevail.

(b) All food preparation facilities, private water systems, and sewage disposal systems shall also meet the requirements of and be approved by the applicable county health department.

Author: Stedmann B. McCollough, Director

Statutory Authority: Code of Ala. 1975, §41-9-141.

History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997.

170-X-2-.06 Responsibility For Compliance. The compliance of plans and specifications with code requirements, is the responsibility of the primary design professional and the awarding authority and approval of these documents by the Technical Staff does not relieve the primary design professional or the awarding authority of this responsibility.

Author: Stedmann B. McCollough, Director

Statutory Authority: Code of Ala. 1975, §§41-9-141.

History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997.

170-X-2.-07 ABC Code Supplements. To minimize reoccurring problems on public construction and improvement projects, from time to time the Commission will adopt and publish specific design and construction requirements or recommendations to supplement the State Building Code. The following requirements and recommendations are adopted and bound at the end of this chapter:

(a) ABC Code Supplement No. 1, LABELING OF FIRE DOORS AND FRAMES

Author: Stedmann B. McCollough, Director

Statutory Authority: Code of Ala. 1975, §§41-9-141, 41-9-161.

History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997.

ATTACHMENT

170-X-2-.07 (a)

ABC CODE SUPPLEMENT No. 1

LABELING OF FIRE DOORS AND FRAMES

All door openings in fire resistive walls and partitions requiring a rating shall be protected by assemblies which include doors, frames, hardware, closing devices, anchorage, sills, etc., installed in accordance with the National Fire Protection Association (NFPA) 80, Standard for "Fire Doors and Fire Windows" and the State Building Code.

To further clarify the basic requirements and/or the correct method of labeling that will be acceptable to the Alabama Building Commission, the labels shall include the following:

1. Accessibility: Each component shall bear a label located so as to be accessible after installation.
2. Permanence: Each component shall bear a label of a type of material and be so attached that the life of the label and the attachment thereof can reasonably be expected to equal the life of the component to which it is attached. Labels shall be raised or embossed on metal labels or stamped into metal frames. Plastic or paper labels are unacceptable.
3. Legibility: The label design shall be such that it can be visible and legible at all times and must be clean of any paint or other coverage making the label illegible.
4. Fire Resistance: All approved labels on doors and on frames shall include thereon the fire resistance rating in hours and/or minutes for which the door or frame is labeled. Labels on frames with transoms or sidelights must identify that the opening assembly includes same.
5. Other Requirements: The labels or stamps applied to frames must be provided by a manufacturer that has been approved by a laboratory or organization to provide testing and follow-up services for fire-rated opening assemblies.

Author: Stedmann B. McCollough, Director

Statutory Authority: Code of Ala. 1975, §§41-9-141; 41-9-161.

History: New: Filed August 29, 1997; effective October 3, 1997.

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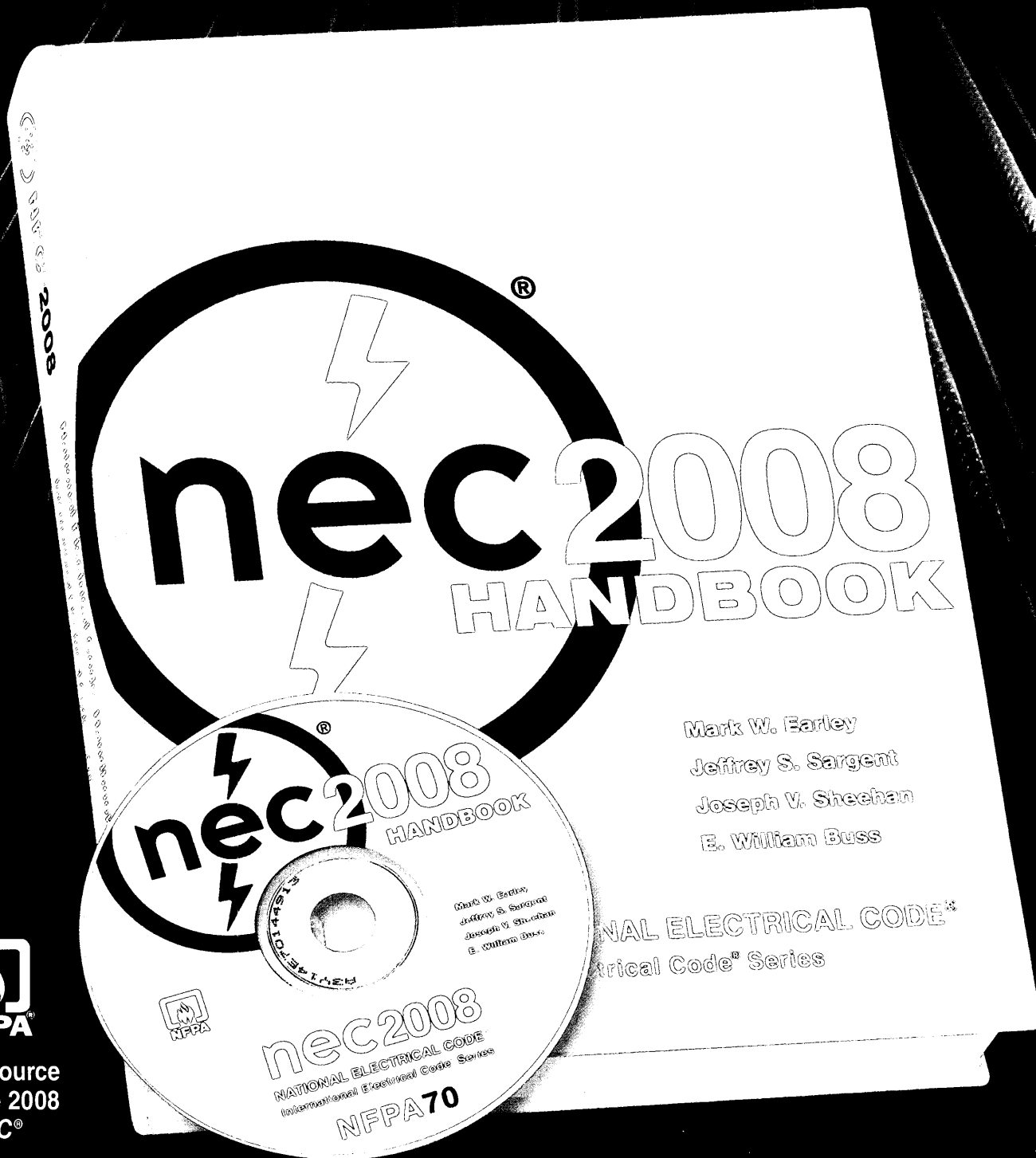
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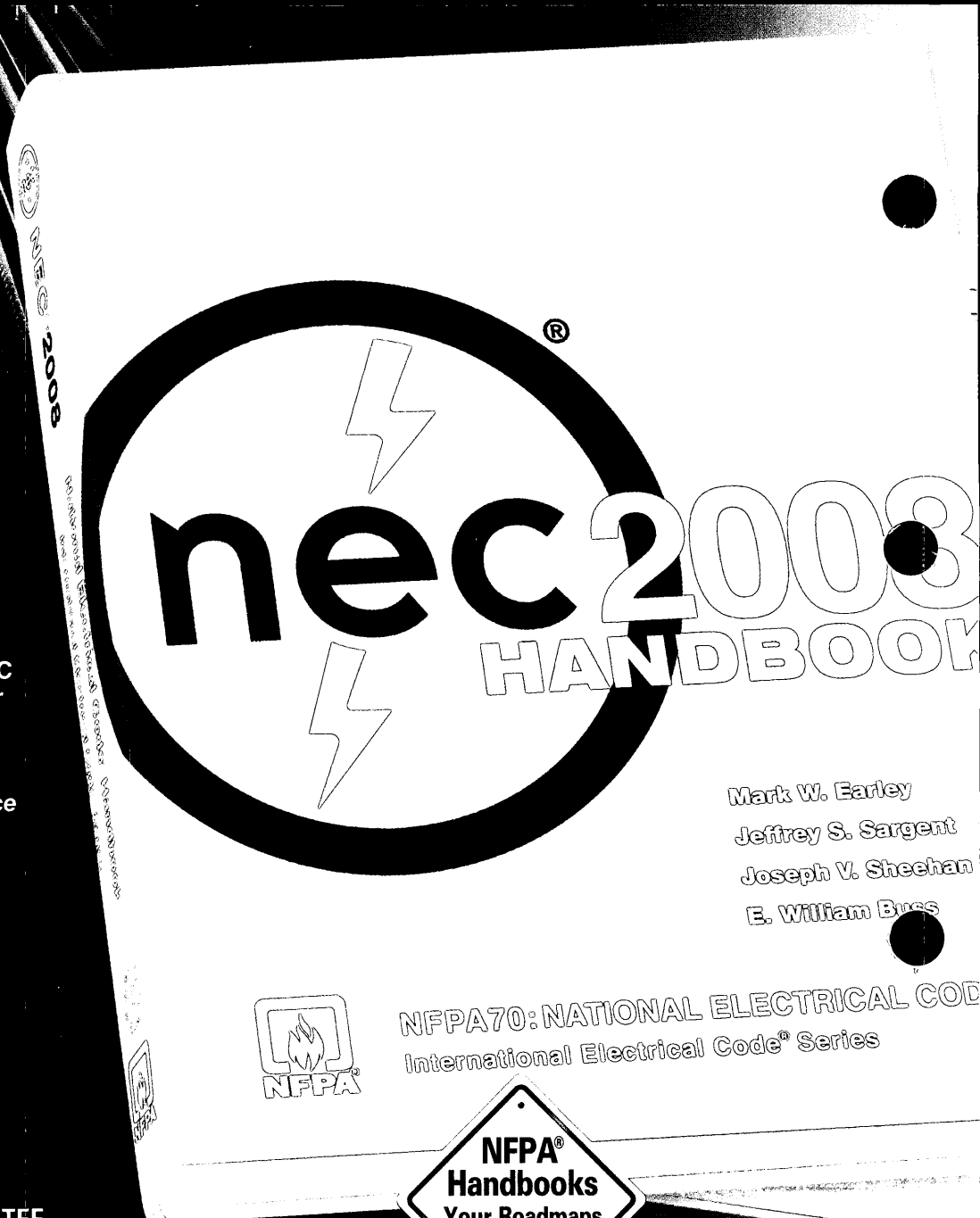


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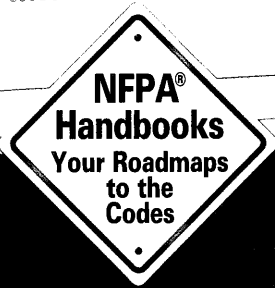
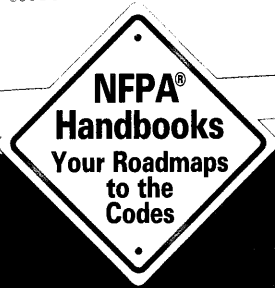
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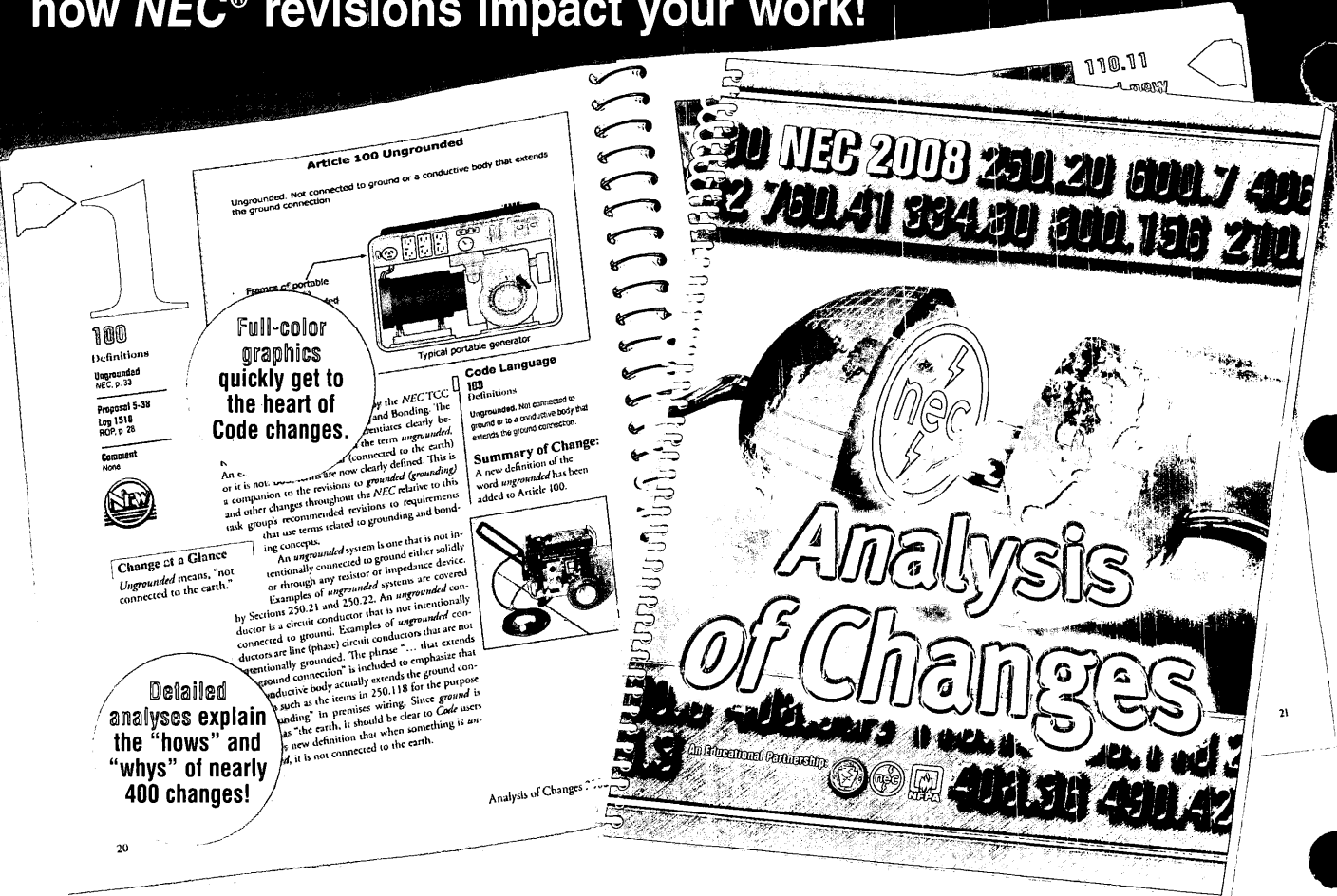
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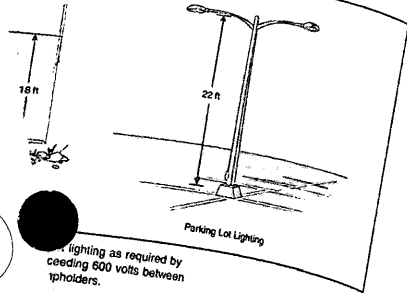
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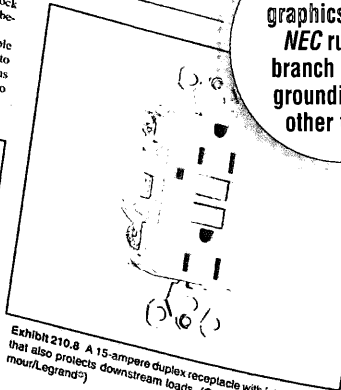


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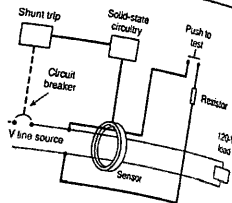
such as falls. GFCIs do not protect persons from shock hazards where contact is between phase and neutral or between phase-to-phase conductors.

A variety of GFCIs are available, including portable and plug-in types and circuit-breaker types, types built into attachment plug caps, and receptacle types. Each type has a test switch so that units can be checked periodically to ensure proper operation. See Exhibits 210.7 and 210.8.

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ent returns by an alternative path, resulting current. The toroidal coil senses the unbalanced current and opens the shunt-trip circuit. Note that these devices require the presence of an equipment ground which is the reason 406.3(D)(3) requires GFCIs as replacements for receptacles in areas where an equipment ground does not exist.

Currents of 5 mA. Listing standards require a 6 mA. At trip levels of 5 mA, the shock could be much higher, a shock of 100 mA could cause secondary accidents.

The main rule for GFCIs, other specific applications are listed in Commentary Table 210.1.

FPN: See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

- (A) Dwelling Units All 125-volt, single-phase, 15- and 20-ampere receptacles installed in the locations specified in (1) through (8) shall have ground-fault circuit-interrupter protection for personnel.
- (1) Bathrooms

GFCI receptacles in bathrooms prevent accidents. Therefore, 210.8(A)(1) requires that all 125-volt, single-phase, 15- and 20-ampere receptacles in bathrooms have GFCI protection, including receptacles that are integral with luminaires and, of course, wall-mounted receptacles adjacent to the basin.

Note that there are no exceptions to the bathroom GFCI requirement. For example, if a washing machine is located in the bathroom, the 15- or 20-ampere, 125 volt receptacle must be GFCI protected.

A bathroom is defined in Article 100 as "an area including a basin with one or more of the following: a toilet, a tub, or a shower." The term applies to the entire area, whether or not a separating door, as illustrated in Exhibit 210.9, is present. Note that 210.52(D) requires that a receptacle be located on the wall or partition adjacent to each basin. However, if the basins are adjacent and in close proximity, then one receptacle outlet may satisfy the requirement, as shown in Exhibit 210.9 (top).

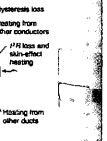
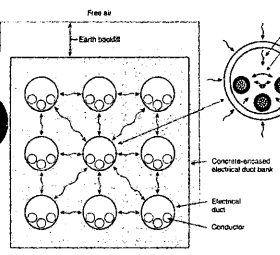
- (2) Garages, and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use

Exception No. 1 to (2): Receptacles that are not readily accessible.

Exception No. 2 to (2): A single receptacle or a duplex receptacle for two appliances located within 6 feet of each other from one phase.

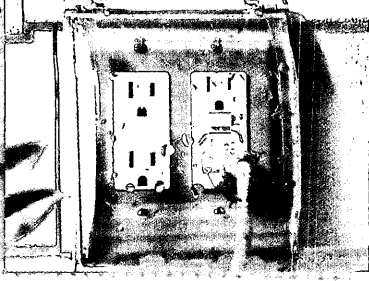
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Type MC (metal-clad) cable is rated and is listed in sizes 18 AWG and 1. AWG and larger for aluminum or copper. It employs thermoset or thermoplastic Composite electrical MC and optical cable by 770.9(C) and are marked by 770.2 for an example.

Type MC cable must be marked with rated voltage, the proper insulation type, the AWG size or circular mil area, the



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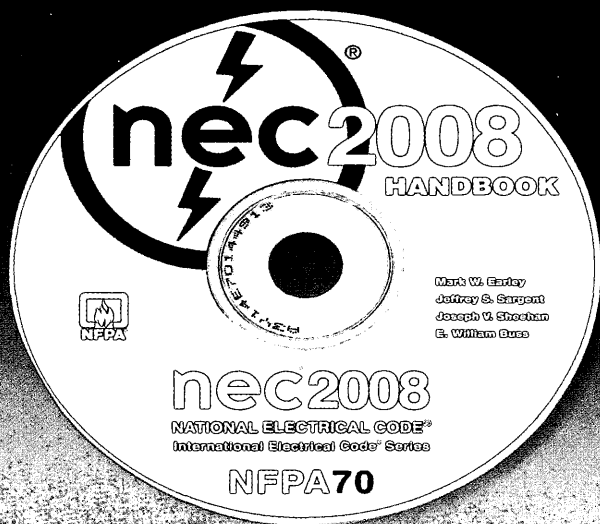
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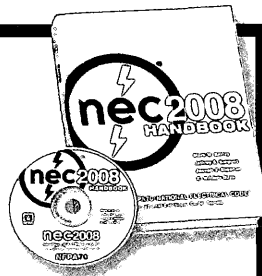
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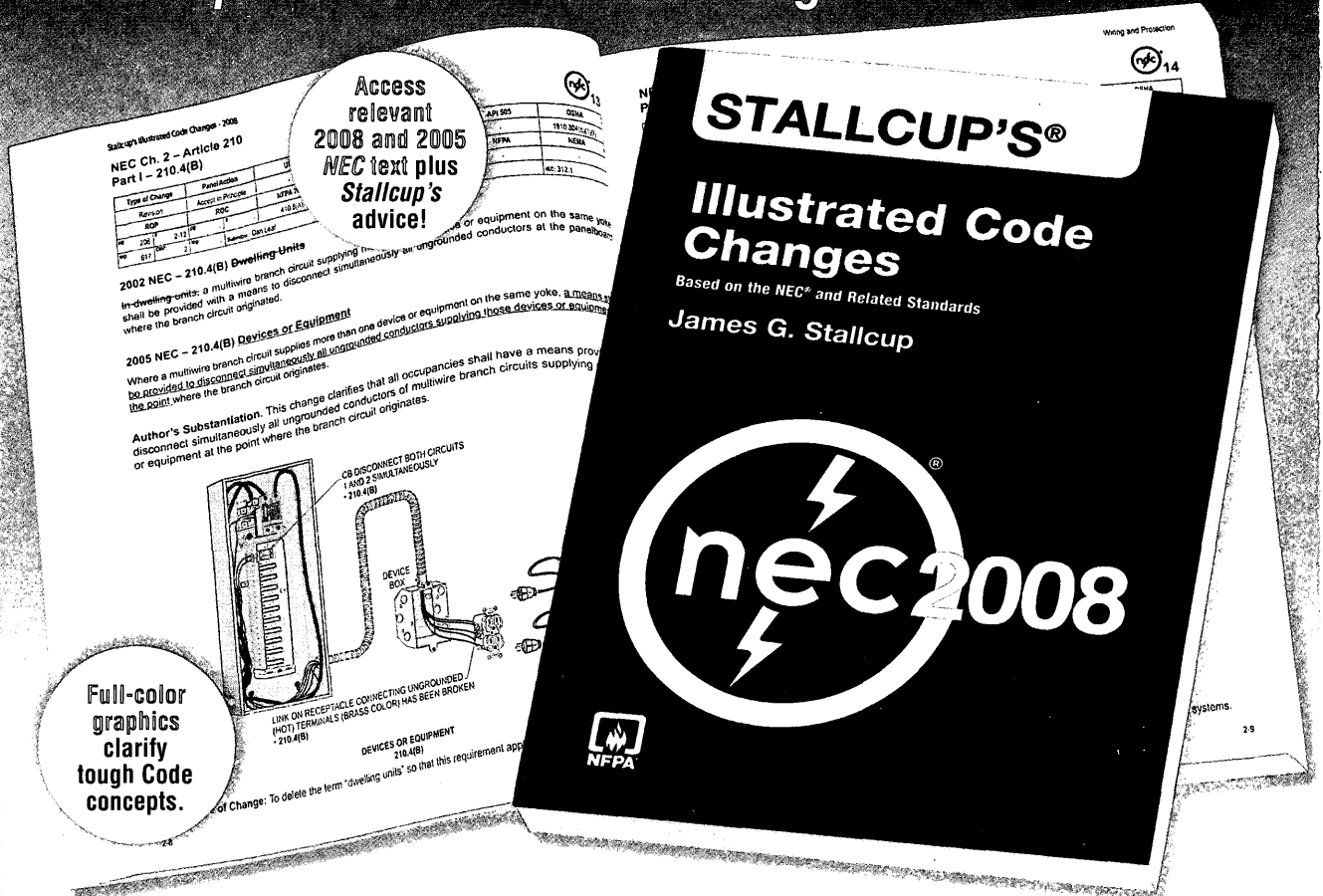
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This edition of NFPA 70, *National Electrical Code*, was prepared by the National Electrical Code Committee and acted on by NFPA at its June Association Technical Meeting held June 3–7, 2007, in Boston, MA. It was issued by the Standards Council on July 26, 2007, with an effective date of August 15, 2007, and supersedes all previous editions.

This edition of NFPA 70 was approved as an American National Standard on August 15, 2007.

History and Development of the *National Electrical Code*

The National Fire Protection Association has acted as sponsor of the *National Electrical Code* since 1911. The original *Code* document was developed in 1897 as a result of the united efforts of various insurance, electrical, architectural, and allied interests.

In accordance with the provisions of the NFPA Regulations Governing Committee Projects, a National Electrical Code Committee Report on Proposals containing proposed amendments to the 2005 *National Electrical Code* was published by NFPA in July 2006. This report recorded the actions of the various Code-Making Panels and the Correlating Committee of the National Electrical Code Committee on each proposal that had been made to revise the 2005 *Code*. The report was circulated to all members of the National Electrical Code Committee and was made available to other interested NFPA members and to the public for review and comment. Following the close of the public comment period, the Code-Making Panels met, acted on each comment, and reported their action to the Correlating Committee. NFPA published the National Electrical Code Committee Report on Comments in March 2007, which recorded the actions of the Code-Making Panels and the Correlating Committee on each public comment to the National Electrical Code Committee Report on Proposals. The National Electrical Code Committee Report on Proposals and the National Electrical Code Committee Report on Comments were presented to the 2007 June Association Technical Meeting for adoption.

NFPA has an Electrical Section that provides particular opportunity for NFPA members interested in electrical safety to become better informed and to contribute to the development of the *National Electrical Code* and other NFPA electrical standards. At the Electrical Section Codes and Standards Review Session held at the 2007 NFPA World Safety Conference and Exposition, Section members had opportunity to discuss and review the report of the National Electrical Code Committee prior to the adoption of this edition of the *Code* by the Association at its 2007 June Technical Session.

This 51st edition supersedes all other previous editions, supplements, and printings dated 1897, 1899, 1901, 1903, 1904, 1905, 1907, 1909, 1911, 1913, 1915, 1918, 1920, 1923, 1925, 1926, 1928, 1930, 1931, 1933, 1935, 1937, 1940, 1942, 1943, 1947, 1949, 1951, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1962, 1965, 1968, 1971, 1975, 1978, 1981, 1984, 1987, 1990, 1993, 1996, 1999, 2002, and 2005.

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This 2008 edition includes the following usability features as aids to the user. Changes other than editorial are highlighted with gray shading within sections and with vertical ruling for large blocks of changed or new text and for new tables and changed or new figures. Where one or more complete paragraphs have been deleted, the deletion is indicated by a bullet (•) between the paragraphs that remain. The index now has dictionary-style headers with helpful identifiers at the top of every index page.

Contents

ARTICLE

90 Introduction 70- 21

Chapter 1 General

100 Definitions 70- 24

I. General 70- 24

II. Over 600 Volts, Nominal 70- 31

110 Requirements for Electrical Installations 70- 32

I. General 70- 32

II. 600 Volts, Nominal, or Less 70- 36

III. Over 600 Volts, Nominal 70- 38

IV. Tunnel Installations over 600 Volts, Nominal 70- 40

V. Manholes and Other Electrical Enclosures Intended for Personnel Entry, All Voltages 70- 41

Chapter 2 Wiring and Protection

200 Use and Identification of Grounded Conductors 70- 43

210 Branch Circuits 70- 45

I. General Provisions 70- 45

II. Branch-Circuit Ratings 70- 49

III. Required Outlets 70- 52

215 Feeders 70- 55

220 Branch-Circuit, Feeder, and Service Calculations 70- 57

I. General 70- 57

II. Branch-Circuit Load Calculations 70- 58

III. Feeder and Service Load Calculations 70- 60

IV. Optional Feeder and Service Load Calculations 70- 62

V. Farm Load Calculations 70- 66

225 Outside Branch Circuits and Feeders 70- 67

I. General 70- 67

II. More Than One Building or Other Structure 70- 70

III. Over 600 Volts 70- 72

230 Services 70- 73

I. General 70- 73

II. Overhead Service-Drop Conductors 70- 74

III. Underground Service-Lateral Conductors 70- 75

IV. Service-Entrance Conductors 70- 76

V. Service Equipment — General 70- 78

VI. Service Equipment — Disconnecting Means 70- 78

VII. Service Equipment — Overcurrent Protection 70- 80

VIII. Services Exceeding 600 Volts, Nominal 70- 81

240 Overcurrent Protection 70- 83

I. General 70- 83

II. Location 70- 86

ARTICLE

III. Enclosures 70- 90

IV. Disconnecting and Guarding 70- 90

V. Plug Fuses, Fuseholders, and Adapters ... 70- 90

VI. Cartridge Fuses and Fuseholders 70- 91

VII. Circuit Breakers 70- 91

VIII. Supervised Industrial Installations 70- 92

IX. Overcurrent Protection over 600 Volts, Nominal 70- 93

250 Grounding and Bonding 70- 94

I. General 70- 94

II. System Grounding 70- 97

III. Grounding Electrode System and Grounding Electrode Conductor 70-104

IV. Enclosure, Raceway, and Service Cable Connections 70-109

V. Bonding 70-109

VI. Equipment Grounding and Equipment Grounding Conductors 70-113

VII. Methods of Equipment Grounding 70-117

VIII. Direct-Current Systems 70-120

IX. Instruments, Meters, and Relays 70-121

X. Grounding of Systems and Circuits of 1 kV and Over (High Voltage) 70-121

280 Surge Arresters, Over 1 kV 70-123

I. General 70-123

II. Installation 70-124

III. Connecting Surge Arresters 70-124

285 Surge-Protective Devices (SPDs), 1 kV or Less 70-124

I. General 70-124

II. Installation 70-125

III. Connecting SPDs 70-125

Chapter 3 Wiring Methods and Materials

300 Wiring Methods 70-126

I. General Requirements 70-126

II. Requirements for over 600 Volts, Nominal 70-136

310 Conductors for General Wiring 70-138

312 Cabinets, Cutout Boxes, and Meter Socket Enclosures 70-164

I. Installation 70-164

II. Construction Specifications 70-165

314 Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures 70-167

I. Scope and General 70-167

II. Installation 70-168

III. Construction Specifications 70-174

IV. Pull and Junction Boxes for Use on Systems over 600 Volts, Nominal 70-175

320 Armored Cable: Type AC 70-175

I. General 70-175

II. Installation 70-175

ARTICLE			ARTICLE		
	III. Construction Specifications	70-177	348	Flexible Metal Conduit: Type FMC	70-194
322	Flat Cable Assemblies: Type FC	70-177		I. General	70-194
	I. General	70-177		II. Installation	70-195
	II. Installation	70-177	350	Liquidtight Flexible Metal Conduit: Type	
	III. Construction	70-178		LFMC	70-196
324	Flat Conductor Cable: Type FCC	70-178		I. General	70-196
	I. General	70-178		II. Installation	70-196
	II. Installation	70-178		III. Construction Specifications	70-197
	III. Construction	70-180	352	Rigid Polyvinyl Chloride Conduit: Type	
326	Integrated Gas Spacer Cable: Type IGS	70-180		PVC	70-197
	I. General	70-180		I. General	70-197
	II. Installation	70-180		II. Installation	70-197
	III. Construction Specifications	70-181		III. Construction Specifications	70-200
328	Medium Voltage Cable: Type MV	70-181	353	High Density Polyethylene Conduit: Type	
	I. General	70-181		HDPE Conduit	70-200
	II. Installation	70-181		I. General	70-200
	III. Construction Specifications	70-182		II. Installation	70-200
330	Metal-Clad Cable: Type MC	70-182		III. Construction Specifications	70-201
	I. General	70-182	354	Nonmetallic Underground Conduit with	
	II. Installation	70-182		Conductors: Type NUCC	70-201
	III. Construction Specifications	70-183		I. General	70-201
332	Mineral-Insulated, Metal-Sheathed Cable:			II. Installation	70-201
	Type MI	70-184		III. Construction Specifications	70-202
	I. General	70-184	355	Reinforced Thermosetting Resin Conduit:	
	II. Installation	70-184		Type RTRC	70-203
	III. Construction Specifications	70-185		I. General	70-203
334	Nonmetallic-Sheathed Cable: Types NM,			II. Installation	70-203
	NMC, and NMS	70-185		III. Construction Specifications	70-204
	I. General	70-185	356	Liquidtight Flexible Nonmetallic Conduit:	
	II. Installation	70-185		Type LFNC	70-205
	III. Construction Specifications	70-187		I. General	70-205
336	Power and Control Tray Cable: Type TC	70-188		II. Installation	70-206
	I. General	70-188		III. Construction Specifications	70-207
	II. Installation	70-188	358	Electrical Metallic Tubing: Type EMT	70-207
	III. Construction Specifications	70-188		I. General	70-207
338	Service-Entrance Cable: Types SE and			II. Installation	70-207
	USE	70-189		III. Construction Specifications	70-208
	I. General	70-189	360	Flexible Metallic Tubing: Type FMT	70-208
	II. Installation	70-189		I. General	70-208
	III. Construction	70-190		II. Installation	70-209
340	Underground Feeder and Branch-Circuit			III. Construction Specifications	70-209
	Cable: Type UF	70-190	362	Electrical Nonmetallic Tubing: Type ENT ...	70-210
	I. General	70-190		I. General	70-210
	II. Installation	70-190		II. Installation	70-210
	III. Construction Specifications	70-191		III. Construction Specifications	70-211
342	Intermediate Metal Conduit: Type IMC	70-191	366	Auxiliary Gutters	70-212
	I. General	70-191		I. General	70-212
	II. Installation	70-191		II. Installation	70-212
	III. Construction Specifications	70-192		III. Construction Specifications	70-213
344	Rigid Metal Conduit: Type RMC	70-192	368	Busways	70-214
	I. General	70-192		I. General Requirements	70-214
	II. Installation	70-193		II. Installation	70-214
	III. Construction Specifications	70-194		III. Construction	70-215

ARTICLE

IV. Requirements for Over 600 Volts,
Nominal 70-216

370 Cablebus 70-216

372 Cellular Concrete Floor Raceways 70-217

374 Cellular Metal Floor Raceways 70-218

 I. Installation 70-219

 II. Construction Specifications 70-219

376 Metal Wireways 70-219

 I. General 70-219

 II. Installation 70-219

 III. Construction Specifications 70-220

378 Nonmetallic Wireways 70-221

 I. General 70-221

 II. Installation 70-221

 III. Construction Specifications 70-222

380 Multioutlet Assembly 70-222

382 Nonmetallic Extensions 70-222

 I. General 70-222

 II. Installation 70-223

 III. Construction Specifications
(Concealable Nonmetallic Extensions
only) 70-224

384 Strut-Type Channel Raceway 70-224

 I. General 70-224

 II. Installation 70-224

 III. Construction Specifications 70-225

386 Surface Metal Raceways 70-226

 I. General 70-226

 II. Installation 70-226

 III. Construction Specifications 70-226

388 Surface Nonmetallic Raceways 70-227

 I. General 70-227

 II. Installation 70-227

 III. Construction Specifications 70-227

390 Underfloor Raceways 70-228

392 Cable Trays 70-229

394 Concealed Knob-and-Tube Wiring 70-235

 I. General 70-235

 II. Installation 70-236

 III. Construction Specifications 70-236

396 Messenger-Supported Wiring 70-237

 I. General 70-237

 II. Installation 70-237

398 Open Wiring on Insulators 70-237

 I. General 70-237

 II. Installation 70-238

 III. Construction Specifications 70-239

Chapter 4 Equipment for General Use

400 Flexible Cords and Cables 70-240

 I. General 70-240

ARTICLE

II. Construction Specifications 70-249

III. Portable Cables Over 600 Volts,
Nominal 70-250

402 Fixture Wires 70-251

404 Switches 70-255

 I. Installation 70-255

 II. Construction Specifications 70-258

406 Receptacles, Cord Connectors, and
Attachment Plugs (Caps) 70-258

408 Switchboards and Panelboards 70-262

 I. General 70-262

 II. Switchboards 70-263

 III. Panelboards 70-263

 IV. Construction Specifications 70-264

409 Industrial Control Panels 70-265

 I. General 70-265

 II. Installation 70-266

 III. Construction Specifications 70-266

410 Luminaires, Lampholders, and Lamps 70-267

 I. General 70-267

 II. Luminaire Locations 70-268

 III. Provisions at Luminaire Outlet Boxes,
Canopies, and Pans 70-269

 IV. Luminaire Supports 70-269

 V. Grounding 70-270

 VI. Wiring of Luminaires 70-271

 VII. Construction of Luminaires 70-272

 VIII. Installation of Lampholders 70-273

 IX. Construction of Lampholders 70-273

 X. Lamps and Auxiliary Equipment 70-274

 XI. Special Provisions for Flush and
Recessed Luminaires 70-274

 XII. Construction of Flush and Recessed
Luminaires 70-274

 XIII. Special Provisions for
Electric-Discharge Lighting Systems of
1000 Volts or Less 70-274

 XIV. Special Provisions for
Electric-Discharge Lighting Systems of
More Than 1000 Volts 70-276

 XV. Lighting Track 70-277

 XVI. Decorative Lighting and Similar
Accessories 70-277

411 Lighting Systems Operating at 30 Volts or
Less 70-278

422 Appliances 70-278

 I. General 70-278

 II. Installation 70-279

 III. Disconnecting Means 70-281

 IV. Construction 70-282

 V. Marking 70-283

424 Fixed Electric Space-Heating Equipment 70-284

 I. General 70-284

 II. Installation 70-284

 III. Control and Protection of Fixed
Electric Space-Heating Equipment 70-284

 IV. Marking of Heating Equipment 70-286

ARTICLE

V. Electric Space-Heating Cables 70-286
 VI. Duct Heaters 70-288
 VII. Resistance-Type Boilers 70-289
 VIII. Electrode-Type Boilers 70-290
 IX. Electric Radiant Heating Panels and Heating Panel Sets 70-290
 426 Fixed Outdoor Electric Deicing and Snow-Melting Equipment 70-292
 I. General 70-292
 II. Installation 70-293
 III. Resistance Heating Elements 70-293
 IV. Impedance Heating 70-294
 V. Skin-Effect Heating 70-294
 VI. Control and Protection 70-295
 427 Fixed Electric Heating Equipment for Pipelines and Vessels 70-295
 I. General 70-295
 II. Installation 70-296
 III. Resistance Heating Elements 70-296
 IV. Impedance Heating 70-297
 V. Induction Heating 70-297
 VI. Skin-Effect Heating 70-298
 VII. Control and Protection 70-298
 430 Motors, Motor Circuits, and Controllers 70-298
 I. General 70-298
 II. Motor Circuit Conductors 70-304
 III. Motor and Branch-Circuit Overload Protection 70-306
 IV. Motor Branch-Circuit Short-Circuit and Ground-Fault Protection 70-310
 V. Motor Feeder Short-Circuit and Ground-Fault Protection 70-313
 VI. Motor Control Circuits 70-313
 VII. Motor Controllers 70-315
 VIII. Motor Control Centers 70-316
 IX. Disconnecting Means 70-317
 X. Adjustable-Speed Drive Systems 70-320
 XI. Over 600 Volts, Nominal 70-321
 XII. Protection of Live Parts — All Voltages 70-322
 XIII. Grounding — All Voltages 70-323
 XIV. Tables 70-324
 440 Air-Conditioning and Refrigerating Equipment 70-327
 I. General 70-327
 II. Disconnecting Means 70-329
 III. Branch-Circuit Short-Circuit and Ground-Fault Protection 70-330
 IV. Branch-Circuit Conductors 70-331
 V. Controllers for Motor-Compressors 70-331
 VI. Motor-Compressor and Branch-Circuit Overload Protection 70-332
 VII. Provisions for Room Air Conditioners 70-333
 445 Generators 70-334
 450 Transformers and Transformer Vaults (Including Secondary Ties) 70-335
 I. General Provisions 70-335
 II. Specific Provisions Applicable to Different Types of Transformers 70-339

ARTICLE

III. Transformer Vaults 70-341
 455 Phase Converters 70-342
 I. General 70-342
 II. Specific Provisions Applicable to Different Types of Phase Converters 70-343
 460 Capacitors 70-344
 I. 600 Volts, Nominal, and Under 70-344
 II. Over 600 Volts, Nominal 70-344
 470 Resistors and Reactors 70-345
 I. 600 Volts, Nominal, and Under 70-345
 II. Over 600 Volts, Nominal 70-346
 480 Storage Batteries 70-346
 490 Equipment, Over 600 Volts, Nominal 70-347
 I. General 70-347
 II. Equipment — Specific Provisions 70-347
 III. Equipment — Metal-Enclosed Power Switchgear and Industrial Control Assemblies 70-350
 IV. Mobile and Portable Equipment 70-352
 V. Electrode-Type Boilers 70-352

 Chapter 5 Special Occupancies
 500 Hazardous (Classified) Locations, Classes I, II, and III, Divisions 1 and 2 70-354
 501 Class I Locations 70-362
 I. General 70-362
 II. Wiring 70-363
 III. Equipment 70-368
 502 Class II Locations 70-372
 I. General 70-372
 II. Wiring 70-372
 III. Equipment 70-374
 503 Class III Locations 70-378
 I. General 70-378
 II. Wiring 70-378
 III. Equipment 70-379
 504 Intrinsically Safe Systems 70-380
 505 Class I, Zone 0, 1, and 2 Locations 70-384
 506 Zone 20, 21, and 22 Locations for Combustible Dusts or Ignitable Fibers/Flyings 70-398
 510 Hazardous (Classified) Locations — Specific 70-404
 511 Commercial Garages, Repair and Storage 70-404
 513 Aircraft Hangars 70-407
 514 Motor Fuel Dispensing Facilities 70-410
 515 Bulk Storage Plants 70-414
 516 Spray Application, Dipping, and Coating Processes 70-419
 517 Health Care Facilities 70-425
 I. General 70-425

ARTICLE

II. Wiring and Protection 70-427

III. Essential Electrical System 70-430

IV. Inhalation Anesthetizing Locations 70-437

V. X-Ray Installations 70-440

VI. Communications, Signaling Systems,
Data Systems, Fire Alarm Systems,
and Systems Less Than 120 Volts,
Nominal 70-441

VII. Isolated Power Systems 70-442

518 Assembly Occupancies 70-443

520 Theaters, Audience Areas of Motion
Picture and Television Studios,
Performance Areas, and Similar Locations ... 70-444

I. General 70-444

II. Fixed Stage Switchboards 70-446

III. Fixed Stage Equipment Other Than
Switchboards 70-447

IV. Portable Switchboards on Stage 70-448

V. Portable Stage Equipment Other Than
Switchboards 70-451

VI. Dressing Rooms 70-452

VII. Grounding 70-453

522 Control Systems for Permanent
Amusement Attractions 70-453

I. General 70-453

II. Control Circuits 70-453

III. Control Circuit Wiring Methods 70-454

525 Carnivals, Circuses, Fairs, and Similar
Events 70-455

I. General Requirements 70-455

II. Power Sources 70-455

III. Wiring Methods 70-456

IV. Grounding and Bonding 70-457

530 Motion Picture and Television Studios
and Similar Locations 70-457

I. General 70-457

II. Stage or Set 70-458

III. Dressing Rooms 70-460

IV. Viewing, Cutting, and Patching Tables 70-460

V. Cellulose Nitrate Film Storage Vaults 70-460

VI. Substations 70-460

540 Motion Picture Projection Rooms 70-461

I. General 70-461

II. Equipment and Projectors of the
Professional Type 70-461

III. Nonprofessional Projectors 70-462

IV. Audio Signal Processing,
Amplification, and Reproduction
Equipment 70-462

545 Manufactured Buildings 70-462

547 Agricultural Buildings 70-463

550 Mobile Homes, Manufactured Homes, and
Mobile Home Parks 70-466

I. General 70-466

II. Mobile and Manufactured Homes 70-467

III. Services and Feeders 70-474

ARTICLE

551 Recreational Vehicles and Recreational
Vehicle Parks 70-475

I. General 70-475

II. Combination Electrical Systems 70-477

III. Other Power Sources 70-477

IV. Nominal 120-Volt or 120/240-Volt
Systems 70-478

V. Factory Tests 70-485

VI. Recreational Vehicle Parks 70-485

552 Park Trailers 70-488

I. General 70-488

II. Low-Voltage Systems 70-488

III. Combination Electrical Systems 70-489

IV. Nominal 120-Volt or 120/240-Volt
Systems 70-490

V. Factory Tests 70-496

553 Floating Buildings 70-497

I. General 70-497

II. Services and Feeders 70-497

III. Grounding 70-497

555 Marinas and Boatyards 70-498

590 Temporary Installations 70-501

Chapter 6 Special Equipment

600 Electric Signs and Outline Lighting 70-504

I. General 70-504

II. Field-Installed Skeleton Tubing and
Wiring 70-508

604 Manufactured Wiring Systems 70-509

605 Office Furnishings (Consisting of Lighting
Accessories and Wired Partitions) 70-510

610 Cranes and Hoists 70-511

I. General 70-511

II. Wiring 70-512

III. Contact Conductors 70-514

IV. Disconnecting Means 70-515

V. Overcurrent Protection 70-515

VI. Control 70-516

VII. Grounding 70-516

620 Elevators, Dumbwaiters, Escalators,
Moving Walks, Platform Lifts, and
Stairway Chairlifts 70-517

I. General 70-517

II. Conductors 70-519

III. Wiring 70-520

IV. Installation of Conductors 70-523

V. Traveling Cables 70-523

VI. Disconnecting Means and Control 70-524

VII. Overcurrent Protection 70-526

VIII. Machine Rooms, Control Rooms,
Machinery Spaces, and Control Spaces 70-526

IX. Grounding 70-527

X. Emergency and Standby Power
Systems 70-527

625 Electric Vehicle Charging System 70-527

I. General 70-527

ARTICLE

II. Wiring Methods 70-528
 III. Equipment Construction 70-528
 IV. Control and Protection 70-529
 V. Electric Vehicle Supply Equipment
 Locations 70-529
 626 Electrified Truck Parking Spaces 70-531
 I. General 70-531
 II. Electrified Truck Parking Spaces
 Electrical Wiring Systems 70-532
 III. Electrified Truck Parking Space Supply
 Equipment 70-533
 IV. Transport Refrigerated Units (TRUs) 70-535
 630 Electric Welders 70-536
 I. General 70-536
 II. Arc Welders 70-536
 III. Resistance Welders 70-537
 IV. Welding Cable 70-538
 640 Audio Signal Processing, Amplification,
 and Reproduction Equipment 70-538
 I. General 70-538
 II. Permanent Audio System Installations 70-542
 III. Portable and Temporary Audio System
 Installations 70-542
 645 Information Technology Equipment 70-544
 647 Sensitive Electronic Equipment 70-546
 650 Pipe Organs 70-547
 660 X-Ray Equipment 70-548
 I. General 70-548
 II. Control 70-549
 III. Transformers and Capacitors 70-549
 IV. Guarding and Grounding 70-549
 665 Induction and Dielectric Heating
 Equipment 70-550
 I. General 70-550
 II. Guarding, Grounding, and Labeling 70-551
 668 Electrolytic Cells 70-551
 669 Electroplating 70-554
 670 Industrial Machinery 70-555
 675 Electrically Driven or Controlled
 Irrigation Machines 70-556
 I. General 70-556
 II. Center Pivot Irrigation Machines 70-558
 680 Swimming Pools, Fountains, and Similar
 Installations 70-558
 I. General 70-558
 II. Permanently Installed Pools 70-561
 III. Storable Pools 70-568
 IV. Spas and Hot Tubs 70-568
 V. Fountains 70-570
 VI. Pools and Tubs for Therapeutic Use 70-572
 VII. Hydromassage Bathtubs 70-572
 682 Natural and Artificially Made Bodies of
 Water 70-573
 I. General 70-573

ARTICLE

II. Installation 70-573
 III. Grounding and Bonding 70-574
 685 Integrated Electrical Systems 70-575
 I. General 70-575
 II. Orderly Shutdown 70-575
 690 Solar Photovoltaic Systems 70-575
 I. General 70-575
 II. Circuit Requirements 70-578
 III. Disconnecting Means 70-580
 IV. Wiring Methods 70-581
 V. Grounding 70-583
 VI. Marking 70-585
 VII. Connection to Other Sources 70-585
 VIII. Storage Batteries 70-587
 IX. Systems over 600 Volts 70-588
 692 Fuel Cell Systems 70-588
 I. General 70-588
 II. Circuit Requirements 70-589
 III. Disconnecting Means 70-589
 IV. Wiring Methods 70-590
 V. Grounding 70-590
 VI. Marking 70-590
 VII. Connection to Other Circuits 70-590
 VIII. Outputs Over 600 Volts 70-591
 695 Fire Pumps 70-591

Chapter 7 Special Conditions

 700 Emergency Systems 70-596
 I. General 70-596
 II. Circuit Wiring 70-597
 III. Sources of Power 70-598
 IV. Emergency System Circuits for
 Lighting and Power 70-600
 V. Control — Emergency Lighting
 Circuits 70-600
 VI. Overcurrent Protection 70-600
 701 Legally Required Standby Systems 70-601
 I. General 70-601
 II. Circuit Wiring 70-602
 III. Sources of Power 70-602
 IV. Overcurrent Protection 70-603
 702 Optional Standby Systems 70-604
 I. General 70-604
 II. Circuit Wiring 70-605
 III. Grounding 70-605
 IV. Sources of Power 70-605
 705 Interconnected Electric Power Production
 Sources 70-605
 I. General 70-605
 II. Utility-Interactive Inverters 70-608
 III. Generators 70-609
 708 Critical Operations Power Systems
(COPS) 70-609
 I. General 70-609
 II. Circuit Wiring and Equipment 70-610

ARTICLE

III. Power Sources and Connection	70-612
IV. Overcurrent Protection	70-613
V. System Performance and Analysis	70-614
720 Circuits and Equipment Operating at Less Than 50 Volts	70-614
725 Class 1, Class 2, and Class 3 Remote-Control, Signaling, and Power-Limited Circuits	70-614
I. General	70-614
II. Class 1 Circuits	70-615
III. Class 2 and Class 3 Circuits	70-617
IV. Listing Requirements	70-622
727 Instrumentation Tray Cable: Type ITC	70-624
760 Fire Alarm Systems	70-625
I. General	70-625
II. Non-Power-Limited Fire Alarm (NPLFA) Circuits	70-626
III. Power-Limited Fire Alarm (PLFA) Circuits	70-628
IV. Listing Requirements	70-631
770 Optical Fiber Cables and Raceways	70-633
I. General	70-633
II. Cables Outside and Entering Buildings	70-634
III. Protection	70-635
IV. Grounding Methods	70-635
V. Installation Methods Within Buildings	70-636
VI. Listing Requirements	70-638

Chapter 8 Communications Systems

800 Communications Circuits	70-640
I. General	70-640
II. Wires and Cables Outside and Entering Buildings	70-641
III. Protection	70-642
IV. Grounding Methods	70-644
V. Installation Methods Within Buildings	70-645
VI. Listing Requirements	70-647
810 Radio and Television Equipment	70-649
I. General	70-649
II. Receiving Equipment — Antenna Systems	70-650
III. Amateur Transmitting and Receiving Stations — Antenna Systems	70-652
IV. Interior Installation — Transmitting Stations	70-653
820 Community Antenna Television and Radio Distribution Systems	70-653
I. General	70-653
II. Coaxial Cables Outside and Entering Buildings	70-654

ARTICLE

III. Protection	70-655
IV. Grounding Methods	70-656
V. Installation Methods Within Buildings	70-657
VI. Listing Requirements	70-659
830 Network-Powered Broadband Communications Systems	70-660
I. General	70-660
II. Cables Outside and Entering Buildings	70-662
III. Protection	70-664
IV. Grounding Methods	70-666
V. Installation Methods Within Buildings	70-667
VI. Listing Requirements	70-669

TABLES

Chapter 9 Tables

1 Percent of Cross Section of Conduit and Tubing for Conductors	70-671
2 Radius of Conduit and Tubing Bends	70-671
4 Dimensions and Percent Area of Conduit and Tubing (Areas of Conduit or Tubing for the Combinations of Wires Permitted in Table 1, Chapter 9)	70-672
5 Dimensions of Insulated Conductors and Fixture Wires	70-676
5A Compact Copper and Aluminum Building Wire Nominal Dimensions and Areas	70-680
8 Conductor Properties	70-681
9 Alternating-Current Resistance and Reactance for 600-Volt Cables, 3-Phase, 60 Hz, 75°C (167°F) — Three Single Conductors in Conduit	70-682
11(A) Class 2 and Class 3 Alternating-Current Power Source Limitations	70-684
11(B) Class 2 and Class 3 Direct-Current Power Source Limitations	70-684
12(A) PLFA Alternating-Current Power Source Limitations	70-685
12(B) PLFA Direct-Current Power Source Limitations	70-685
Annex A	70-686
Annex B	70-689
Annex C	70-703
Annex D	70-763
Annex E	70-773
Annex F	70-774
Annex G	70-776
Annex H	70-778
Index	70-785

NATIONAL ELECTRICAL CODE COMMITTEE

These lists represent the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of this document.

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Committee Scope: This Committee shall have primary responsibility for documents on minimizing the risk of electricity as a source of electric shock and as a potential ignition source of fires and explosions. It shall also be responsible for text to minimize the propagation of fire and explosions due to electrical installations.

CODE-MAKING PANEL NO. 1

Articles 90, 100, 110, Annex A, Annex G

John D. Minick, Chair

National Electrical Manufacturers Association, TX [M]

Michael A. Anthony, University of Michigan, MI [U]

Rep. Association of Higher Education Facilities Officers

Louis A. Barrios, Shell Global Solutions, TX [U]

Rep. American Chemistry Council

Kenneth P. Boyce, Underwriters Laboratories Inc., IL [RT]

William T. Fiske, Intertek Testing Services NA, Inc., NY [RT]

H. Landis Floyd, The DuPont Company, DE [U]

Rep. Institute of Electrical & Electronics Engineers, Inc.

Palmer L. Hickman, National Joint Apprentice & Training
Committee, MD [L]

Rep. International Brotherhood of Electrical Workers

David L. Hittinger, IEC of Greater Cincinnati, OH [IM]

Rep. Independent Electrical Contractors, Inc.

Neil F. LaBrake, Jr., National Grid, NY [UT]

Rep. Electric Light & Power Group/EEI

Randall R. McCarver, Telcordia Technologies, Inc., NJ [U]

Rep. Alliance for Telecommunications Industry Solutions

Lanny G. McMahill, City of Phoenix, AZ [E]

Rep. International Association of Electrical Inspectors

H. Brooke Stauffer, National Electrical Contractors
Association, MD [IM]

Alternates

Mark Christian, IBEW Local Union 175, TN [L]
(Alt. to P. L. Hickman)
Benjamin F. Dunford, Ben Dunford Electric Company Inc., TN [IM]
(Alt. to D. L. Hittinger)
Ernest J. Gallo, Telcordia Technologies, Inc., NJ [U]
(Alt. to R. R. McCarver)
Russell J. Helmick, Jr., Orange, CA [E]
(Alt. to L. G. McMahill)
Donald H. McCullough, II, Washington Savannah River Company, SC [U]
(Alt. to H. L. Floyd)

Gil Moniz, National Electrical Manufacturers Association, MA [M]
(Alt. to J. D. Minick)
Alfredo M Ramirez, Underwriters Laboratories Inc., IL [RT]
(Alt. to K. P. Boyce)
John W. Troglia, Edison Electric Institute, WI [UT]
(Alt. to N. F. LaBrake, Jr.)

Nonvoting

Ark Tsisserev, City of Vancouver, Canada
Rep. CSA/Canadian Electrical Code Committee

CODE-MAKING PANEL NO. 2

Articles 210, 215, 220, Annex D, Chapter 9 Examples 1 through 6

Raymond W. Weber, *Chair*
State of Wisconsin, WI [E]
Rep. International Association of Electrical Inspectors

Richard W. Becker, Engineered Electrical Systems, Inc., WA [U]
Rep. Institute of Electrical & Electronics Engineers, Inc.
Lawrence Brown, National Association of Home Builders, DC [U]
Frank Coluccio, New York City Department of Buildings, NY [E]
Thomas L. Harman, University of Houston-Clear Lake, TX [SE]
Donald M. King, IBEW Local Union 313, DE [L]
Rep. International Brotherhood of Electrical Workers
Robert L. LaRocca, Underwriters Laboratories Inc., NY [RT]
Brian J. Nenninger, The Dow Chemical Company, TX [U]
Rep. American Chemistry Council
Jim Pauley, Square D Company/Schneider Electric, KY [M]
Rep. National Electrical Manufacturers Association
Ronald L. Purvis, Sharpsburg, GA [UT]
Rep. Electric Light & Power Group/EEI
Michael D. Toman, MEGA Power Electrical Services, Inc., MD [IM]
Rep. National Electrical Contractors Association
Robert G. Wilkinson, IEC Texas Gulf Coast, TX [IM]
Rep. Independent Electrical Contractors, Inc.

Alternates

James E. Degnan, Sparling, WA [U]
(Alt. to R. W. Becker)
David A. Dini, Underwriters Laboratories Inc., IL [RT]
(Alt. to R. L. LaRocca)
Daniel J. Kissane, Pass & Seymour/Legrand, NY [M]
(Alt. to J. Pauley)
William Ross McCorcle, American Electric Power, OK [UT]
(Alt. to R. L. Purvis)
William J. McGovern, City of Plano, TX [E]
(Alt. to R. W. Weber)
Clifford L. Rediger, Independent Electrical Contractors Training Fund, CO [IM]
(Alt. to R. G. Wilkinson)
Janet D. Skipper, IBEW Local Union 606, FL [L]
(Alt. to D. M. King)
Joseph E. Wiehagen, National Association of Home Builders, MD [U]
(Alt. to L. Brown)

Nonvoting

William Burr, Canadian Standards Association, Canada [RT]
Douglas A. Lee, U.S. Consumer Product Safety Commission, MD [C]
Andrew M. Trotta, U.S. Consumer Product Safety Commission, MD [C]

CODE-MAKING PANEL NO. 3

Articles 300, 590, 720, 725, 727, 760, Chapter 9, Tables 11(A) and (B), and Tables 12(A) and (B)

Richard P. Owen, *Chair*
City of St. Paul, MN [E]
Rep. International Association of Electrical Inspectors

Lawrence S. Ayer, Biz Com Electric, Inc., OH [IM]
Rep. Independent Electrical Contractors, Inc.
Paul J. Casparro, Scranton Electricians JATC, PA [L]
Rep. International Brotherhood of Electrical Workers
Les Easter, Allied Tube and Conduit, IL [M]
Rep. National Electrical Manufacturers Association
Sanford E. Egesdal, Egesdal Associates PLC, MN [M]
Rep. Automatic Fire Alarm Association, Inc.
Thomas J. Guida, Underwriters Laboratories Inc., NY [RT]
Ray R. Keden, ERICO, Inc., CA [M]
Rep. Building Industry Consulting Services International

Ronald E. Maassen, Lemberg Electric Company, Inc., WI [IM]
Rep. National Electrical Contractors Association
Juan C. Menendez, Southern California Edison Company, CA [UT]
Rep. Electric Light & Power Group/EEI
Steven J. Owen, Steven J. Owen, Inc., AL [IM]
Rep. Associated Builders & Contractors, Inc.
David A. Pace, Olin Corporation, AL [U]
Rep. American Chemistry Council

Melvin K. Sanders, Things Electrical Co., Inc.
(TECo., Inc.), IA [U]
Rep. Institute of Electrical & Electronics Engineers, Inc.
John E. Sleights, St. Paul Travelers, CT [I]

Alternates

Shane M. Clary, Bay Alarm Company, CA [M]
(Alt. to S. E. Egesdal)
Adam D. Corbin, Corbin Electrical Services, Inc., NJ [IM]
(Alt. to L. S. Ayer)
Danny Liggett, Dupont Company, TX [U]
(Alt. to D. A. Pace)
T. David Mills, Bechtel Savannah River, Inc., SC [U]
(Alt. to M. K. Sanders)
Mark C. Ode, Underwriters Laboratories Inc., NC [RT]
(Alt. to T. J. Guida)

Roger S. Passmore, Davis Electrical Constructors, Inc., SC [IM]
(Alt. to S. J. Owen)
Marty L. Riesberg, IBEW Local Union 22, MD [L]
(Alt. to P. J. Casparro)
George A. Straniero, Tyco/AFC Cable Systems, Inc., NJ [M]
(Alt. to L. Easter)
Robert J. Walsh, City of Hayward, CA [E]
(Alt. to R. P. Owen)

Nonvoting

Edward C. Lawry, Oregon, WI [E]
(Member Emeritus)

CODE-MAKING PANEL NO. 4

Articles 225, 230

James M. Naughton, *Chair*
IBEW Local Union 103, MA [L]
Rep. International Brotherhood of Electrical Workers

Thomas L. Adams, Exelon Corporation, IL [UT]
Rep. Electric Light & Power Group/EEI
Malcolm Allison, Ferraz Shawmut, MA [M]
Robert J. Deaton, The Dow Chemical Company, TX [U]
Rep. Institute of Electrical & Electronics Engineers, Inc.
Howard D. Hughes, Hughes Electric Company Inc., AR [IM]
Rep. National Electrical Contractors Association
Mark C. Ode, Underwriters Laboratories Inc., NC [RT]
James J. Rogers, Towns of Oak Bluffs, Tisbury, West
Tisbury, MA [E]
Rep. International Association of Electrical Inspectors
John A. Sigmund, PPG Industries, Inc., LA [U]
Rep. American Chemistry Council
John W. Young, Siemens Energy & Automation, Inc., GA [M]
Rep. National Electrical Manufacturers Association
Vincent Zinnante, Advantage Electric, Inc., TX [IM]
Rep. Independent Electrical Contractors, Inc.

Alternates

Paul D. Barnhart, Underwriters Laboratories Inc., NC [RT]
(Alt. to M. C. Ode)
Mark D. Gibbs, BWXT Y-12, LLC, TN [U]
(Alt. to R. J. Deaton)
Kenneth W. Hengst, EAS Contracting, LP, TX [IM]
(Alt. to V. Zinnante)
Mark R. Hilbert, State of New Hampshire, NH [E]
(Alt. to J. J. Rogers)
Philip M. Piqueira, General Electric Company, CT [M]
(Alt. to J. W. Young)
Mark H. Sumrall, IBEW Local Union 527, TX [L]
(Alt. to J. M. Naughton)
Peter R. Walsh, Ferraz Shawmut, MA [M]
(Alt. to M. Allison)

CODE-MAKING PANEL NO. 5

Articles 200, 250, 280, 285

Ronald J. Toomer, *Chair*
Toomer Electrical Company Inc., LA [IM]
Rep. National Electrical Contractors Association

Jeffrey Boksiner, Telcordia Technologies, Inc., NJ [UT]
Rep. Alliance for Telecommunications Industry Solutions
David Brender, Copper Development Association, Inc., NY [M]
Rep. Copper Development Association Inc.
Martin J. Brett, Jr., Wheatland Tube Company, NJ [M]
Rep. American Iron and Steel Institute
Paul Dobrowsky, Innovative Technology Services, NY [U]
Rep. American Chemistry Council
Dan Hammel, IBEW Local Union 704, IA [L]
Rep. International Brotherhood of Electrical Workers
G. Scott Harding, F. B. Harding, Inc., MD [IM]
Rep. Independent Electrical Contractors, Inc.
William J. Helfrich, U.S. Department of Labor, PA [E]
Michael J. Johnston, International Association of Electrical Inspectors, TX [E]
Chuck Mello, Underwriters Laboratories Inc., WA [RT]

Daleep C. Mohla, DCM Electrical Consulting Services, Inc., TX [U]
Rep. Institute of Electrical & Electronics Engineers, Inc.
Gregory J. Steinman, Thomas & Betts Corporation, TN [M]
Rep. National Electrical Manufacturers Association
Robert G. Stoll, Thomas Associates, Inc., OH [M]
Rep. Power Tool Institute, Inc.
Richard Temblador, Southwire Company, GA [M]
Rep. The Aluminum Association
C. Douglas White, CenterPoint Energy, Inc., TX [UT]
Rep. Electric Light & Power Group/EEI

Alternates

Harold G. Alexander, American Electric Power, OH [UT]
(Alt. to C. D. White)
Ron D. Alley, Northern New Mexico IEC, NM [IM]
(Alt. to G. S. Harding)

Joseph P. DeGregoria, Underwriters Laboratories Inc., NY [RT]

(Alt. to C. Mello)

Ronald Lai, FCI Electrical, NH [M]

(Alt. to G. J. Steinman)

Paul J. LeVasseur, Bay City JEATC, MI [L]

(Alt. to D. Hammel)

Richard E. Loyd, R & N Associates, AZ [M]

(Alt. to M. J. Brett, Jr.)

Michael E. McNeil, FMC Corporation/Bio Polymer, ME [U]

(Alt. to P. Dobrowsky)

Nathan Philips, Integrated Electronic Systems, OR [IM]

(Alt. to R. J. Toomer)

Paul R. Picard, Tyco/AFC Cable Systems, Inc., MA [M]

(Alt. to R. Temblador)

Elliot Rappaport, Electro Technology Consultants, Inc., FL [U]

(Alt. to D. C. Mohla)

Phil Simmons, Simmons Electrical Services, WA [M]

(Alt. to D. Brender)

David A. Williams, Delta Charter Township, MI [E]

(Alt. to M. J. Johnston)

Nonvoting

Robert A. Nelson, Canadian Standards Association, Canada [RT]

CODE-MAKING PANEL NO. 6

Articles 310, 400, 402, Chapter 9 Tables 5 through 9, Annex B

Scott Cline, *Chair*

McMurtrey Electric, Inc., CA [IM]

Rep. National Electrical Contractors Association

Samuel B. Friedman, General Cable Corporation, RI [M]

Rep. National Electrical Manufacturers Association

Robert L. Huddleston, Jr., Eastman Chemical Company, TN [U]

Rep. American Chemistry Council

G. W. "Jerry" Kent, Kent Electric & Plumbing Systems, TX [IM]

Rep. Independent Electrical Contractors, Inc.

William F. Laidler, South Shore VoTech/IBEW 223, MA [L]

Rep. International Brotherhood of Electrical Workers

L. Bruce McClung, Electrical Safety Consulting Services, Inc., WV [U]

Rep. Institute of Electrical & Electronics Engineers, Inc.

Paul R. Picard, Tyco/AFC Cable Systems, Inc., MA [M]

Rep. The Aluminum Association

Oran P. Post, Akron, OH [E]

Rep. International Association of Electrical Inspectors

Carl Timothy Wall, Alabama Power Company, AL [UT]

Rep. Electric Light & Power Group/EEI

Austin D. Wetherell, Underwriters Laboratories Inc., NY [RT]

Joseph S. Zimnoch, The Okonite Company, NJ [M]

Rep. Copper Development Association Inc.

Alternates

Jacob Benninger, IBEW Local Union 241 JATC, NY [L]

(Alt. to W. F. Laidler)

Peter E. Bowers, Satellite Electric Company, Inc., MD [IM]

(Alt. to G. W. Kent)

James M. Daly, General Cable, NJ [M]

(Alt. to J. S. Zimnoch)

Timothy Edwards, Alcan Cable Company, GA [M]

(Alt. to P. R. Picard)

Richard A. Holub, E. I. DuPont de Nemours & Company, Inc., DE [U]

(Alt. to R. L. Huddleston, Jr.)

Lowell Lisker, American Insulated Wire Corporation, MA [M]

(Alt. to S. B. Friedman)

Harry J. Sassaman, Forest Electric Corporation, NJ [IM]

(Alt. to S. Cline)

Bradley J. Schmidt, Underwriters Laboratories Inc., IL [RT]

(Alt. to A. D. Wetherell)

John Stacey, City of St. Louis, MO [E]

(Alt. to O. P. Post)

Donald A. Voltz, Mustang Engineering, Inc., TX [U]

(Alt. to L. B. McClung)

CODE-MAKING PANEL NO. 7

Articles 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 382, 394, 396, 398

Gaylen D. Rogers, *Chair*

Highland, UT [E]

Rep. International Association of Electrical Inspectors

Martin D. Adams, Adams Electric, Inc., CO [IM]

Rep. National Electrical Contractors Association

Harry C. Brown, IBEW Local Union 606, FL [L]

Rep. International Brotherhood of Electrical Workers

John J. Cangemi, Underwriters Laboratories Inc., NY [RT]

James M. Daly, General Cable, NJ [M]

Rep. National Electrical Manufacturers Association

Timothy Edwards, Alcan Cable Company, GA [M]

Rep. The Aluminum Association

Chris J. Fahrenthold, Design Electric, TX [IM]

Rep. Independent Electrical Contractors, Inc.

Herman J. Hall, Austin, TX [M]

Rep. Society of the Plastics Industry, Inc.

Ronald G. Nickson, National Multi Housing Council, DC [U]

John W. "Wes" Ray, Duke Energy Corporation, NC [UT]

Rep. Electric Light & Power Group/EEI

Gregory L. Runyon, Eli Lilly and Company, IN [U]

Rep. American Chemistry Council

David E. Schumacher, Associated Builders & Contractors, Inc., IA [IM]

H. R. Stewart, HRS Consulting, TX [U]

Rep. Institute of Electrical & Electronics Engineers, Inc.

George A. Straniero, Tyco/AFC Cable Systems, Inc., NJ [M]

Rep. Copper Development Association Inc.

Alternates

William B. Crist, Houston Stafford Electric Company, TX [IM]
 (Alt. to C. J. Fahrenthold)
James D. Erwin, Celanese, Ltd., TX [U]
 (Alt. to G. L. Runyon)
Rogers Hester, Jr., Encore Wire Limited, TX [M]
 (Alt. to G. A. Straniero)
James K. Hinrichs, State of Washington, WA [E]
 (Alt. to G. D. Rogers)
Jacob Killinger, Underwriters Laboratories Inc., IL [RT]
 (Alt. to J. J. Cangemi)

Samuel R. LaDart, City of Memphis, TN [L]
 (Alt. to H. C. Brown)
David Mercier, Southwire Company, GA [M]
 (Alt. to J. M. Daly)
Dennis A. Nielsen, Lawrence Berkeley National Laboratory, CA [U]
 (Alt. to H. R. Stewart)
Peter Pollak, The Aluminum Association, Inc., VA [M]
 (Alt. to T. Edwards)
Thomas H. Wood, Cecil B. Wood Inc., IL [IM]
 (Alt. to M. D. Adams)

CODE-MAKING PANEL NO. 8

Articles 342, 344, 348, 350, 352, 353, 354, 356, 358, 360, 362, 366, 368, 370, 372, 374, 376, 378, 380, 384, 386, 388, 390, 392, Chapter 9, Tables 1 through 4, Annex C

Julian R. Burns, *Chair*

Burns Electrical/Quality Power Solutions, Inc., NC [IM]
 Rep. Independent Electrical Contractors, Inc.

Joseph Dabe, City of St. Paul, MN [L]
 Rep. International Brotherhood of Electrical Workers
George R. Dauberger, Thomas & Betts Corporation, TN [M]
 Rep. National Electrical Manufacturers Association
James C. Dollins, Tyco/AFC Cable Systems, MA [M]
 Rep. The Aluminum Association
James T. Dwight, Sasol North America, Inc., LA [U]
 Rep. American Chemistry Council
M. Shan Griffith, Kellogg, Brown & Root, Inc., TX [U]
 Rep. Institute of Electrical & Electronics Engineers, Inc.
David G. Humphrey, County of Henrico, Virginia, VA [E]
 Rep. International Association of Electrical Inspectors
David H. Kendall, Carlon, Lamson & Sessions, OH [M]
 Rep. Society of the Plastics Industry, Inc.
Richard E. Loyd, R & N Associates, AZ [M]
 Rep. American Iron and Steel Institute
Stephen P. Poholski, Newkirk Electric Associates, Inc., MI [IM]
 Rep. National Electrical Contractors Association
George F. Walbrecht, Underwriters Laboratories Inc., IL [RT]
Leslie R. Zielke, South Carolina Electric & Gas Company, SC [UT]
 Rep. Electric Light & Power Group/EEI

Alternates

Richard J. Berman, Underwriters Laboratories Inc., IL [RT]
 (Alt. to G. F. Walbrecht)
Joyce Evans Blom, The Dow Chemical Company, CA [U]
 (Alt. to J. T. Dwight)
Duane A. Carlson, PRS Consulting Engineers, WA [U]
 (Alt. to M. S. Griffith)
Charles W. Forsberg, Shaker Heights, OH [M]
 (Alt. to D. H. Kendall)
James M. Imlah, City of Hillsboro, OR [E]
 (Alt. to D. G. Humphrey)
Kevin J. Lippert, Eaton Corporation, PA [M]
 (Alt. to G. R. Dauberger)
Gregory L. Maurer, Wheatland Tube Company, AR [M]
 (Alt. to R. E. Loyd)
Gary W. Pemble, Montana Electrical JATC, MT [L]
 (Alt. to J. Dabe)
C. Ernest Reynolds, Hatfield-Reynolds Electric Company, AZ [IM]
 (Alt. to J. R. Burns)
Richard Temblador, Southwire Company, GA [M]
 (Alt. to J. C. Dollins)

CODE-MAKING PANEL NO. 9

Articles 312, 314, 404, 408, 450, 490

Robert A. McCullough, *Chair*

Ocean County Construction Inspection Department, NJ [E]
 Rep. International Association of Electrical Inspectors

Rodney D. Beisle, NECA-IBEW Electrical Training Trust, OR [L]
 Rep. International Brotherhood of Electrical Workers
Billy Breikreutz, Fluor Corporation, TX [U]
 Rep. Associated Builders & Contractors, Inc.
Richard P. Fogarty, Consolidated Edison Company of New York, Inc., NY [UT]
 Rep. Electric Light & Power Group/EEI
Frederic P. Hartwell, Hartwell Electrical Services, Inc., MA [SE]
Thomas J. LeMay, LeMay Electric, Inc., GA [IM]
 Rep. Independent Electrical Contractors, Inc.
Robert D. Osborne, Underwriters Laboratories Inc., NC [RT]

Bradford D. Rupp, Allied Moulded Products, Inc., OH [M]
 Rep. National Electrical Manufacturers Association
Sukanta Sengupta, FMC Corporation, NJ [U]
 Rep. Institute of Electrical & Electronics Engineers, Inc.
Monte Szendre, Wilson Construction Company, OR [IM]
 Rep. National Electrical Contractors Association
Ralph H. Young, Eastman Chemical Company, TN [U]
 Rep. American Chemistry Council

Alternates

Charles L. Boynton, The DuPont Company, TX [U]
 (Alt. to R. H. Young)

Kevin J. Breen, Breen Electrical Contractors Inc., NY [IM]
 (Alt. to T. J. LeMay)
James C. Carroll, Square D Company/Schneider Electric,
 TN [M]
 (Alt. to B. D. Rupp)
Kenneth L. McKinney, Jr., Underwriters Laboratories Inc.,
 NC [RT]
 (Alt. to R. D. Osborne)
James C. Missildine, Jr., Southern Company Services, Inc.,
 AL [UT]
 (Alt. to R. P. Fogarty)

Paul W. Myers, Innovene LLC, OH [U]
 (Alt. to S. Sengupta)
Donald R. Offerdahl, North Dakota State Electrical Board,
 ND [E]
 (Alt. to R. A. McCullough)
Rhett A. Roe, IBEW Local Union 26 JATC, MD [L]
 (Alt. to R. D. Belisle)

CODE-MAKING PANEL NO. 10

Articles 240, 780

James T. Dollard, Jr., *Chair*
 IBEW Local Union 98, PA [L]
 Rep. International Brotherhood of Electrical Workers

Charles K. Blizard, American Electrical Testing Company,
 Inc., MA [IM]
 Rep. InterNational Electrical Testing Association
Madeline Borthick, IEC of Houston, Inc., TX [IM]
 Rep. Independent Electrical Contractors, Inc.
Dennis M. Darling, Ayres, Lewis, Norris & May, Inc., MI [U]
 Rep. Institute of Electrical & Electronics Engineers, Inc.
Charles Eldridge, Indianapolis Power & Light Company, IN
 [UT]
 Rep. Electric Light & Power Group/EEI
Carl Fredericks, The Dow Chemical Company, TX [U]
 Rep. American Chemistry Council
C. W. Kimblin, Eaton Electrical Corporation, PA [M]
 Rep. National Electrical Manufacturers Association
John R. Kovacik, Underwriters Laboratories Inc., IL [RT]
Robert W. Mount, Jr., Hussmann Corporation, MO [M]
 Rep. Air-Conditioning and Refrigeration Institute
George J. Ockuly, O'Fallon, MO [M]
Richard Sobel, Quantum Electric Corporation, NY [IM]
 Rep. National Electrical Contractors Association
Gerald W. Williams, County of Ventura, California, CA [E]
 Rep. International Association of Electrical Inspectors

Alternates

Robert R. Gage, National Grid, NY [UT]
 (Alt. to C. Eldridge)
Roderic Hageman, PRIT Service, Inc., IL [IM]
 (Alt. to C. K. Blizard)
Robert J. Kauer, Middle Department Inspection Agency,
 Inc., PA [E]
 (Alt. to G. W. Williams)
Frank G. Ladonne, Underwriters Laboratories Inc., IL [RT]
 (Alt. to J. R. Kovacik)
Richard E. Lofton, II, IBEW Local Union 280, OR [L]
 (Alt. to J. T. Dollard, Jr.)
Alan Manche, Square D Company/Schneider Electric, KY
 [M]
 (Alt. to C. W. Kimblin)
Vincent J. Saporita, Cooper Bussmann, MO [M]
 (Alt. to G. J. Ockuly)
Steve A. Struble, Freeman's Electric Service, Inc., SD [IM]
 (Alt. to M. Borthick)
Steven E. Townsend, General Motors Corporation, MI [U]
 (Alt. to D. M. Darling)

CODE-MAKING PANEL NO. 11

Articles 409, 430, 440, 460, 470, Annex D, Example D8

Wayne Brinkmeyer, *Chair*
 Britain Electric Company, TX [IM]
 Rep. National Electrical Contractors Association

Rick L. Bunch, Tecumseh Products Company, MI [M]
 Rep. Air-Conditioning and Refrigeration Institute
J. Ron Caccamese, Alterman Electric Co., Ltd., TX [L]
 Rep. International Brotherhood of Electrical Workers
Terry D. Cole, Hamer Electric, Inc., WA [IM]
 Rep. Independent Electrical Contractors, Inc.
Robert G. Fahey, City of Janesville, WI [E]
 Rep. International Association of Electrical Inspectors
William D. Glover, PPG Industries, Inc., WV [U]
 Rep. American Chemistry Council
Charles A. Goetz, Underwriters Laboratories Inc., IL [RT]
Paul E. Guidry, Fluor Enterprises, Inc., TX [U]
 Rep. Associated Builders & Contractors, Inc.
Leo H. Haas, Jr., CenterPoint Energy, Inc., TX [UT]
 Rep. Electric Light & Power Group/EEI

Paul S. Hamer, Chevron Energy Technology Company, CA
 [U]
 Rep. American Petroleum Institute
Vincent J. Saporita, Cooper Bussmann, MO [M]
Lynn F. Saunders, Brighton, MI [U]
 Rep. Institute of Electrical & Electronics Engineers, Inc.
Lawrence E. Todd, Intertek Testing Services NA, Inc., OR
 [RT]
Ron Widup, Shermco Industries, Inc., TX [IM]
 Rep. InterNational Electrical Testing Association
James R. Wright, Siemens Energy & Automation, Inc., IL
 [M]
 Rep. National Electrical Manufacturers Association

Alternates

Larry W. Burns, Burns Electric, Inc., TX [IM]
 (Alt. to T. D. Cole)
Ralph M. Esemplare, Consolidated Edison Company of
 New York, NY [UT]
 (Alt. to L. H. Haas, Jr.)
James M. Fahey, IBEW Local Union 103, MA [L]
 (Alt. to J. R. Caccamese)
Stanley J. Folz, Morse Electric Company, NV [IM]
 (Alt. to W. Brinkmeyer)
Barry G. Karnes, Underwriters Laboratories Inc., CA [RT]
 (Alt. to C. A. Goetz)
Robert J. Keough, Emerson Motor Company, MO [M]
 (Alt. to J. R. Wright)

Thomas E. Moore, City of North Royalton, OH [E]
 (Alt. to R. G. Fahey)
Arthur S. Neubauer, Colonial Pipeline Company, GA [U]
 (Alt. to P. S. Hamer)
George J. Ockuly, O'Fallon, MO [M]
 (Alt. to V. J. Saporita)
Charles L. Powell, Eastman Chemical Company, TN [U]
 (Alt. to W. D. Glover)
Arthur J. Smith, III, Waldemar S. Nelson & Company,
 Inc., LA [U]
 (Alt. to L. F. Saunders)
Russell A. Tiffany, Johnson Controls, Inc., PA [M]
 (Alt. to R. L. Bunch)

CODE-MAKING PANEL NO. 12

Articles 610, 620, 625, 630, 640, 645, 647, 650, 660, 665, 668, 669, 670, 685,
 Annex D, Examples D9 and D10

Timothy M. Croushore, *Chair*
 Allegheny Power, PA [UT]
 Rep. Electric Light & Power Group/EEI

Kent B. Givens, Alcoa, Inc., TX [M]
 Rep. The Aluminum Association
 (VL to 610, 625, 630, 645, 660, 665, 668, 669, 685)
Thomas L. Hedges, Hedges Electric & Construction Inc.,
 CA [IM]
 Rep. National Electrical Contractors Association
Ron L. Janikowski, City of Wausau, Wisconsin, WI [E]
 Rep. International Association of Electrical Inspectors
Robert E. Johnson, ITE Safety, MA [U]
 Rep. Information Technology Industry Council
 (VL to 640, 645, 647, 685)
Robert A. Jones, Independent Electrical Contractors, Inc.,
 TX [IM]
Andy Juhasz, Kone, Inc., IL [M]
 Rep. National Elevator Industry Inc.
 (VL to 610, 620, 630)
Todd Lottmann, Cooper Bussmann, MO [M]
 Rep. National Electrical Manufacturers Association
Sam Marcovici, New York City Department of Buildings,
 NY [E]
John H. Mortimer, Inductotherm Corporation, NJ [M]
 (VL to 610, 630, 665, 668, 669)
Ralph C. Prichard, Hercules Incorporated, DE [U]
 Rep. Institute of Electrical & Electronics Engineers, Inc.
David R. Quave, IBEW Local Union 903, MS [L]
 Rep. International Brotherhood of Electrical Workers
Craig Sato, Underwriters Laboratories Inc., CA [RT]
Arthur E. Schlueter, Jr., A. E. Schlueter Pipe Organ
 Company, GA [M]
 Rep. American Institute of Organ Builders
 (VL to 640, 650)
Kenneth White, Olin Corporation, NY [U]
 Rep. American Chemistry Council

Alternates

William E. Anderson, The Procter & Gamble Company, OH
 [U]
 (Alt. to R. C. Prichard)
Jeffrey W. Blain, Schindler Elevator Corporation, NY [M]
 (VL to 610, 620, 630)
 (Alt. to A. Juhasz)
Thomas M. Burke, Underwriters Laboratories Inc., CA [RT]
 (Alt. to C. Sato)
Jeffrey L. Holmes, IBEW Local Union 1 JATC, MO [L]
 (Alt. to D. R. Quave)
Tim McClintock, Wayne County, Ohio, OH [E]
 (Alt. to R. L. Janikowski)
Roger D. McDaniel, Georgia Power Company, GA [UT]
 (Alt. to T. M. Croushore)
Peter Pollak, The Aluminum Association, Inc., VA [M]
 (VL to 610, 625, 630, 645, 660, 665, 668, 669, 685)
 (Alt. to K. B. Givens)
Lori L. Tennant, Square D Company/Schneider Electric, NC
 [M]
 (Alt. to T. Lottmann)
George S. Tidden, George's Electrical Service Inc., TX [IM]
 (Alt. to R. A. Jones)
Charles M. Trout, Maron Electric Company, FL [IM]
 (Alt. to T. L. Hedges)
Robert C. Turner, Oxford, MD [M]
 (VL to 610, 630, 665, 668, 669)
 (Alt. to J. H. Mortimer)

Nonvoting

Andre R. Cartal, Yardley, PA [E]
 (Member Emeritus)

CODE-MAKING PANEL NO. 13

Articles 445, 455, 480, 690, 692, 695, 700, 701, 702, 705

Thomas H. Wood, *Chair*
Cecil B. Wood Inc., IL [IM]
Rep. National Electrical Contractors Association

Tarry L. Baker, Broward County Board of Rules & Appeals, FL [E]
Rep. International Association of Electrical Inspectors

Ward I. Bower, Sandia National Laboratories, NM [U]
Rep. Solar Energy Industries Association
(VL to 690, 692, 705)

Douglas L. L. Elkins, ExxonMobil Chemical Company, TX [U]
Rep. American Chemistry Council

George W. Flach, George W. Flach Consultant, Inc., LA [SE]

Ernest J. Gallo, Telcordia Technologies, Inc., NJ [U]
Rep. Alliance for Telecommunications Industry Solutions
(VL to 445, 480, 690, 692)

Robert J. Gustafson, Ohio State University, OH [U]
Rep. American Society of Agricultural & Biological Engineers

Banks Hattaway, Hattaway Brothers, Inc., AL [IM]
Rep. Associated Builders & Contractors, Inc.

Barry N. Hornberger, PECO Energy Company, PA [UT]
Rep. Electric Light & Power Group/EEI

Kenneth Krastins, Plug Power, Inc., NY [M]
Rep. U.S. Fuel Cell Council
(VL to 690, 692, 705)

James S. Nasby, Master Control Systems, Inc., IL [M]
Rep. National Electrical Manufacturers Association

Steven H. Pasternack, Intertek Testing Services NA, Inc., NY [RT]

Elliot Rappaport, Electro Technology Consultants, Inc., FL [U]
Rep. Institute of Electrical & Electronics Engineers, Inc.

Duke W. Schamel, Electrical Service Solutions, Inc., CO [IM]
Rep. Independent Electrical Contractors, Inc.

Todd W. Stafford, National Joint Apprentice & Training Committee, TN [L]
Rep. International Brotherhood of Electrical Workers

Herbert V. Whittall, Electrical Generating Systems Association, FL [M]

Timothy P. Zgonena, Underwriters Laboratories Inc., IL [RT]

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(Alt. to B. N. Hornberger)

Ron B. Chilton, North Carolina Department of Insurance, NC [E]
(Alt. to T. L. Baker)

Larry D. Cogburn, Cogburn Bros, Inc., FL [IM]
(Alt. to T. H. Wood)

Brian L. Crise, NIETC, OR [L]
(Alt. to T. W. Stafford)

Steven J. Fredette, UTC Fuel Cells, LLC, CT [M]
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(Alt. to K. Krastins)

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Timothy D. Holleman, AC Corporation, NC [IM]
(Alt. to D. W. Schamel)

Robert Swayne, P2S Engineering, Inc., CA [U]
(Alt. to E. Rappaport)

Dale A. Triffo, Shell Oil Products U.S., TX [U]
(Alt. to D. L. L. Elkins)

Robert H. Wills, Intergrid, LLC, NH [U]
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(Alt. to W. I. Bower)

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David Mascarenhas, Canadian Standards Association, Canada [RT]

CODE-MAKING PANEL NO. 14

Articles 500, 501, 502, 503, 504, 505, 506, 510, 511, 513, 514, 515, 516

Donald Cook, *Chair*
Shelby County Development Services, AL [E]
Rep. International Association of Electrical Inspectors

Troy Beall, B & D Industries, Inc., NM [IM]
Rep. National Electrical Contractors Association

Marc J. Bernsen, IBEW Local Union 291, ID [L]
Rep. International Brotherhood of Electrical Workers

Edward M. Briesch, Underwriters Laboratories Inc., IL [RT]

James D. Cospolich, Waldemar S. Nelson & Company Inc., LA [U]
Rep. Institute of Electrical & Electronics Engineers, Inc.

Mark Goodman, Jacobs Engineering Group, CA [U]
Rep. American Petroleum Institute

Gregory D. Hall, Better-Way Electric, Inc., CO [IM]
Rep. Independent Electrical Contractors, Inc.

Joseph H. Kuczka, Killark Electric Manufacturing Company, MO [M]
Rep. National Electrical Manufacturers Association

William G. Lawrence, Jr., FM Global, MA [I]

L. Evans Massey, Rockwell Automation, SC [M]
Rep. Instrumentation, Systems, & Automation Society

Jeremy Neagle, Intertek ETL SEMKO, NY [RT]

Mike O'Meara, Arizona Public Service Company, AZ [UT]
Rep. Electric Light & Power Group/EEI

David B. Wechsler, The Dow Chemical Company, TX [U]
Rep. American Chemistry Council

Mark C. Wirfs, R & W Engineering, Inc., OR [U]
Rep. Grain Elevator and Processing Society

Alternates

Donald W. Ankele, Underwriters Laboratories Inc., IL [RT]
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A. W. Ballard, Crouse-Hinds, NY [M]
 (Alt. to J. H. Kuczka)
Mark W. Bonk, Cargill Incorporated, MN [U]
 (Alt. to M. C. Wirfs)
Dave Burns, Shell Exploration & Production Company, LA [U]
 (Alt. to M. Goodman)
Larry E. Fuhrman, City of Titusville, FL [E]
 (Alt. to D. Cook)
Richard A. Holub, E. I. DuPont de Nemours & Company, Inc., DE [U]
 (Alt. to D. B. Wechsler)
Nicholas P. Ludlam, FM Global, United Kingdom [I]
 (Alt. to W. G. Lawrence, Jr.)
Christopher P. O'Neil, NSTAR Electric & Gas Corporation, MA [UT]
 (Alt. to M. O'Meara)

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 (Alt. to L. E. Massey)
John L. Simmons, Florida East Coast JATC, FL [L]
 (Alt. to M. J. Bernsen)
Donald W. Zipse, Zipse Electrical Engineering Inc., PA [U]
 (Alt. to J. D. Cospolich)

Nonvoting

Timothy J. Pope, Canadian Standards Association, Canada [RT]
Eduardo N. Solano, Estudio Ingeniero Solano S.A., Argentina [SE]
Fred K. Walker, U.S. Department of the Air Force, FL [U]
 Rep. TC on Airport Facilities

CODE-MAKING PANEL NO. 15
Articles 517, 518, 520, 525, 530, 540

Donald J. Talka, *Chair*
 Underwriters Laboratories Inc., NY [RT]

James R. Duncan, Sparling Electrical Engineering & Technology Consulting, WA [U]
 Rep. Institute of Electrical & Electronics Engineers, Inc.
Ronald E. Duren, PacifiCorp, WA [UT]
 Rep. Electric Light & Power Group/EEI
Douglas S. Erickson, American Society for Healthcare Engineering, VI [U]
Mitchell K. Hefter, Entertainment Technology/Genlyte, TX [IM]
 Rep. Illuminating Engineering Society of North America
 (VL to 518, 520, 525, 530, 540)
Kim Jones, Funtastic Shows, OR [U]
 Rep. Outdoor Amusement Business Association, Inc.
 (VL to 525)
Edwin S. Kramer, Radio City Music Hall, NY [L]
 Rep. International Alliance of Theatrical Stage Employees
 (VL to 518, 520, 525, 530, 540)
Larry Lau, U.S. Department of Veterans Affairs, DC [U]
 (VL to 517, 518)
Dennis W. Marshall, TAG Electric Companies, TX [IM]
 Rep. Independent Electrical Contractors, Inc.
Eugene E. Morgan, County of Clackamas, Oregon, OR [E]
 Rep. International Association of Electrical Inspectors
Hugh O. Nash, Jr., Nash Lipsey Burch, LLC, TN [SE]
 Rep. TC on Electrical Systems
Bruce D. Shelly, Shelly Electric Company, Inc., PA [IM]
 Rep. National Electrical Contractors Association
Michael D. Skinner, CBS Studio Center, CA [U]
 Rep. Alliance of Motion Picture and Television Producers
 (VL to 518, 520, 525, 530, 540)

Kenneth E. Vannice, Leviton Manufacturing Company Inc., OR [M]
 Rep. U.S. Institute for Theatre Technology
 (VL to 518, 520, 525, 530, 540)
Michael Velvikis, High Voltage Maintenance Corporation, WI [IM]
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Andrew White, IBEW Local Union 3, NY [L]
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 (Alt. to J. R. Duncan)
Samuel B. Friedman, General Cable Corporation, RI [M]
 (Alt. to J. L. Wiseman)
Stephen M. Lipster, The Electrical Trades Center, OH [L]
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Joseph P. Murnane, Jr., Underwriters Laboratories Inc., NY [RT]
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Marcus R. Sampson, Minnesota Department of Labor & Industry, MN [E]
 (Alt. to E. E. Morgan)
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 (Alt. to D. W. Marshall)
Steven R. Terry, Electronic Theatre Controls Inc., NY [M]
 (VL to 518, 520, 525, 530, 540)
 (Alt. to K. E. Vannice)

CODE-MAKING PANEL NO. 16

Articles 770, 800, 810, 820, 830

S. D. Kahn, Chair

Tri-City Electric Company, Inc., CA [IM]
Rep. National Electrical Contractors Association

J. Robert Boyer, GE Infrastructure, Security, NJ [M]
Rep. National Electrical Manufacturers Association
James E. Brunssen, Telcordia, NJ [U]
Rep. Alliance for Telecommunications Industry Solutions
Larry Chan, City of New Orleans, LA [E]
Rep. International Association of Electrical Inspectors
Gerald Lee Dorna, Belden Wire & Cable, IN [M]
Rep. Insulated Cable Engineers Association Inc.
Roland W. Gubisch, Intertek Testing Services NA, Inc., MA [RT]
Robert L. Hughes, The DuPont Company, GA [U]
Rep. American Chemistry Council
Robert W. Jensen, dbi-Telecommunication Infrastructure Design, TX [M]
Rep. Building Industry Consulting Services International
Steven C. Johnson, Time Warner Cable, NC [UT]
Rep. National Cable & Telecommunications Association
Ronald G. Jones, Ronald G. Jones, P.E., TX [U]
Rep. Institute of Electrical & Electronics Engineers, Inc.
Harold C. Ohde, IBEW-NECA Technical Institute, IL [L]
Rep. International Brotherhood of Electrical Workers
Luigi G. Prezioso, M. C. Dean, Inc., VA [IM]
Rep. Independent Electrical Contractors, Inc.
James W. Romlein, MV Labs LLC, WI [M]
Rep. Telecommunications Industry Association
Susan L. Stene, Underwriters Laboratories Inc., CA [RT]

Kyle E. Todd, Entergy Corporation, TX [UT]
Rep. Electric Light & Power Group/EEL

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Terry C. Coleman, National Joint Apprentice & Training Committee, TN [L]
(Alt. to H. C. Ohde)
Timothy D. Cooke, Times Fiber Communications, Inc., VA [UT]
(Alt. to S. C. Johnson)
Bill Hopple, Tyco/SimplexGrinnell, CA [M]
(Alt. to J. R. Boyer)
Randolph J. Ivans, Underwriters Laboratories Inc., NY [RT]
(Alt. to S. L. Stene)
Stanley Kaufman, CableSafe, Inc./OFS, GA [M]
(Alt. to G. L. Dorna)
William J. McCoy, Verizon Wireless, TX [U]
(Alt. to R. G. Jones)
Robert P. McGann, City of Cambridge, MA [E]
(Alt. to L. Chan)
W. Douglas Pirkle, Pirkle Electric Company, Inc., GA [IM]
(Alt. to S. D. Kahn)
David B. Schrembeck, DBS Communications, Inc., OH [IM]
(Alt. to L. G. Prezioso)

CODE-MAKING PANEL NO. 17

Articles 422, 424, 426, 427, 680, 682

Don W. Jhonson, Chair

Interior Electric, Inc., FL [IM]
Rep. National Electrical Contractors Association

Thomas V. Blewitt, Underwriters Laboratories Inc., NY [RT]
Richard J. Cripps, Association of Home Appliance Manufacturers, VA [M]
(VL to 422, 424)
Paul Crivell, Camp, Dresser & McKee Inc., WA [U]
Rep. Institute of Electrical & Electronics Engineers, Inc.
Larry M. Eils, National Automatic Merchandising Association, IL [M]
(VL to 422)
Christopher S. Gill, New York Board of Fire Underwriters, NY [E]
Bruce R. Hirsch, Baltimore Gas & Electric Company, MD [UT]
Rep. Electric Light & Power Group/EEL
Robert M. Milatovich, Clark County Building Department, NV [E]
Rep. International Association of Electrical Inspectors
Jurgen Pannock, Whirlpool Corporation, TN [M]
Rep. Air-Conditioning and Refrigeration Institute
(VL to 422, 424)
Marcos Ramirez, Hatfield-Reynolds Electric company, AZ [IM]
Rep. Independent Electrical Contractors, Inc.
Brian E. Rock, Hubbell Incorporated, CT [M]
Rep. National Electrical Manufacturers Association

Kenneth M. Shell, Tyco Thermal Controls, CA [M]
Rep. Copper Development Association Inc.
(VL to 426, 427)
Ronald Sweigart, E.I. duPont de Nemours & Company, Inc., DE [U]
Rep. American Chemistry Council
(VL to 422, 424, 426, 427, 682)
Lee L. West, Balboa Instruments, Inc., CA [M]
Rep. National Spa and Pool Institute
(VL to 680)
Randy J. Yasenchak, IBEW Local Union 607, PA [L]
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Aaron B. Chase, Leviton Manufacturing Company, Inc., NY [M]
(Alt. to B. E. Rock)
James E. Maldonado, City of Tempe, AZ [E]
(Alt. to R. M. Milatovich)
Wayne E. Morris, Association of Home Appliance Manufacturers, DC [M]
(VL to 422, 424)
(Alt. to R. J. Cripps)
Brian Myers, IBEW Local Union 98, PA [L]
(Alt. to R. J. Yasenchak)

Ronald F. Schapp, Intertek Testing Services NA, Inc., OH [RT]
 (Voting Alt. to Intertek Rep.)
Gary L. Siggins, Underwriters Laboratories Inc., CA [RT]
 (Alt. to T. V. Blewitt)
Joel G. Solis, Air-Conditioning & Refrigeration Institute, VA [M]
 (VL to 422, 424)
 (Alt. to J. Pannock)

Robert E. Wisenburg, Coates Heater Company, Inc., WA [M]
 (VL to 680)
 (Alt. to Lee L. West)

Nonvoting

Andrew M. Trotta, U.S. Consumer Product Safety Commission, MD [C]
Douglas A. Lee, U.S. Consumer Product Safety Commission, MD [C]

CODE-MAKING PANEL NO. 18

Articles 406, 410, 411, 600, 605

Michael N. Ber, *Chair*
 IEC, Houston, TX [IM]
 Rep. Independent Electrical Contractors, Inc.

Charles L. Boynton, The DuPont Company, TX [U]
 Rep. American Chemistry Council
Frederick L. Carpenter, Lithonia Lighting, GA [M]
 Rep. National Electrical Manufacturers Association
Paul Costello, NECA and IBEW Local 90 JATC, CT [L]
 Rep. International Brotherhood of Electrical Workers
Kenneth F. Kempel, Underwriters Laboratories Inc., NC [RT]
Stephen G. Kieffer, Kieffer & Company, Inc., WI [M]
 Rep. International Sign Association
 (VL to 600)
Steven A. Larson, BWXT Y-12, LLC, TN [U]
 Rep. Institute of Electrical & Electronics Engineers, Inc.
Michael S. O'Boyle, Lightolier Division of Genlyte Group, MA [M]
 Rep. American Lighting Association
 (VL to 410, 411)
Timothy S. Owens, City of Santa Clara, CA [E]
 Rep. International Association of Electrical Inspectors
Jim F. Pierce, Intertek Testing Services NA, Inc., OR [RT]
Michael W. Smith, Schaeffer Electric Company, MO [IM]
 Rep. National Electrical Contractors Association
Sondra K. Todd, Westar Energy, Inc., KS [UT]
 Rep. Electric Light & Power Group/EEI
Jack Wells, Pass & Seymour/Legrand, NC [M]

Randall K. Wright, RKW Consulting, PA [SE]

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Robert T. Carlock, R. T. Carlock Company, TN [IM]
 (Alt. to M. N. Ber)
Melvyn J. Kochan, Young Electric Sign Company, NV [M]
 (VL to 600)
 (Alt. to S. G. Kieffer)
Charles S. Kurten, Underwriters Laboratories Inc., NY [RT]
 (Alt. to K. F. Kempel)
Amos D. Lowrance, Jr., City of Chattanooga, Tennessee, TN [E]
 (Alt. to T. S. Owens)
Terry K. McGowan, Lighting Ideas, Inc., OH [M]
 (VL to 410, 411)
 (Alt. to M. S. O'Boyle)
Ronald Michaelis, South Bend Vicinity Electrical JATC, IN [L]
 (Alt. to P. Costello)
Ronald Sweigart, E.I. duPont de Nemours & Company, Inc., DE [U]
 (Alt. to C. L. Boynton)

CODE-MAKING PANEL NO. 19

Articles 545, 547, 550, 551, 552, 553, 555, 604, 675, Annex D, Examples D11 and D12

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 San Diego Gas & Electric Company, CA [UT]
 Rep. Electric Light & Power Group/EEI

Barry Bauman, Alliant Energy, WI [U]
 Rep. American Society of Agricultural & Biological Engineers
William Bruce Bowman, Fox Systems, Inc., GA [IM]
 Rep. Independent Electrical Contractors, Inc.
Roger L. Carlson, Monaco Coach Corporation, IN [M]
 (VL to 550, 551, 552)
Monte R. Ewing, Wisconsin Department of Commerce, WI [E]
 Rep. International Association of Electrical Inspectors
James W. Finch, Kampgrounds of America, Inc., MT [U]
 (VL to 550, 551, 552, 555)
Bruce A. Hopkins, Recreation Vehicle Industry Association, VA [M]
 (VL to 550, 551, 552)

Thomas R. Lichtenstein, Underwriters Laboratories Inc., IL [RT]
Linda J. Little, IBEW Local 1 Electricians JATC, MO [L]
 Rep. International Brotherhood of Electrical Workers
Timothy P. McNeive, Thomas & Betts Corporation, TN [M]
 Rep. National Electrical Manufacturers Association
John Mikel, Skyline Corporation, IN [M]
 Rep. Manufactured Housing Institute
 (VL to 550, 551, 552)
Tug L. Miller, National Association of RV Parks & Campgrounds, CA [U]
 Rep. National Assn. of RV Parks & Campgrounds
 (VL to 550, 551, 552)
Kenneth Weakley, Mountain Electric, Inc., CA [IM]
 Rep. National Electrical Contractors Association

Michael L. Zieman, RADCO, CA [RT]
(VL to 545, 550, 551, 552)

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(Alt. to W. B. Bowman)

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(Alt. to B. A. Hopkins)

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(Alt. to J. Mikel)

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CODE-MAKING PANEL NO. 20
Articles 708 and Annexes F and G

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Rep. Alliance for Telecommunications Industry Solutions

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Wayne G. Carson, Carson Associates, Inc., VA [SE]

George R. Dauberger, Thomas & Betts Corporation, TN [M]

Palmer L. Hickman, National Joint Apprentice & Training Committee, MD [L]

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Rep. Independent Electrical Contractors, Inc.

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Wayne D. Moore, Hughes Associates, Inc., RI [SE]

Timothy S. Owens, City of Santa Clara, CA [E]

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Note: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the Committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on minimizing the risk of electricity as a source of electric shock and as a potential ignition source of fires and explosions. It shall also be responsible for text to minimize the propagation of fire and explosions due to electrical installations.

NFPA 70

National Electrical Code®

2008 Edition

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ARTICLE 90

Introduction

90.1 Purpose.

(A) **Practical Safeguarding.** The purpose of this *Code* is the practical safeguarding of persons and property from hazards arising from the use of electricity.

(B) **Adequacy.** This *Code* contains provisions that are considered necessary for safety. Compliance therewith and proper maintenance results in an installation that is essentially free from hazard but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use.

FPN: Hazards often occur because of overloading of wiring systems by methods or usage not in conformity with this *Code*. This occurs because initial wiring did not provide for increases in the use of electricity. An initial adequate installation and reasonable provisions for system changes provide for future increases in the use of electricity.

(C) **Intention.** This *Code* is not intended as a design specification or an instruction manual for untrained persons.

(D) **Relation to Other International Standards.** The requirements in this *Code* address the fundamental principles of protection for safety contained in Section 131 of International Electrotechnical Commission Standard 60364-1, *Electrical Installations of Buildings*.

FPN: IEC 60364-1, Section 131, contains fundamental principles of protection for safety that encompass protection against electric shock, protection against thermal effects, protection against overcurrent, protection against fault currents, and protection against overvoltage. All of these potential hazards are addressed by the requirements in this *Code*.

90.2 Scope.

(A) **Covered.** This *Code* covers the installation of electrical conductors, equipment, and raceways; signaling and

communications conductors, equipment, and raceways; and optical fiber cables and raceways for the following:

- (1) Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings
- (2) Yards, lots, parking lots, carnivals, and industrial substations
- (3) Installations of conductors and equipment that connect to the supply of electricity
- (4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control center.

(B) **Not Covered.** This *Code* does not cover the following:

- (1) Installations in ships, watercraft other than floating buildings, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles

FPN: Although the scope of this *Code* indicates that the *Code* does not cover installations in ships, portions of this *Code* are incorporated by reference into Title 46, *Code of Federal Regulations*, Parts 110–113.

- (2) Installations underground in mines and self-propelled mobile surface mining machinery and its attendant electrical trailing cable
- (3) Installations of railways for generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communications purposes
- (4) Installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations
- (5) Installations under the exclusive control of an electric utility where such installations
 - a. Consist of service drops or service laterals, and associated metering, or
 - b. Are located in legally established easements or rights-of-way designated by or recognized by public service commissions, utility commissions, or other regulatory agencies having jurisdiction for such installations, or
 - c. Are on property owned or leased by the electric utility for the purpose of communications, metering, generation, control, transformation, transmission, or distribution of electric energy.

FPN to (4) and (5): Examples of utilities may include those entities that are typically designated or recognized by governmental law or regulation by public service/utility commissions and that install, operate, and maintain electric supply (such as generation, transmission, or distribution systems) or communication systems (such as telephone, CATV, Internet, satellite, or