

EXHIBIT 16

ALABAMA BUILDING COMMISSION
ADMINISTRATIVE CODE

CHAPTER 170-X-2
ALABAMA STATE BUILDING CODE

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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

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Building Commission

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History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997.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History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997.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History: Repealed and Replaced: Filed August 29, 1997; effective October 3, 1997.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

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(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.

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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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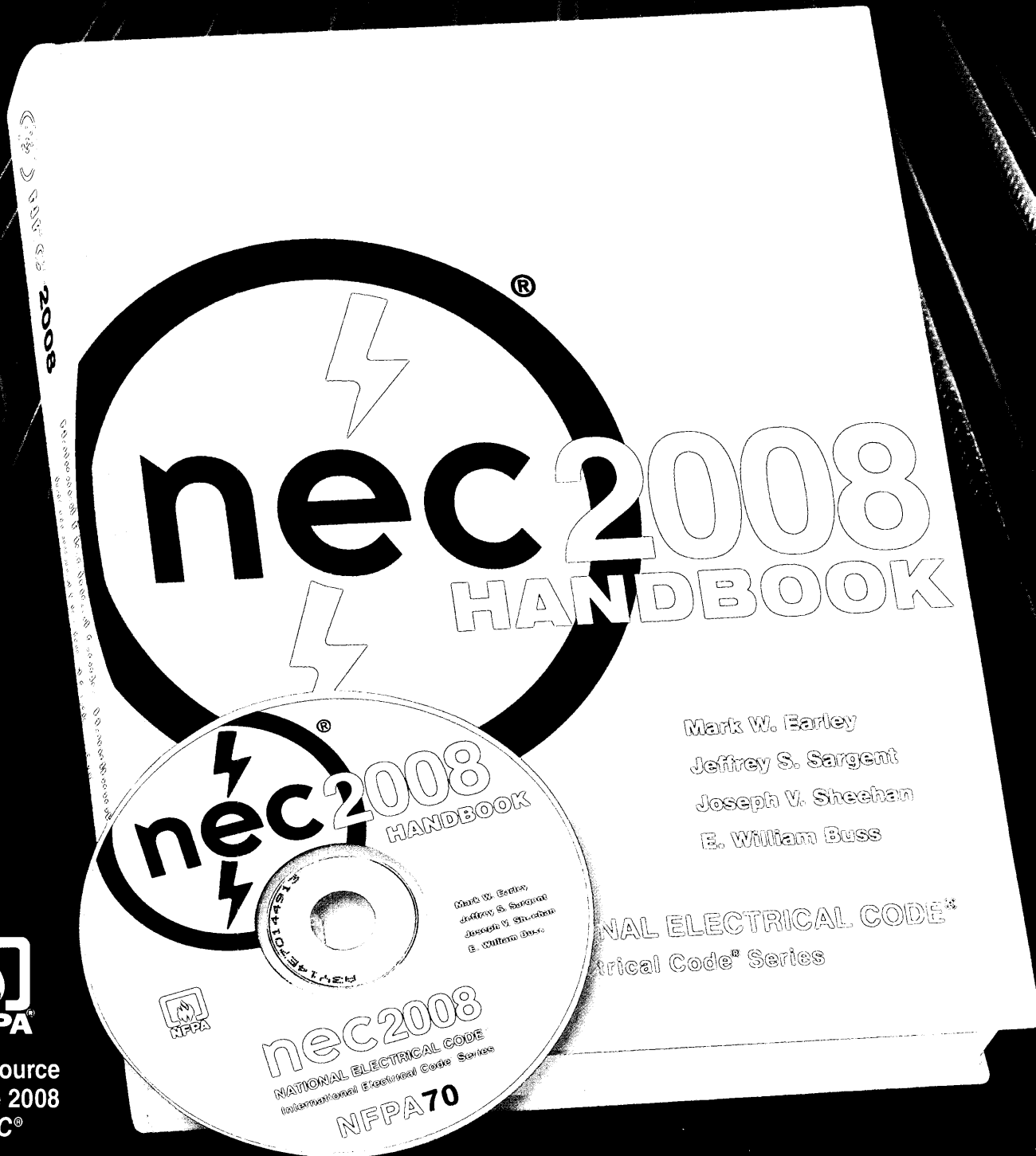
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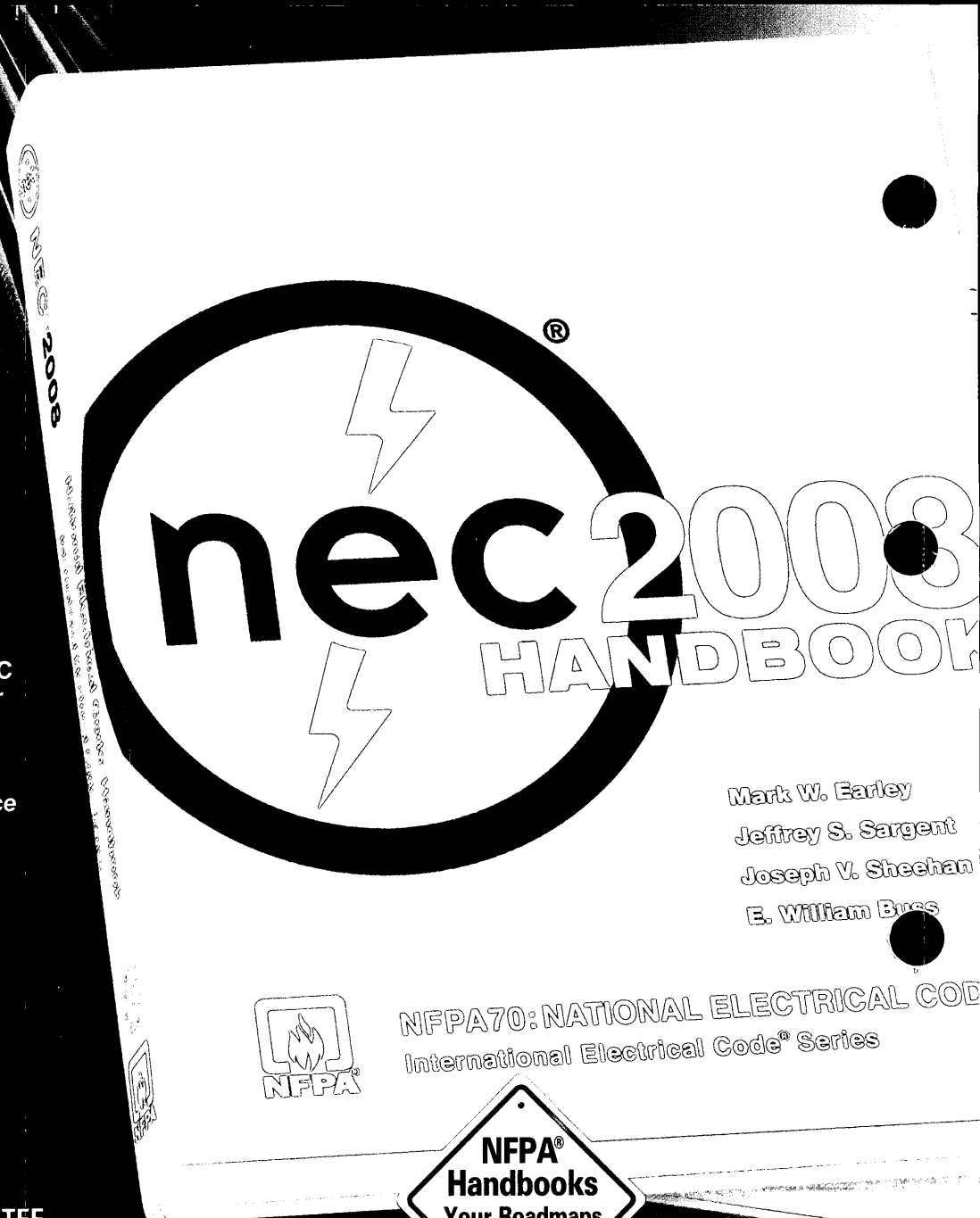


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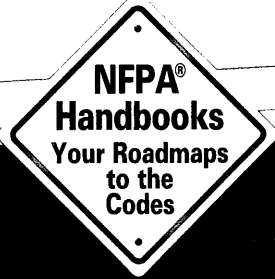
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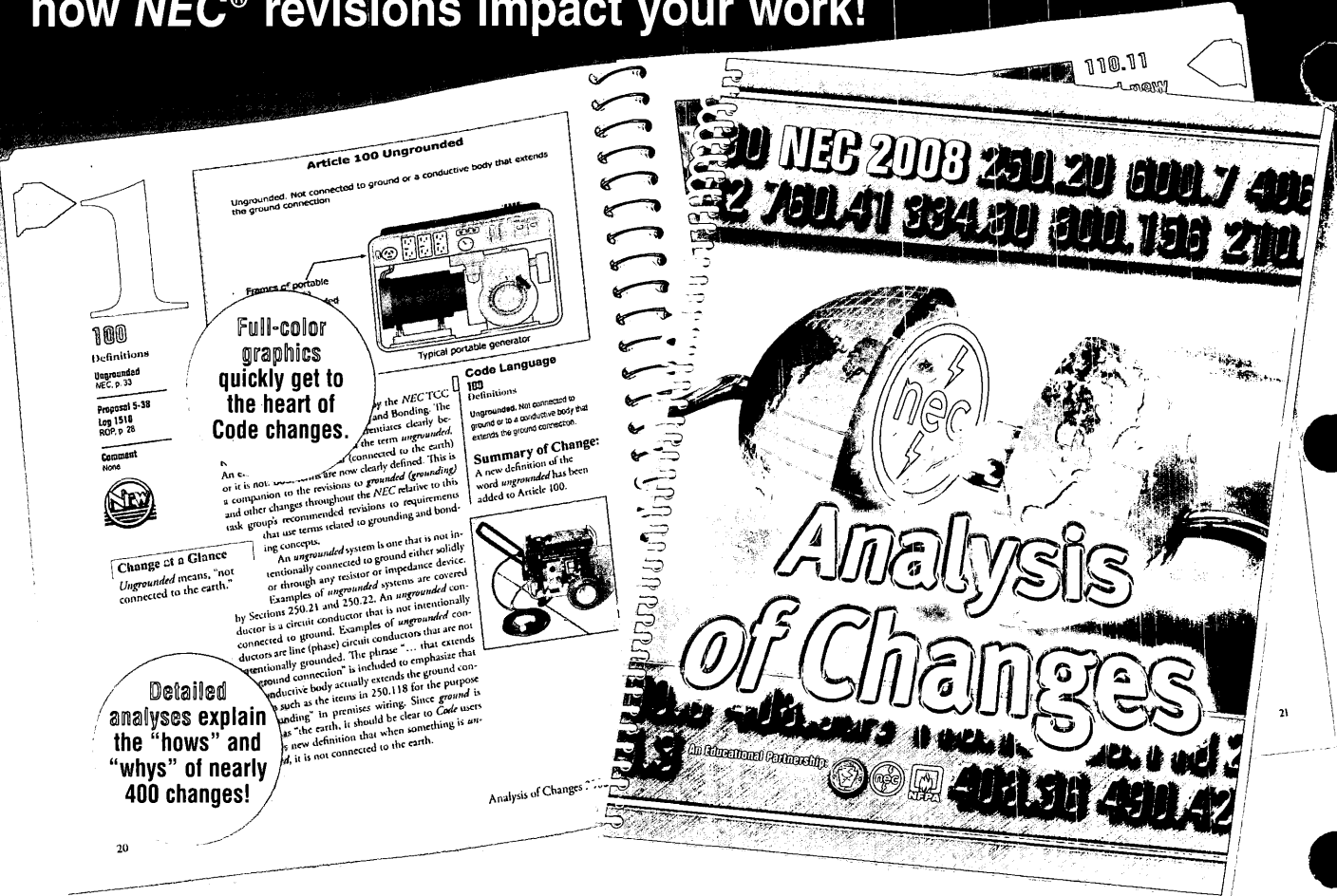
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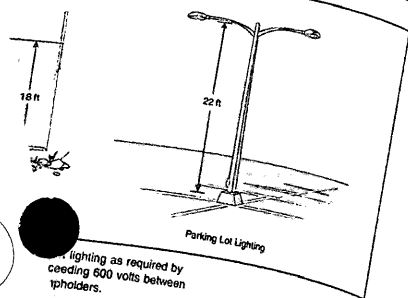
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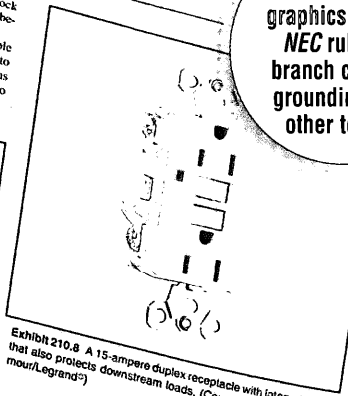
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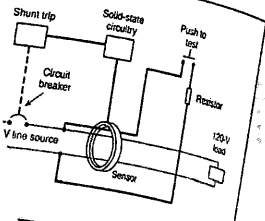
Article 210 — Branch Circuits

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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The main rule for GFCIs, other specifications require the use of GFCIs. These additional specific applications are listed in Commentary Table 210.1.

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 where a ground does not exist. Listing standards require trip levels of 5 mA (listing standards allow 6 mA. At trip levels of 5 mA the shock could be much higher, a shock of 5 mA could cause secondary accidents).

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

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 location. The basins are adjacent and in close proximity, then one receptacle outlet may satisfy the requirement, as shown in Exhibit 210.9 (top).

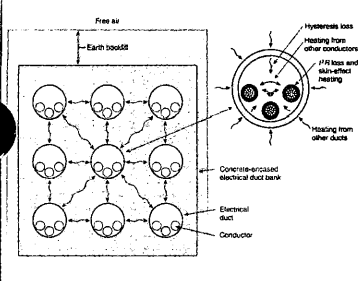
- (2) Garages, and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use

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.

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 1.8 m (6 ft) from one another.

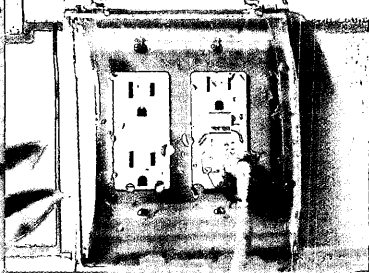
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Type MC (metal-clad) cable is rated and is listed in sizes 18 AWG and 1. AWG and larger for aluminum or copper. It employs thermoset or thermoplastic Composite electrical MC and optical cable by 770.9(C) and are marked by 770.2 for an example.

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



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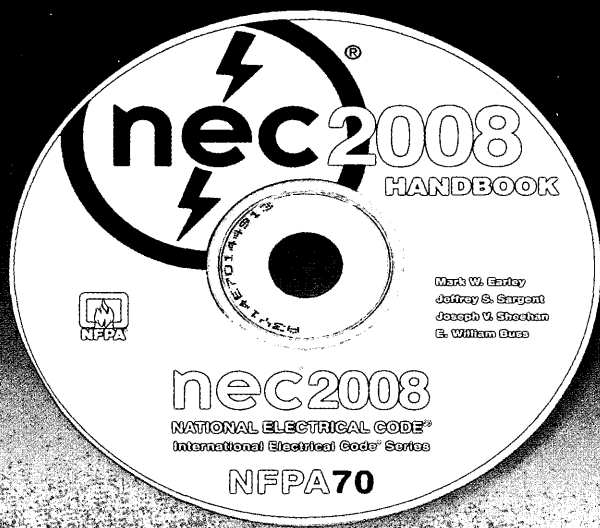
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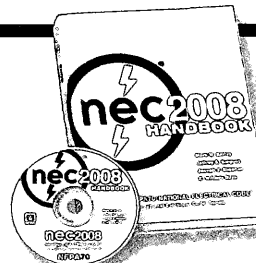
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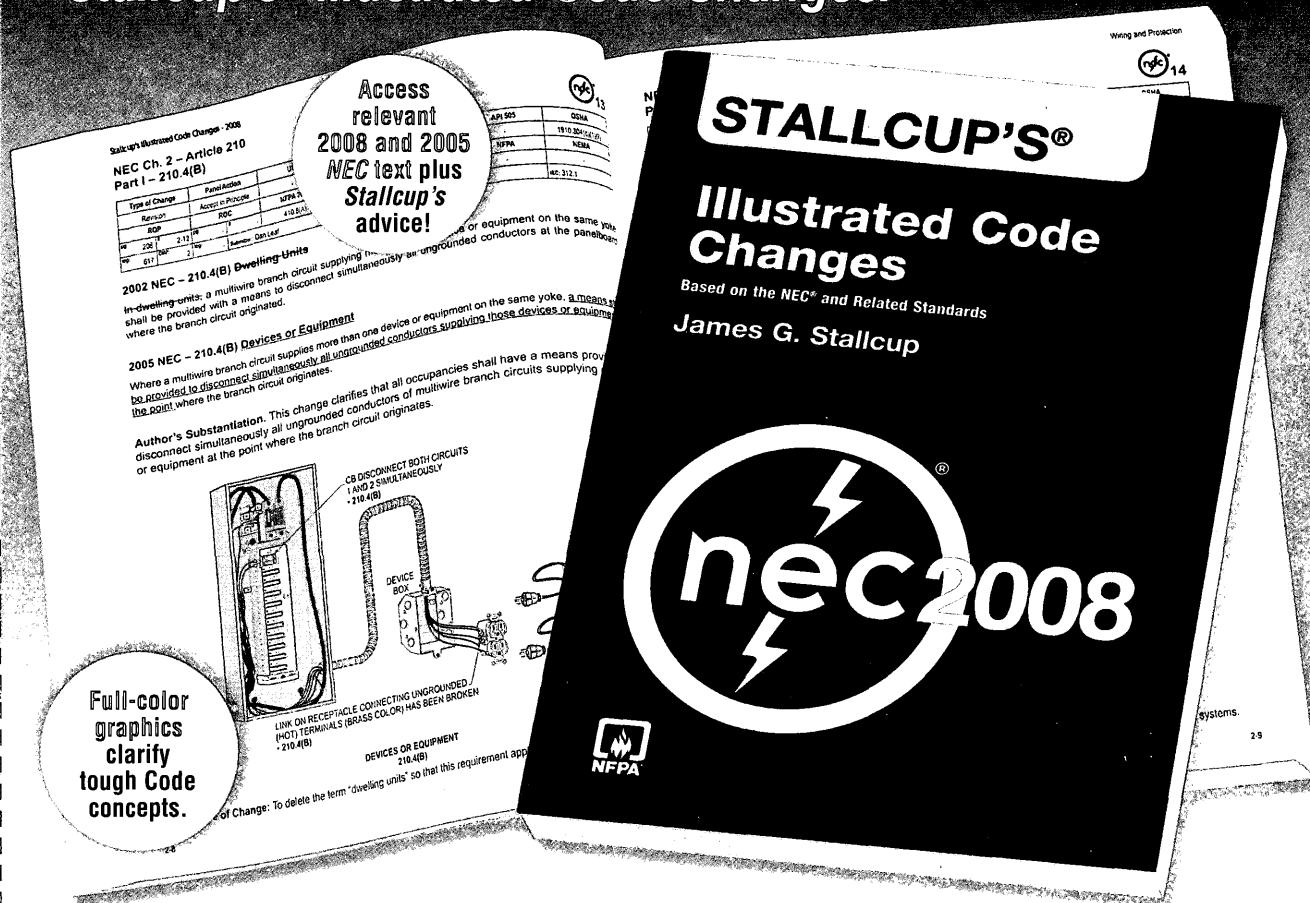
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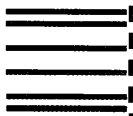
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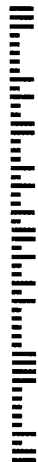
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This edition of NFPA 70, *National Electrical Code*, was prepared by the National Electrical Code Committee and acted on by NFPA at its June Association Technical Meeting held June 3–7, 2007, in Boston, MA. It was issued by the Standards Council on 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.

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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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(Member Emeritus)

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]

Alternates

Paul D. Barnhart, Underwriters Laboratories Inc., NC [RT]
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Daniel Batta, Jr., Constellation Power Source Generation, Inc., MD [UT]
(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]
(VL to 690, 692, 705)
(Alt. to K. Krastins)
John P. Goodsell, Hubbell Incorporated, CT [M]
(Alt. to J. S. Nasby)
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]
(VL to 690, 692, 705)
(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)
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(Alt. to W. G. Lawrence, Jr.)
Christopher P. O'Neil, NSTAR Electric & Gas Corporation, MA [UT]
(Alt. to M. O'Meara)

Ted H. Schnaare, Rosemount Incorporated, MN [M]
(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]
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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]
Rep. InterNational Electrical Testing Association
Andrew White, IBEW Local Union 3, NY [L]
Rep. International Brotherhood of Electrical Workers
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(Alt. to J. R. Duncan)
Samuel B. Friedman, General Cable Corporation, RI [M]
(Alt. to J. L. Wiseman)
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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]
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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]
Rep. International Brotherhood of Electrical Workers

Alternates

Dennis L. Baker, Springs & Sons Electrical Contractors Inc., AZ [IM]
(Alt. to M. Ramirez)
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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Steve Campolo, Leviton Manufacturing Company, Inc., NY [M]
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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

Leslie Sabin-Mercado, *Chair*
San Diego Gas & Electric Company, CA [UT]
Rep. Electric Light & Power Group/EEI

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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]
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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. Ziemán, RADCO, CA [RT]
(VL to 545, 550, 551, 552)

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David W. Johnson, CenTex IEC, TX [IM]
(Alt. to W. B. Bowman)

Kent Perkins, Recreation Vehicle Industry Association, VA
[M]
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(Alt. to B. A. Hopkins)

Michael J. Slifka, PFS Corporation, WI [M]
(VL to 550, 551, 552)
(Alt. to J. Mikel)

Raymond F. Tucker, Consulting Professional
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CODE-MAKING PANEL NO. 20
Articles 708 and Annexes F and G

Donald P. Bliss, *Chair*
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Rep. Independent Electrical Contractors, Inc.

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(Alt. to T. P. Zgonena)

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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