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NFPA 72®

National Fire Alarm and Signaling Code

2010 Edition

This edition of NFPA 72, *National Fire Alarm and Signaling Code*, was prepared by the Technical Committees on Signaling Systems for the Protection of Life and Property, Fundamentals of Fire Alarm Systems, Testing and Maintenance of Fire Alarm Systems, Initiating Devices for Fire Alarm Systems, Notification Appliances for Fire Alarm Systems, Protected Premises Fire Alarm Systems, Emergency Communication Systems, Supervising Station Fire Alarm Systems, Public Fire Reporting Systems, and Single- and Multiple-Station Alarms and Household Fire Alarm Systems and released by the Technical Correlating Committee on Signaling Systems for the Protection of Life and Property, and acted on by NFPA at its June Association Technical Meeting held June 8-11, 2009, in Chicago, IL. It was issued by the Standards Council on August 6, 2009, with an effective date of August 26, 2009, and supersedes all previous editions.

Tentative interim amendments (TIAs) to 3.3.141, 3.3.273, 12.2.4.2, 17.4.9, 17.7.5.5.8, 29.7.8.1.5, A.3.3.141, A.12.2.4, A.12.2.4.2, and A.29.7.8.1.5(1) were issued on August 6, 2009. For further information on tentative interim amendments, see Section 5 of the NFPA Regulations Governing Committee Projects available at: <http://www.nfpa.org/assets/files/PDF/CodesStandards/TIAErrataFI/TIAREgs.pdf>.

This edition of NFPA 72 was approved as an American National Standard on August 26, 2009.

Origin and Development of NFPA 72

The development of NFPA's signaling standards dates back to 1898 with the appointment of the Committee on Thermo-Electric Fire Alarms. The 1905 edition of NBFU 71A, *Rules and Requirements of the National Board of Fire Underwriters for the Construction, Installation, and Use of Signaling Systems Used for the Transmission of Signals Affecting the Fire Hazard as Recommended by the National Fire Protection Association*, and related documents dating back to 1903 were among the first of numerous signaling standards published in conjunction with the National Fire Protection Association. The descendants of these earlier standards have been consolidated into the *National Fire Alarm Code, NFPA 72*.

The first edition of the *National Fire Alarm Code*, published in 1993, was a consolidation of the 1989 edition of NFPA 71, *Standard for the Installation, Maintenance, and Use of Signaling Systems for Central Station Service*; the 1990 edition of NFPA 72, *Standard for the Installation, Maintenance, and Use of Protective Signaling Systems*; the 1990 edition of NFPA 72E, *Standard on Automatic Fire Detectors*; the 1989 edition of NFPA 72G, *Guide for the Installation, Maintenance, and Use of Notification Appliances for Protective Signaling Systems*; the 1988 edition of NFPA 72H, *Guide for Testing Procedures for Local, Auxiliary, Remote Station, and Proprietary Protective Signaling Systems*; and the 1989 edition of NFPA 74, *Standard for the Installation, Maintenance, and Use of Household Fire Warning Equipment*. Many of the requirements of these standards were identical or very similar. The recommendations that were taken from the guides (NFPA 72G and NFPA 72H) were changed to mandatory requirements.

The 1996 edition of *NFPA 72* incorporated many changes of a technical nature. These changes related to issues such as the Americans with Disabilities Act, software testing, fire modeling, and communications.

The 1999 edition represented a major change in code content and organization. The chapters were arranged to facilitate user friendliness and provide a logical structure. A new chapter on public fire reporting was added, and many technical revisions were made. Annex B (formerly Appendix B) was streamlined to facilitate ease of use, many unenforceable terms were removed, and Chapter 3 was reorganized to facilitate a more logical approach.

The 2002 edition reflected an extensive editorial revision of the Code to comply with the latest edition of the *Manual of Style for NFPA Technical Committee Documents*. These revisions included the addition of three administrative chapters at the beginning of the Code: "Administration," "Referenced Publications," and "Definitions." Eight technical chapters followed the administrative chapters in the same sequence as in the 1999 edition. Other editorial

revisions included the breakout of paragraphs with multiple requirements into individually numbered paragraphs for each requirement, the minimization of use of exceptions, the use of consistent headings for sections and section subdivisions, and reorganization to limit paragraph numbering to six digits.

The 2002 edition contained a number of technical revisions throughout the Code. These included a major revision of the power supply requirements; a new requirement addressing impairments to fire alarm systems; additional requirements concerning the review and approval of performance-based detection system designs; revision of the rules for system survivability from attack by fire; the introduction of rules for an alternate approach for audible signaling; the addition of requirements to address performance-based designs for visible signaling; the relocation of testing and maintenance requirements for single- and multiple-station alarms and household fire alarm systems to the testing and maintenance chapter; and revisions to re-establish the prescriptive rules for household fire-warning equipment from the 1996 edition of the Code.

The 2007 edition contained a number of technical revisions including many to accommodate new technology and to take advantage of new research. Changes were made to better address the integration of mass notification systems and other systems with fire alarm systems. Revisions were also made in several areas of the Code for clarity and to enhance its usability.

Some of the more significant revisions in the 2007 edition addressed protection of fire alarm control units, personnel qualification, heat detector response time, smoke detector spacing, smoke detection in ducts, detectors that use multiple sensing inputs, video image smoke and flame detection, synchronization of visible notification appliances, exit marking audible notification appliances, tactile notification appliances, different types of protected premises fire alarm system, and in-building enhancement systems for firefighter radio communications.

The 2007 edition also included significant changes to the requirements for smoke alarms in residential applications included revisions to require the interconnection of smoke alarms for existing occupancies, revisions to require additional smoke alarms for larger dwelling units, and revisions to allow voice messages to be included as a part of the smoke alarm notification signal.

Revisions in the 2007 edition to enhance and clarify the Code included those that address suppression system inputs to the fire alarm system, emergency/voice alarm communications systems, fire alarm system interface with elevator systems, and the means to indicate central station service. In addition, a complete revision of the Record of Completion Form along with examples of filled-out forms were provided.

The 2007 edition also included the addition of two new annexes — one to provide guidance for the design of mass notification systems and one to replace previous annex material for the design of fire service interfaces with a separate industry standard.

The 2010 edition of the Code presents a major change in the scope and organization of the document. This is reflected in the new title, *National Fire Alarm and Signaling Code*. The broader scope of the Code includes emergency communications systems in addition to the traditional scope of fire alarm systems. A new chapter on emergency communications systems (ECS) has been added to provide requirements for a variety of systems used for communication of information in various emergency situations. The ECS chapter includes new systems such as in-building mass notification systems, wide-area mass notification systems, distributed recipient mass notifications systems, two-way radio communications enhancement system, and area of refuge emergency communications systems. The ECS chapter also includes two systems formerly located in the chapter on protected premises fire alarm systems: (in-building fire) emergency voice/alarm communications systems, and two-way in-building wired (telephone) emergency services communication systems.

Two other new chapters have also been added in the 2010 edition. The new chapter on circuits and pathways includes requirements and information formerly from the chapters on fundamentals of fire alarm systems and from the chapter on protected premises fire alarm systems. This new chapter provides circuit and pathway performance (class) designations and pathway survivability level designations as well as general wiring requirements presented in a format that will allow use by any type of system covered in the Code. The new chapter on emergency control functions and interfaces includes requirements and information formerly contained in the chapter of protected premises fire alarm systems. In this chapter the term “fire safety function” has generally been replaced with the term “emergency control function” to reflect the potentially broader application beyond just fire alarm systems. This new chapter also includes new provisions for first-responder-use elevators and elevators for occupant controlled evacuation.

The 2010 edition has been substantially reorganized to accommodate the new chapters in a logical order with reserved chapter numbers included to minimize the potential for further renumbering in the future. The overall organization includes administrative chapters, support chapters, and system chapters as well as numerous annexes for usability.

Significant revisions have also been made throughout the 2010 edition to reflect the broader application of the Code to emergency communication systems. These include revisions within the chapter on fundamentals to address power supply requirements, signal priorities, signal distinction and documentation requirements; revisions to the protected premises chapter to better accommodate non-fire alarm systems in combination systems; revisions to the supervising stations chapter and public emergency reporting system chapter to allow their use for emergency communications systems; and revisions to the testing and maintenance chapter to incorporate requirements for the inspection, testing, and maintenance of mass notification systems and two-way radio communications enhancement systems.

In addition to the content of the new chapters, the 2010 edition includes significant technical changes. These include new requirements for signaling to the deaf and hard of hearing, new requirements and guidance for the



design, installation, and testing of voice communications systems to ensure voice intelligibility, and extensive revision of requirements for the installation of smoke detectors in both level and sloped joist and beam ceiling applications.

Revisions to the supervising station chapter in the 2010 edition include the retirement of four legacy transmission technologies no longer being installed: active multiplex transmission systems, McCulloh systems, directly connected noncoded systems, and private microwave systems. The subsection on “Other Transmission Technologies” has been relocated to become the default subsection for supervising stations communications methods.

Modifications in the 2010 edition to the chapter on single- and multiple-station alarms and household fire alarms systems include new provisions to address the interconnection of smoke alarms using wireless technology, new provisions for signaling to those with hearing loss, and new requirements and guidance for the placement of smoke alarms and smoke detectors.

The 2010 edition includes two new guidance annexes, Annex C on system performance and design, and Annex D on speech intelligibility.

Prior editions of this document have been translated into languages other than English, including Spanish.

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Committee Scope: This Committee shall have primary responsibility for documents on the installation, performance, maintenance, testing, and use of signaling components and signaling systems for the protection of life and property.



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Rep. National Assn. of Fire Equipment Distributors
Maurice Marvi, HSB Professional Loss Control, NJ [I]
Jack McNamara, Bosch Security Systems, NY [M]
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Rep. U.S. Naval Historical Center
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Committee Scope: This Committee shall have primary responsibility for documents on common system fundamentals for signaling systems, including definitions, requirements for approvals, installation, service, power supplies, equipment locations, compatibility, and system interfaces.

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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 and requirements for the proper inspection, testing, and maintenance of fire alarm and emergency communications systems, interface equipment, connected emergency control functions, and the signaling system's associated components, for both new and existing systems.



Technical Committee on Initiating Devices for Fire Alarm Systems (SIG-IDS) (Chapter 17 and Annex B)

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Assn.
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Lynn Nielson, City of Henderson, NV [E]
Daniel J. O'Connor, Schirmer Engineering Corporation,
IL [I]
Ronald D. Ouimette, Siemens Building Technologies,
Inc., NJ [M]
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James C. Roberts, North Carolina Department of
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David L. Royse, Potter Electric Signal Company, MO [M]
James R. Schario, Electrical Industry Training Center
(IBEW/NECA), MO [L]
Rep. International Brotherhood of Electrical Workers
Michael D. Sides, XL Global Asset Protection Services,
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Mark Swerdin, Zurich North America, NY [I]
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(Alt. to L. L. Leimer)
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(Alt. to M. H. Reiss)
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CA [SE]
(Alt. to R. A. Hall)
Scott M. Golly, Hughes Associates, Inc., MD [SE]
(Alt. to L. J. Wenzel)
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Lee F. Richardson, NFPA Staff Liaison

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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 the installation and operation of initiating devices for signaling systems.

Technical Committee on Notification Appliances for Fire Alarm Systems (SIG-NAS) (Chapter 18 and Annex E)

Raymond A. Grill, *Chair*
Arup Fire, DC [SE]

David O. Lowrey, *Secretary*
City of Boulder Fire Rescue, CO [E]

Joe Achak, Fire Sentry Corporation, CA [M]
Rep. Fire Suppression Systems Association
David E. Becker, Fire Equipment Service Company,
KY [IM]
Rep. National Assn. of Fire Equipment Distributors
Robert F. Bitter, Honeywell Inc., MO [M]
Thomas Carrie, Jr., Schirmer Engineering Corporation,
IL [I]
Daniel M. Grosch, Underwriters Laboratories Inc., IL [RT]
Jeffrey M. Klein, System Sensor, IL [M]
Rep. Automatic Fire Alarm Association, Inc.
Neal W. Krantz, Krantz Systems & Associates, LLC, MI [IM]
Rep. NFPA Industrial Fire Protection Section

Warren E. Olsen, Fire Safety Consultants, Inc., IL [E]
Rep. Illinois Fire Inspectors Association
Maurice M. Pilette, Mechanical Designs Ltd., MA [SE]
Jack Poole, Poole Fire Protection, Inc., KS [SE]
Sam P. Salwan, Environmental Systems Design, Inc.,
IL [SE]
Robert P. Schifiliti, R. P. Schifiliti Associates, Inc., MA [SE]
Daniel L. Seibel, Wolverine Fire Protection Company, MI
[IM]
Morris L. Stoops, GE Security, KS [M]
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Corporation, GA [I]
(Alt. to T. Carrie, Jr.)
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James Mongeau, Space Age Electronics, Inc., MA [M]
(Alt. to J. M. Klein)

Alan D. Moors, Siemens Building Technologies, Inc.,
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(Alt. to P. R. Strelecki)
David Newhouse, Gentex Corporation, MI [M]
(Voting Alt. to NEMA Rep.)
Robert M. Pikula, Reliable Fire Equipment Company,
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Lee F. Richardson, NFPA Staff Liaison

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Committee Scope: This Committee shall have primary responsibility for documents on the installation and operation of notification appliances for signaling systems.

Technical Committee on Protected Premises Fire Alarm Systems (SIG-PRO) (Chapters 12, 21, 23 and Annex C)

J. Jeffrey Moore, *Chair*
Hughes Associates, Inc., OH [SE]

Scott Barrett, World Electronics, Inc., FL [M]
James G. Bisker, U.S. Department of Energy, DC [U]
David J. Burkhardt, Code Consultants, Inc., MO [SE]
Anthony J. Capowski, Tyco/SimplexGrinnell, MA [M]
Harry M. Corson, IV, Siemens Fire Safety, NJ [M]
John Craig, Jr., Safety Systems, Inc., MI [IM]
Paul F. Crowley, FM Approvals, MA [I]
Keith W. Dix, West Metro Fire Department, CO [E]
Joshua W. Elvove, U.S. General Services Administration, CO [U]
Thomas P. Hammerberg, Automatic Fire Alarm Association, Inc., GA [M]
Scott D. Harris, AFA Protective Systems, Inc., NY [IM]
Mark D. Hayes, Schirmer Engineering Corporation, TX [I]
Daniel J. Horon, CADgraphics, Incorporated, MN [M]
Vic Humm, Vic Humm & Associates, TN [SE]
Jim R. Kern, Kern Technical Services, TN [SE]
Thomas E. Kuhta, Willis Corporation, NJ [I]
Peter Leszczak, U.S. Department of Veterans Affairs, CT [U]

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Scott T. Martorano, The Viking Corporation, MI [M]
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Jebediah J. Novak, Cedar Rapids Electrical JATC, IA [L]
 Rep. International Brotherhood of Electrical Workers
John R. Olenick, Vector Security Inc., MD [IM]
 Rep. Central Station Alarm Association
Harris M. Oliff, Security and Fire Enterprises, Inc., CA [IM]
 Rep. California Automatic Fire Alarm Association Inc.
Kurt A. Ruchala, FIREPRO Incorporated, MA [SE]
Yogesh B. Shah, Honeywell Life Safety/Notifier, CT [M]
 Rep. Fire Suppression Systems Association
Lawrence J. Shudak, Underwriters Laboratories Inc., IL [RT]
Ralph E. Transue, The RJA Group, Inc., IL [SE]
Bogue M. Waller, Nash Lipsey Burch, LLC, TN [U]
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Fred J. Wenzel, Jr., XL Global Asset Protection Services, TX [I]
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 (Alt. to J. R. Kern)
Gary Girouard, Tyco/SimplexGrinnell, MA [M]
 (Alt. to A. J. Capowski)
Jacob P. Hemke, Code Consultants, Inc., MO [SE]
 (Alt. to D. J. Burkhardt)
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 (Alt. to L. J. Shudak)
Peter A. Larrimer, U.S. Department of Veterans Affairs, PA [U]
 (Alt. to P. Leszczak)

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 (Alt. to M. D. Hayes)
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 (Alt. to R. E. Transue)
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 (Alt. to J. J. Moore)
Joseph Ranaudo, AFA Protective Systems, Inc., NY [IM]
 (Alt. to S. D. Harris)
Scott F. Ruland, Fike Corporation, MO [M]
 (Alt. to Y. B. Shah)
Donald Struck, Siemens Fire Safety, NJ [M]
 (Alt. to H. M. Corson, IV)
Jeffery G. Van Keuren, GE Security, FL [M]
 (Alt. to T. P. Hammerberg)
Frank L. Van Overmeiren, FP&C Consultants, Inc., IN [SE]
 (Alt. to V. Humm)

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Lee F. Richardson, NFPA Staff Liaison

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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 the installation and operation of protected premises signaling systems, including their interconnection with initiating devices, notification appliances, and other related building control equipment, within the protected premises.

Technical Committee on Emergency Communications Systems (SIG-ECS) (Chapter 24)

Wayne D. Moore, *Chair*
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Steven D. Admire, Communication Concepts, TX [IM]
Christopher Afuwah, Fire Department City of New York, NY [E]
Oded Aron, Port Authority of New York & New Jersey, NJ [U]
Peter Binkley, Evax Systems, Inc., CT [M]
Daniel Bridgett, U.S. Department of the Navy, CA [E]
Whit Chaibabhat, Georgetown University, MD [U]
Thomas M. Chambers, Vector Security Inc., PA [IM]
Rep. Central Station Alarm Association
Joe L. Collins, Dallas/Fort Worth International Airport, TX [U]
Joseph Dafin, U.S. General Services Administration, DC [U]
John Dorney, Acoustic Technology, Inc., MA [M]
John C. Fannin, III, SafePlace Corporation, DE [U]
Bruce Fraser, Fraser Fire Protection Services, MA [SE]
John S. Fuoto, AMEC Earth and Environmental, Inc., VA [SE]
Charles E. Hahl, The Protection Engineering Group, Inc., VA [SE]

Raymond N. Hansen, U.S. Department of the Air Force, FL [U]
Waymon Jackson, University of Texas at Austin, TX [U]
Scott Lacey, Lacey Fire Protection Engineering, AR [SE]
Robert J. Libby, The RJA Group, Inc., MD [SE]
Derek D. Mathews, Underwriters Laboratories Inc., IL [RT]
Daniel L. Meneguini, State of Wisconsin, WI [E]
James Mongeau, Space Age Electronics, Inc., MA [M]
Rep. Automatic Fire Alarm Association, Inc.
Scott Pelletreau, Fire Safety Consultants Inc., IL [E]
Rep. Illinois Fire Inspectors Association
Joseph Ranaudo, AFA Protective Systems, Inc., NY [IM]
Rodger Reiswig, SimplexGrinnell, FL [M]
Sean C. Remke, FP&C Consultants, Inc., IN [SE]
Jason R. Scott, U.S. Army Garrison, AL [U]
James P. Simpson, National Joint Apprentice & Training Committee, MN [L]
Rep. International Brotherhood of Electrical Workers
Andrew B. Woodward, Arup, MA [SE]

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Laura E. Doyle, U.S. General Services Administration, DC [U]
(Alt. to J. Dafin)
Jeffrey T. Dudley, U.S. Department of the Air Force, VA [U]
(Alt. to R. N. Hansen)
Raymond A. Grill, Arup Fire, DC [SE]
(Alt. to A. B. Woodward)
J. Jeffrey Moore, Hughes Associates, Inc., OH [SE]
(Alt. to W. D. Moore)
Denise L. Pappas, Valcom, Inc., VA [M]
Lee F. Richardson, NFPA Staff Liaison

(Voting Alt. to NEMA Rep.)
Thomas J. Parrish, Telgian, AZ [IM]
(Alt. to S. D. Admire)
Todd C. Shearer, Tyco/SimplexGrinnell, NJ [M]
(Alt. to R. Reiswig)
Joseph M. Swiderski, III, The RJA Group Inc., IL [SE]
(Alt. to R. J. Libby)
Jack Taddeo, Fire Department City of New York, NY [E]
(Alt. to C. Afuwah)
Larry D. Watson, American Professional Services, Inc., OK [IM]
(Alt. to T. M. Chambers)

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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 the risk analysis, design, application, installation, and performance of emergency communications systems and their components. Public emergency services communications systems covered by NFPA 1221 are outside the scope of this committee except where they interface with in-building bi-directional amplifiers and where trouble and supervisory signals are intended to be monitored by the building fire alarm system.



Technical Committee on Supervising Station Fire Alarm Systems (SIG-SSS) (Chapter 26)

Art Black, *Chair*

Carmel Fire Dept/Carmel Fire Prot Assoc., CA [E]

Geoffrey Aus, Menlo Park Fire Protection District, CA [E]
Robert Bitton, Supreme Security Systems, Inc., NJ [IM]
 Rep. Central Station Alarm Association
Edward R. Bonifas, Alarm Detection Systems, Inc., IL [IM]
J. Robert Boyer, GE Security, NJ [M]
 Rep. National Electrical Manufacturers Association
Thomas C. Brown, The RJA Group, Inc., MD [SE]
Robert F. Buckley, Signal Communications Corporation,
 MA [M]
Paul M. Carroll, Central Signal Corporation, MA [M]
 Rep. Automatic Fire Alarm Association, Inc.
Scot Colby, Bayou Security Systems, Inc., LA [IM]
 Rep. National Burglar & Fire Alarm Association
E. Tom Duckworth, Insurance Services Office, Inc., TX [I]
Patrick M. Egan, Select Security, PA [IM]
Bob Elliott, FM Approvals, MA [I]
Louis T. Fiore, L. T. Fiore, Inc., NJ [SE]

Harvey M. Fox, Keltron Corporation, MA [M]
Robert Gillespie, Jr., Thompsonville Fire Department,
 CT [U]
 Rep. International Municipal Signal Association
Richard Kleinman, AFA Protective Systems Inc., NY [IM]
Gene Monaco, Monaco Enterprises, Inc., WA [M]
Anthony Mucci, Tyco/ADT Security Services, Inc., FL [M]
Donald C. Pannell, City of Memphis, TN [E]
Isaac I. Papier, Honeywell, Inc., IL [M]
Jeffrey R. Roberts, XL Global Asset Protection Services,
 MS [I]
Steven A. Schmit, Underwriters Laboratories Inc., IL [RT]
Robert V. Scholes, Fireman's Fund Insurance Company,
 CA [I]
James H. Smith, James H. Smith Consulting, Inc., TX [SE]
Sean P. Titus, Fike Corporation, MO [M]
 Rep. Fire Suppression Systems Association

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 (Alt. to B. Elliott)
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 (Alt. to T. C. Brown)
Derek D. Mathews, Underwriters Laboratories Inc., IL [RT]
 (Alt. to S. A. Schmit)

Charlie G. McDaniel, XL Global Asset Protection
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 (Alt. to R. Bitton)
Rodger Reiswig, SimplexGrinnell, FL [M]
 (Alt. to A. Mucci)
Frank J. Tokarz, Monaco Enterprises, Inc., WA [M]
 (Alt. to G. Monaco)
Richard E. Vinciguerra, City of Malden Fire Department,
 NH [U]
 (Alt. to R. Gillespie, Jr.)

Lee F. Richardson, NFPA Staff Liaison

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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 the installation and operation of off-premises signaling systems, including the signal-receiving facility and the communications between the protected premises and the off-premises signal-receiving facility.

Technical Committee on Public Fire Reporting Systems (SIG-PRS) (Chapter 27)

Jeffrey G. Knight, *Chair*
City of Newton Fire Department, MA [U]
Rep. International Municipal Signal Association

Douglas M. Aiken, Lakes Region Mutual Fire Aid, NH [E]
R. Bruce Allen, R. B. Allen Company, Inc., NH [IM]
William Ambrefe, City of Beverly, MA [E]
Robert J. Campbell, Braintree, MA [SE]
Daniel R. Dinwiddie, L W Bills Company, MA [M]
Sidney M. Earley, TLC Systems, MA [IM]
Emerson B. Fisher, King-Fisher Company, IL [M]
John K. Guhl, California State Fire Marshal, CA [E]
Rep. International Association of Fire Chiefs
Paul T. Kahle, Code Consultants, Inc., MO [SE]
Robert E. Lapham, Signal Communications Corporation, MA [M]

Robert Malanga, Fire and Risk Engineering, NJ [SE]
Rep. Fairmount Fire Company No. 1
Leo F. Martin, Jr., Martin Electrical Code Consultants, MA [SE]
Max McLeod, Siemens Building Technologies, Inc., AL [M]
Robert E. Myers, East Coast Fire Protection, VA [IM]
Isa Y. Saah, The Protection Engineering Group, PC, VA [SE]
Frank J. Tokarz, Monaco Enterprises, Inc., WA [M]

Alternates

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(Alt. to P. T. Kahle)
Charles E. Hahl, The Protection Engineering Group, Inc., VA [SE]
(Alt. to I. Y. Saah)

Nathaniel M. Johnson, City of Laconia Fire Department, NH [U]
(Alt. to J. G. Knight)
Gene Monaco, Monaco Enterprises, Inc., WA [M]
(Alt. to F. J. Tokarz)

Lee F. Richardson, NFPA Staff Liaison

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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 the proper configuration, performance, installation, and operation of public emergency alarm reporting systems and auxiliary alarm systems. The Committee scope shall include systems that use a communication infrastructure that is publicly owned, operated, and controlled. Reporting of alarms by voice over the public switched telephone network utilizing the Universal Emergency Number 9-1-1, or any other telephone number that can be dialed, is outside the scope of this committee.



Technical Committee on Single- and Multiple-Station Alarms and Household Fire Alarm Systems (SIG-HOU) (Chapter 29)

Daniel T. Gottuk, *Chair*
Hughes Associates, Inc., MD [SE]

Bradley B. Barnes, GE Security, OR [M]
Rep. National Electrical Manufacturers Association
H. Wayne Boyd, U.S. Safety & Engineering Corporation,
CA [M]
Rep. California Automatic Fire Alarm Association Inc.
Dan Cantrell, Brink's Home Security, TX [IM]
Melissa K. Chernovsky, Exponent, Inc., MD [SE]
David E. Christian, Gentex Corporation, MI [M]
Rep. Automatic Fire Alarm Association, Inc.
Thomas G. Cleary, U.S. National Institute of Standards
& Technology, MD [RT]
James J. Convery, Schirmer Engineering Corporation,
NY [I]
Laurence J. Dallaire, Code Consultants, Inc., NY [SE]
Darrell Dantzler, U.S. Department of State, MD [U]
Edward M. Fraczkowski, EBL Engineers, LLC, MD [SE]
Robert B. Fuller, Fire Code Analysts, Inc., CA [C]

John Knecht, Intertek Testing Services NA, Inc., IL [RT]
Anna Kryagin, Port Authority of New York & New Jersey,
NJ [U]
Joseph L. Lynch, III, City of Irondale Fire Department,
AL [E]
Jeffrey L. Okun, Nuko Security, Inc., LA [IM]
Stephen M. Olenick, Combustion Science
& Engineering, Inc., MD [SE]
Steven Orlowski, National Association of Home Builders,
DC [U]
John L. Parssinen, Underwriters Laboratories Inc., IL
[RT]
Forrest J. Pecht, U.S. Access Board, DC [C]
Larry Ratzlaff, Kidde Safety, IL [M]
Michael L. Savage, Sr., Middle Department Inspection
Agency, Inc., MD [E]
Richard M. Simpson, Vector Security Inc., PA [IM]
Rep. Central Station Alarm Association

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Lawrence Brown, National Association of Home Builders,
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(Alt. to S. Orlowski)
Manuelita E. David, Schirmer Engineering Corporation,
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(Alt. to J. J. Convery)
Wendy B. Gifford, United Technologies Corporation
(UTC), IL [M]
(Alt. to L. Ratzlaff)

Jeffery P. McBride, EBL Engineers, LLC, MD [SE]
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Paul E. Patty, Underwriters Laboratories Inc., IL [RT]
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Rick D. Sheets, Brink's Home Security, TX [IM]
(Alt. to D. Cantrell)
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Arthur S. Lee, U.S. Consumer Product Safety
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Lee F. Richardson, NFPA Staff Liaison

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Committee Scope: This Committee shall have primary responsibility for documents on the performance, installation, operation, and use of single- and multiple-station alarms and household alarm systems for fire warning.

Contents

Chapter 1 Administration	72- 17	Chapter 11 Reserved	72- 53
1.1 Scope	72- 17	Chapter 12 Circuits and Pathways	72- 53
1.2 Purpose	72- 17	12.1 Application	72- 53
1.3 Application	72- 17	12.2 General	72- 53
1.4 Retroactivity	72- 17	12.3 Pathway Class Designations	72- 53
1.5 Equivalency	72- 17	12.4 Pathway Survivability	72- 54
1.6 Units and Formulas	72- 18	12.5 Nomenclature	72- 54
1.7 Code Adoption Requirements	72- 18	Chapter 13 Reserved	72- 54
Chapter 2 Referenced Publications	72- 18	Chapter 14 Inspection, Testing, and Maintenance	72- 54
2.1 General	72- 18	14.1 Application	72- 54
2.2 NFPA Publications	72- 18	14.2 General	72- 54
2.3 Other Publications	72- 18	14.3 Inspection	72- 55
2.4 References for Extracts in Mandatory Sections	72- 19	14.4 Testing	72- 55
Chapter 3 Definitions	72- 19	14.5 Maintenance	72- 77
3.1 General	72- 19	14.6 Records	72- 77
3.2 NFPA Official Definitions	72- 19	Chapter 15 Reserved	72- 89
3.3 General Definitions	72- 19	Chapter 16 Reserved	72- 89
Chapter 4 Reserved	72- 32	Chapter 17 Initiating Devices	72- 89
Chapter 5 Reserved	72- 32	17.1 Application	72- 89
Chapter 6 Reserved	72- 32	17.2 Purpose	72- 89
Chapter 7 Reserved	72- 32	17.3 Performance-Based Design	72- 89
Chapter 8 Reserved	72- 32	17.4 General Requirements	72- 89
Chapter 9 Reserved	72- 32	17.5 Requirements for Smoke and Heat Detectors	72- 89
Chapter 10 Fundamentals	72- 32	17.6 Heat-Sensing Fire Detectors	72- 90
10.1 Application	72- 32	17.7 Smoke-Sensing Fire Detectors	72- 92
10.2 Purpose	72- 32	17.8 Radiant Energy-Sensing Fire Detectors ..	72- 97
10.3 Equipment	72- 32	17.9 Combination, Multi-Criteria, and Multi-Sensor Detectors	72- 99
10.4 Personnel Qualifications	72- 32	17.10 Gas Detection	72- 99
10.5 Power Supplies	72- 33	17.11 Other Fire Detectors	72- 99
10.6 Signal Priority	72- 36	17.12 Sprinkler Waterflow Alarm-Initiating Devices	72- 99
10.7 Distinctive Signals	72- 36	17.13 Detection of the Operation of Other Automatic Extinguishing Systems	72- 99
10.8 ECS Priority Signals	72- 36	17.14 Manually Actuated Alarm-Initiating Devices	72- 99
10.9 Fire Alarm Signals	72- 36	17.15 Fire Extinguisher Electronic Monitoring Device	72-100
10.10 Fire Alarm Signal Deactivation	72- 36	17.16 Supervisory Signal-Initiating Devices	72-100
10.11 Supervisory Signals	72- 37	Chapter 18 Notification Appliances	72-100
10.12 Trouble Signals	72- 37	18.1 Application	72-100
10.13 Emergency Control Function Status Indicators	72- 38	18.2 Purpose	72-101
10.14 Performance and Limitations	72- 38	18.3 General	72-101
10.15 Protection of Fire Alarm System	72- 38	18.4 Audible Characteristics	72-101
10.16 Annunciation and Annunciation Zoning	72- 38	18.5 Visible Characteristics — Public Mode ...	72-103
10.17 Monitoring Integrity	72- 38		
10.18 Documentation	72- 40		
10.19 Impairments	72- 53		

18.6	Visible Characteristics — Private Mode ...	72-106	23.17	Protected Premises Fire Safety Functions	72-115
18.7	Supplementary Visible Signaling Method	72-106	23.18	Special Requirements for Low-Power Radio (Wireless) Systems	72-116
18.8	Textual Audible Appliances	72-106	Chapter 24	Emergency Communications Systems (ECS)	72-116
18.9	Textual Visible Appliances	72-106	24.1	Application	72-116
18.10	Tactile Appliances	72-106	24.2	Purpose	72-117
18.11	Standard Emergency Service Interface ...	72-106	24.3	General	72-117
Chapter 19	Reserved	72-106	24.4	One-Way Emergency Communications Systems	72-118
Chapter 20	Reserved	72-106	24.5	Two-Way, In-Building Emergency Communications Systems	72-125
Chapter 21	Emergency Control Functions and Interfaces	72-106	24.6	Information, Command, and Control	72-127
21.1	Application	72-106	24.7	Performance-Based Design of Mass Notification Systems	72-128
21.2	General	72-106	Chapter 25	Reserved	72-129
21.3	Elevator Recall for Fire Fighters' Service.	72-107	Chapter 26	Supervising Station Alarm Systems	72-129
21.4	Elevator Shutdown	72-108	26.1	Application	72-129
21.5	First Responders Use Elevators	72-108	26.2	General	72-129
21.6	Elevators for Occupant-Controlled Evacuation.	72-108	26.3	Alarm Systems for Central Station Service	72-129
21.7	Heating, Ventilating and Air-Conditioning (HVAC) Systems	72-108	26.4	Proprietary Supervising Station Systems	72-132
21.8	Door Release Service	72-108	26.5	Remote Supervising Station Alarm Systems	72-134
21.9	Electrically Locked Doors.	72-109	26.6	Communications Methods for Supervising Station Alarm Systems.	72-135
21.10	Exit Marking Audible Notification Systems	72-109	Chapter 27	Public Emergency Alarm Reporting Systems	72-142
Chapter 22	Reserved	72-109	27.1	Application	72-142
Chapter 23	Protected Premises Fire Alarm Systems	72-109	27.2	General Fundamentals	72-143
23.1	Application	72-109	27.3	Management and Maintenance	72-143
23.2	General	72-109	27.4	Communications Methods.	72-143
23.3	System Features	72-109	27.5	Alarm Processing Equipment	72-144
23.4	System Performance and Integrity	72-110	27.6	Alarm Boxes.	72-148
23.5	Performance of Initiating Device Circuits (IDCs)	72-110	27.7	Public Cable Plant	72-151
23.6	Performance of Signaling Line Circuits (SLCs)	72-110	27.8	Emergency Communications Systems (ECS)	72-153
23.7	Performance of Notification Appliance Circuits (NACs)	72-110	Chapter 28	Reserved	72-153
23.8	System Requirements	72-110	Chapter 29	Single- and Multiple-Station Alarms and Household Fire Alarm Systems	72-153
23.9	In-Building Fire Emergency Voice/Alarm Communications	72-114	29.1	Application	72-153
23.10	Prerecorded (Digital) Voice and Tone Fire Alarm Systems.	72-114	29.2	Purpose	72-153
23.11	Two-Way Communication Service	72-114	29.3	Basic Requirements	72-154
23.12	Signal Annunciation	72-114	29.4	Assumptions	72-154
23.13	Suppression System Actuation	72-114	29.5	Detection and Notification	72-154
23.14	Off-Premises Signals	72-115	29.6	Power Supplies	72-155
23.15	Guard's Tour Supervisory Service	72-115	29.7	Equipment Performance	72-156
23.16	Suppressed (Exception Reporting) Signal System	72-115	29.8	Installation	72-158

29.9	Optional Functions	72-159	Annex E	NEMA SB 30, <i>Fire Service Annunciator and Interface</i>	72-311
29.10	Maintenance and Tests	72-160			
29.11	Markings and Instructions	72-160	Annex F	Sample Ordinance Adopting <i>NFPA 72</i>	72-319
Annex A	Explanatory Material	72-160	Annex G	Wiring Diagrams and Guide for Testing Fire Alarm Circuits	72-319
Annex B	Engineering Guide for Automatic Fire Detector Spacing	72-263	Annex H	Informational References	72-327
Annex C	System Performance and Design Guide	72-300	Annex I	Cross-Reference Table	72-331
Annex D	Speech Intelligibility	72-301	Index		72-346



NFPA 72

National Fire Alarm and Signaling Code

2010 Edition

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

Changes other than editorial are indicated by a vertical rule beside the paragraph, table, or figure in which the change occurred. These rules are included as an aid to the user in identifying changes from the previous edition. Where one or more complete paragraphs have been deleted, the deletion is indicated by a bullet (•) between the paragraphs that remain.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex H. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

A reference in parentheses () following a paragraph indicates the committee responsibility for that section or paragraph. Committee acronyms are keyed to the acronyms shown with the committee lists at the front of the document.

Information on referenced publications can be found in Chapter 2 and Annex H.

Chapter 1 Administration

1.1 Scope.

1.1.1 NFPA 72 covers the application, installation, location, performance, inspection, testing, and maintenance of fire alarm systems, supervising station alarm systems, public emergency alarm reporting systems, fire warning equipment and emergency communications systems (ECS), and their components.

1.1.2 The provisions of this chapter apply throughout the Code unless otherwise noted.

1.2* Purpose.

1.2.1 The purpose of this Code is to define the means of signal initiation, transmission, notification, and annunciation; the levels of performance; and the reliability of the various types of fire alarm systems, supervising station alarm systems, public emergency alarm reporting systems, fire warning equipment, emergency communications systems, and their components.

1.2.2 This Code defines the features associated with these systems and also provides information necessary to modify or upgrade an existing system to meet the requirements of a particular system classification.

1.2.3 This Code establishes minimum required levels of performance, extent of redundancy, and quality of installation but does not establish the only methods by which these requirements are to be achieved.

1.2.4* This Code shall not be interpreted to require a level of protection that is greater than that which would otherwise be required by the applicable building or fire code.

1.3 Application.

1.3.1 Alarm systems shall be classified as follows:

- (1) Fire alarm systems
 - (a) Household fire alarm systems
 - (b) Protected premises (local) fire alarm systems
- (2) Supervising station alarm systems
 - (a) Central station (service) alarm systems
 - (b) Remote supervising station alarm systems
 - (c) Proprietary supervising station alarm systems
- (3) Public emergency alarm reporting systems
 - (a) Auxiliary alarm systems — local energy type
 - (b) Auxiliary alarm systems — shunt type

1.3.2 Emergency communications systems shall be classified as follows:

- (1) One-way emergency communications systems
 - (a) Distributed recipient mass notification systems
 - (b) In-building fire emergency voice/alarm communications systems
 - (c) In-building mass notification systems
 - (d) Wide area mass notification systems
- (2) Two-way emergency communications systems
 - (a) In-building emergency communications systems

1.3.3 Any reference or implied reference to a particular type of hardware shall be for the purpose of clarity and shall not be interpreted as an endorsement.

1.3.4 The intent and meaning of the terms used in this Code shall be, unless otherwise defined herein, the same as those of NFPA 70, *National Electrical Code*®.

1.4 Retroactivity.

1.4.1 Unless otherwise noted, it is not intended that the provisions of this document be applied to facilities, equipment, structures, or installations that were existing or approved for construction or installation prior to the effective date of the document.

1.4.2 In those cases where it is determined by the authority having jurisdiction that the existing situation involves a distinct hazard to life or property, retroactive application of the provisions of this document shall be permitted.

1.5 Equivalency.

1.5.1 Nothing in this Code shall prevent the use of systems, methods, devices, or appliances of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this Code.

1.5.2 Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.

1.5.3 The systems, methods, devices, or appliances that are found equivalent shall be approved.

1.6 Units and Formulas.

1.6.1 The units of measure in this Code are presented in U.S. customary units (inch-pound units).

1.6.2 Where presented, the International System (SI) of units follow the inch-pound units in parentheses.

1.6.3 Where both systems of units are presented, either system shall be acceptable for satisfying the requirements in this Code.

1.6.4 Where both systems of units are presented, users of this Code shall apply one set of units consistently and shall not alternate between units.

1.6.5* The values presented for measurements in this Code are expressed with a degree of precision appropriate for practical application and enforcement. It is not intended that the application or enforcement of these values be more precise than the precision expressed.

1.6.6 Where extracted text contains values expressed in only one system of units, the values in the extracted text have been retained without conversion to preserve the values established by the responsible technical committee in the source document.

1.7 Code Adoption Requirements. This Code shall be administered and enforced by the authority having jurisdiction designated by the governing authority. (*See Annex F for sample wording for enabling legislation.*)

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this Code and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 10, *Standard for Portable Fire Extinguishers*, 2007 edition.

NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam*, 2005 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2010 edition.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 2008 edition.

NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*, 2006 edition.

NFPA 70®, *National Electrical Code*®, 2008 edition.

NFPA 75, *Standard for the Protection of Information Technology Equipment*, 2009 edition.

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 2009 edition.

NFPA 110, *Standard for Emergency and Standby Power Systems*, 2010 edition.

NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, 2010 edition.

NFPA 601, *Standard for Security Services in Fire Loss Prevention*, 2005 edition.

NFPA 720, *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment*, 2009 edition.

NFPA 780, *Standard for the Installation of Lightning Protection Systems*, 2008 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2010 edition.

NFPA 1600®, *Standard on Disaster/Emergency Management and Business Continuity Programs*, 2007 edition.

NFPA 1620, *Recommended Practice for Pre-Incident Planning*, 2003 edition.

2.3 Other Publications.

2.3.1 ANSI Publications. American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.

ANSI A-58.1, *Building Code Requirements for Minimum Design Loads in Buildings and Other Structures*.

ANSI S1.4a, *Specifications for Sound Level Meters*, 1985, reaffirmed 2006.

ANSI S3.2, *Method for Measuring the Intelligibility of Speech Over Communications Systems*, 1989, revised 1999.

ANSI S3.41, *American National Standard Audible Emergency Evacuation Signal*, 1990, reaffirmed 2008.

ANSI/ASME A17.1a/CSA B44a, *Safety Code for Elevators and Escalators*, 2008.

ANSI/IEEE C2, *National Electrical Safety Code*, 2007.

ANSI/UL 217, *Standard for Single and Multiple Station Smoke Alarms*, 2006, revised 2008.

ANSI/UL 268, *Standard for Smoke Detectors for Fire Alarm Systems*, 2006.

ANSI/UL 827, *Standard for Central-Station Alarm Services*, 2008.

ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*, 2003, revised 2006.

ANSI/UL 985, *Standard for Household Fire Warning System Units*, 2000, revised 2003.

ANSI/UL 1730, *Standard for Smoke Detector Monitors and Accessories for Individual Living Units of Multifamily Residences and Hotel/Motel Rooms*, 2006, revised 2007.

ANSI/UL 1971, *Standard for Signaling Devices for the Hearing Impaired*, 2002, revised 2008.

UL 2017, *Standard for General-Purpose Signaling Devices and Systems*, 2000, revised 2004.

2.3.2 EIA Publications. Electronic Industries Alliance, 2500 Wilson Boulevard, Arlington, VA 22201-3834.

EIA Tr 41.3, *Telephones*.

2.3.3 IEC Publications. International Electrotechnical Commission, 3 rue de Varembe, P.O. Box 131, CH-1211 Geneva 20, Switzerland. IEC documents are available through ANSI.

IEC 61260, *Electroacoustics — Octave-Band and Fractional-Octave-Band Filters*, 1995.

2.3.4 ISO Publications. Standards Secretariat, Acoustical Society of America, 335 East 45th Street, New York, NY 10017-3483.



ISO 7240-19, *Fire Detection and Alarm Systems — Part 19: Design, Installation, Commissioning and Service of Sound Systems for Emergency Purposes*, 8/15/07.

ISO 7731, *Danger signals for work places — Auditory danger signals*.

2.3.5 Telcordia Publications. One Telcordia Drive, Piscataway, NJ 08854.

GR-506-CORE, *LATA Switching Systems Generic Requirements: Signaling for Analog Interface*, 2006.

GR-909-CORE, *Fiber in the Loop Systems Generic Requirements*, 2004.

2.3.6 Other Publications. *Merriam-Webster's Collegiate Dictionary*, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 70®, *National Electrical Code*®, 2008 edition.

NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*, 2008 edition.

NFPA 101®, *Life Safety Code*®, 2009 edition.

NFPA 654, *Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids*, 2006 edition.

NFPA 720, *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment*, 2009 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2010 edition.

NFPA 5000®, *Building Construction and Safety Code*®, 2009 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this Code. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3* Code. A standard that is an extensive compilation of provisions covering broad subject matter or that is suitable for adoption into law independently of other codes and standards.

3.2.4 Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

3.2.5* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products

or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

3.2.6 Shall. Indicates a mandatory requirement.

3.2.7 Should. Indicates a recommendation or that which is advised but not required.

3.3 General Definitions.

3.3.1 Acknowledge. To confirm that a message or signal has been received, such as by the pressing of a button or the selection of a software command. (SIG-SSS)

3.3.2* Acoustically Distinguishable Space (ADS). An emergency communications system notification zone, or subdivision thereof, that might be an enclosed or otherwise physically defined space, or that might be distinguished from other spaces because of different acoustical, environmental, or use characteristics, such as reverberation time and ambient sound pressure level. (SIG-NAS)

3.3.3 Active Multiplex System. A multiplexing system in which signaling devices such as transponders are employed to transmit status signals of each initiating device or initiating device circuit within a prescribed time interval so that the lack of receipt of such a signal can be interpreted as a trouble signal. (SIG-SSS)

3.3.4 Addressable Device. A fire alarm system component with discrete identification that can have its status individually identified or that is used to individually control other functions. (SIG-IDS)

3.3.5 Adverse Condition. Any condition occurring in a communications or transmission channel that interferes with the proper transmission or interpretation, or both, of status change signals at the supervising station. (See also 3.3.240.7, *Trouble Signal*.) (SIG-SSS)

3.3.6 Air Sampling-Type Detector. See 3.3.59, Detector.

3.3.7 Alarm. A warning of danger. (SIG-FUN)

3.3.7.1 Nuisance Alarm. Any alarm caused by mechanical failure, malfunction, improper installation, or lack of proper maintenance, or any alarm activated by a cause than cannot be determined. (SIG-FUN)

3.3.8 Alarm Box.

3.3.8.1 Auxiliary Box. An alarm box that can only be operated from one or more remote initiating devices or an auxiliary alarm system used to send an alarm to the communications center. (SIG-PRS)

3.3.8.2 Combination Fire Alarm and Guard's Tour Box. A manually operated box for separately transmitting a fire alarm signal and a distinctive guard patrol tour supervisory signal. (SIG-IDS)

3.3.8.3 Manual Fire Alarm Box. A manually operated device used to initiate a fire alarm signal. (SIG-IDS)

3.3.8.4 Master Box. A publicly accessible alarm box that can also be operated by one or more remote initiating devices or an auxiliary alarm system used to send an alarm to the communications center. (SIG-PRS)

3.3.8.5 Publicly Accessible Alarm Box. An enclosure, accessible to the public, housing a manually operated transmitter used to send an alarm to the communications center. (SIG-PRS)

3.3.9 Alarm Service. The service required following the receipt of an alarm signal. (SIG-SSS)

3.3.10 Alarm Signal. See 3.3.240, Signal.

3.3.11 Alarm System. See 3.3.95, Fire Alarm System; 3.3.267, Supervising Station Alarm System; 3.3.199, Public Emergency Alarm Reporting System.

3.3.12 Alarm Verification Feature. A feature of automatic fire detection and alarm systems to reduce unwanted alarms wherein smoke detectors report alarm conditions for a minimum period of time, or confirm alarm conditions within a given time period after being reset, in order to be accepted as a valid alarm initiation signal. (SIG-PRO)

3.3.13 Alert Tone. An attention-getting signal to alert occupants of the pending transmission of a voice message. (SIG-PRO)

3.3.14 Analog Initiating Device (Sensor). See 3.3.122, Initiating Device.

3.3.15 Ancillary Functions. Ancillary functions are those non-emergency activations of the fire alarm or mass notification audible, visual, and textual output circuits allowed. Ancillary functions can include general paging, background music, or other non-emergency signals. (SIG-ECS)

3.3.16 Annunciator. A unit containing one or more indicator lamps, alphanumeric displays, or other equivalent means in which each indication provides status information about a circuit, condition, or location. (SIG-FUN)

3.3.17 Apartment Building. A building or portion thereof containing three or more dwelling units with independent cooking and bathroom facilities. (SIG-HOU) [5000, 2009]

3.3.18 Audible Notification Appliance. See 3.3.160, Notification Appliance.

3.3.19 Automatic Extinguishing System Supervisory Device. See 3.3.122, Initiating Device.

3.3.20 Automatic Fire Detector. See 3.3.59, Detector.

3.3.21 Automatic Fire Extinguishing or Suppression System Operation Detector. See 3.3.59, Detector.

3.3.22 Autonomous Control Unit (ACU). See 3.3.53, Control Unit.

3.3.23 Auxiliary Alarm System. See 3.3.199, Public Emergency Alarm Reporting System.

3.3.24 Auxiliary Box. See 3.3.8, Alarm Box.

3.3.25* Average Ambient Sound Level. The root mean square, A-weighted, sound pressure level measured over the period of time that any person is present, or a 24-hour period, whichever time period is the lesser. (SIG-NAS)

3.3.26 Beam Construction. See 3.3.33, Ceiling Surfaces.

3.3.27 Building Fire Alarm System. See 3.3.95, Fire Alarm System.

3.3.28 Building Fire Safety Plan. Documentation that provides information on the use of alarms, transmission of alarms, response to alarms, evacuation of immediate area, evacuation of smoke compartment, preparation of floors and building for evacuation and extinguishment of fire. [SIG-ECS]

3.3.29 Carrier. High-frequency energy that can be modulated by voice or signaling impulses. (SIG-SSS)

3.3.30 Carrier System. A means of conveying a number of channels over a single path by modulating each channel on a different carrier frequency and demodulating at the receiving point to restore the signals to their original form. (SIG-SSS)

3.3.31 Ceiling. The upper surface of a space, regardless of height. Areas with a suspended ceiling have two ceilings, one visible from the floor and one above the suspended ceiling. (SIG-IDS)

3.3.31.1 Level Ceilings. Ceilings that are level or have a slope of less than or equal to 1 in 8. (SIG-IDS)

3.3.31.2 Sloping Ceiling. A ceiling that has a slope of more than 1 in 8. (SIG-IDS)

3.3.31.3* Sloping Peaked-Type Ceiling. A ceiling in which the ceiling slopes in two directions from the highest point. Curved or domed ceilings can be considered peaked with the slope figured as the slope of the chord from highest to lowest point. (SIG-IDS)

3.3.31.4* Sloping Shed-Type Ceiling. A ceiling in which the high point is at one side with the slope extending toward the opposite side. (SIG-IDS)

3.3.32 Ceiling Height. The height from the continuous floor of a room to the continuous ceiling of a room or space. (SIG-IDS)

3.3.33 Ceiling Surfaces.

3.3.33.1 Beam Construction. Ceilings that have solid structural or solid nonstructural members projecting down from the ceiling surface more than 4 in. (100 mm) and spaced more than 36 in (910 mm), center to center. (SIG-IDS)

3.3.33.2 Girder. A support for beams or joists that runs at right angles to the beams or joists. If the top of the girder is within 4 in. (100 mm) of the ceiling, the girder is a factor in determining the number of detectors and is to be considered a beam. If the top of the girder is more than 4 in. (100 mm) from the ceiling, the girder is not a factor in detector location. (SIG-IDS)

3.3.33.3* Smooth Ceiling. A ceiling surface uninterrupted by continuous projections, such as solid joists, beams, or ducts, extending more than 4 in. (100 mm) below the ceiling surface. (SIG-IDS)

3.3.33.4 Solid Joist Construction. Ceilings that have solid structural or solid nonstructural members projecting down from the ceiling surface for a distance of more than 4 in. (100 mm) and spaced at intervals of 36 in (910 mm) or less, center to center. (SIG-IDS)

3.3.34 Central Control Station. See 3.3.80, Emergency Communications System — Central Control Station.

3.3.35 Central Station. See 3.3.266.1, Central Supervising Station.

3.3.36 Central Station Alarm System. See 3.3.267.1, Central Station Service Alarm System.

3.3.37 Central Station Service. See 3.3.268, Supervising Station Service.

3.3.38 Central Station Service Alarm System. See 3.3.267, Supervising Station Alarm System.

3.3.39 Central Supervising Station. See 3.3.266, Supervising Station.



• **3.3.40 Channel.** A path for voice or signal transmission that uses modulation of light or alternating current within a frequency band. (SIG-SSS)

3.3.40.1 Communications Channel. A circuit or path connecting a subsidiary station(s) to a supervising station(s) over which signals are carried. (SIG-SSS)

3.3.40.2 Derived Channel. A signaling line circuit that uses the local leg of the public switched network as an active multiplex channel while simultaneously allowing that leg's use for normal telephone communications. (SIG-SSS)

3.3.40.3* Radio Channel. A band of frequencies of a width sufficient to allow its use for radio communications. (SIG-SSS)

3.3.40.4 Transmission Channel. A circuit or path connecting transmitters to supervising stations or subsidiary stations on which signals are carried. (SIG-SSS)

3.3.41 Circuit Interface. See 3.3.127, Interface.

3.3.42 Cloud Chamber Smoke Detection. See 3.3.252, Smoke Detection.

3.3.43* Coded. An audible or visible signal that conveys several discrete bits or units of information. (SIG-NAS)

3.3.44 Combination Detector. See 3.3.59, Detector.

3.3.45 Combination Emergency Communications Systems. See 3.3.81, Emergency Communications Systems — Combination.

3.3.46 Combination Fire Alarm and Guard's Tour Box. See 3.3.8, Alarm Box.

• **3.3.47 Combination System.** See 3.3.95, Fire Alarm System.

3.3.48 Common Talk Mode. See 3.3.277, Talk Mode.

3.3.49* Communications Center. A building or portion of a building that is specifically configured for the primary purpose of providing emergency communications services or public safety answering point (PSAP) services to one or more public safety agencies under the authority or authorities having jurisdiction. [1221, 2007] (SIG-PRS)

3.3.50 Communications Channel. See 3.3.40, Channel.

3.3.51 Communications Circuit. Any signaling path of an emergency communications system that carries voice, audio, data or other signals. [SIG-ECS]

3.3.52 Contiguous Property. See 3.3.191, Property.

3.3.53 Control Unit. A system component that monitors inputs and controls outputs through various types of circuits. (SIG-PRO)

3.3.53.1* Autonomous Control Unit (ACU). The primary control unit for an in-building mass notification system. (SIG-ECS)

3.3.53.2 Emergency Communications Control Unit (ECCU). A system capable of sending mass notification messages to individual buildings, zones of buildings, individual outdoor speaker arrays, zones of outdoor speaker arrays or; a building, multiple buildings, outside areas, or a combination of these. (SIG-ECS)

3.3.53.3 Fire Alarm Control Unit. See 3.3.92, Fire Alarm Control Unit.

3.3.53.4 Wireless Control Unit. A component that transmits/ receives and processes wireless signals. (SIG-PRO)

3.3.54 Day-Care Home. A building or portion of a building in which more than 3 but not more than 12 clients receive care, maintenance, and supervision, by other than their relative(s) or legal guardian(s), for less than 24 hours per day. [101, 2009] (SIG-HOU)

3.3.55 Dedicated Function Fire Alarm Control Unit. See 3.3.92, Fire Alarm Control Unit.

3.3.56 Dedicated Function Fire Alarm System. See 3.3.95, Fire Alarm System.

3.3.57 Delinquency Signal. See 3.3.240, Signal.

3.3.58 Derived Channel. See 3.3.40, Channel.

3.3.59 Detector. A device suitable for connection to a circuit that has a sensor that responds to a physical stimulus such as heat or smoke. (SIG-IDS)

3.3.59.1 Air Sampling-Type Detector. A detector that consists of a piping or tubing distribution network that runs from the detector to the area(s) to be protected. An aspiration fan in the detector housing draws air from the protected area back to the detector through air sampling ports, piping, or tubing. At the detector, the air is analyzed for fire products. (SIG-IDS)

3.3.59.2 Automatic Fire Detector. A device designed to detect the presence of a fire signature and to initiate action. For the purpose of this Code, automatic fire detectors are classified as follows: Automatic Fire Extinguishing or Suppression System Operation Detector, Fire-Gas Detector, Heat Detector, Other Fire Detectors, Radiant Energy-Sensing Fire Detector, Smoke Detector. (SIG-IDS)

3.3.59.3 Automatic Fire Extinguishing or Suppression System Operation Detector. A device that automatically detects the operation of a fire extinguishing or suppression system by means appropriate to the system employed. (SIG-IDS)

3.3.59.4* Combination Detector. A device that either responds to more than one of the fire phenomena or employs more than one operating principle to sense one of these phenomena. Typical examples are a combination of a heat detector with a smoke detector or a combination rate-of-rise and fixed-temperature heat detector. This device has listings for each sensing method employed. (SIG-IDS)

3.3.59.5 Electrical Conductivity Heat Detector. A line-type or spot-type sensing element in which resistance varies as a function of temperature. (SIG-IDS)

3.3.59.6 Fire-Gas Detector. A device that detects gases produced by a fire. (SIG-IDS)

3.3.59.7* Fixed-Temperature Detector. A device that responds when its operating element becomes heated to a predetermined level. (SIG-IDS)

3.3.59.8* Flame Detector. A radiant energy-sensing fire detector that detects the radiant energy emitted by a flame. (Refer to A.17.8.2.) (SIG-IDS)

3.3.59.9 Heat Detector. A fire detector that detects either abnormally high temperature or rate of temperature rise, or both. (SIG-IDS)

3.3.59.10 Line-Type Detector. A device in which detection is continuous along a path. Typical examples are rate-of-rise pneumatic tubing detectors, projected beam smoke detectors, and heat-sensitive cable. (SIG-IDS)

3.3.59.11* Multi-Criteria Detector. A device that contains multiple sensors that separately respond to physical stimulus such as heat, smoke, or fire gases, or employs more than one sensor to sense the same stimulus. This sensor is capable of generating only one alarm signal from the sensors employed in the design either independently or in combination. The sensor output signal is mathematically evaluated to determine when an alarm signal is warranted. The evaluation can be performed either at the detector or at the control unit. This detector has a single listing that establishes the primary function of the detector. (SIG-IDS)

3.3.59.12* Multi-Sensor Detector. A device that contains multiple sensors that separately respond to physical stimulus such as heat, smoke, or fire gases, or employs more than one sensor to sense the same stimulus. A device capable of generating multiple alarm signals from any one of the sensors employed in the design, independently or in combination. The sensor output signals are mathematically evaluated to determine when an alarm signal is warranted. The evaluation can be performed either at the detector or at the control unit. This device has listings for each sensing method employed. (SIG-IDS)

3.3.59.13 Other Fire Detectors. Devices that detect a phenomenon other than heat, smoke, flame, or gases produced by a fire. (SIG-IDS)

3.3.59.14 Pneumatic Rate-of-Rise Tubing Heat Detector. A line-type detector comprising small-diameter tubing, usually copper, that is installed on the ceiling or high on the walls throughout the protected area. The tubing is terminated in a detector unit containing diaphragms and associated contacts set to actuate at a predetermined pressure. The system is sealed except for calibrated vents that compensate for normal changes in temperature. (SIG-IDS)

3.3.59.15 Projected Beam-Type Detector. A type of photoelectric light obscuration smoke detector wherein the beam spans the protected area. (SIG-IDS)

3.3.59.16 Radiant Energy-Sensing Fire Detector. A device that detects radiant energy, such as ultraviolet, visible, or infrared, that is emitted as a product of combustion reaction and obeys the laws of optics. (SIG-IDS)

3.3.59.17* Rate Compensation Detector. A device that responds when the temperature of the air surrounding the device reaches a predetermined level, regardless of the rate of temperature rise. (SIG-IDS)

3.3.59.18* Rate-of-Rise Detector. A device that responds when the temperature rises at a rate exceeding a predetermined value. (SIG-IDS)

3.3.59.19 Smoke Detector. A device that detects visible or invisible particles of combustion. (SIG-IDS)

3.3.59.20 Spark/Ember Detector. A radiant energy-sensing fire detector that is designed to detect sparks or embers, or both. These devices are normally intended to operate in dark environments and in the infrared part of the spectrum. (SIG-IDS)

3.3.59.21 Spot-Type Detector. A device in which the detecting element is concentrated at a particular location. Typical examples are bimetallic detectors, fusible alloy detectors, certain pneumatic rate-of-rise detectors, certain smoke detectors, and thermoelectric detectors. (SIG-IDS)

3.3.60 Digital Alarm Communicator Receiver (DACR). A system component that accepts and displays signals from digital alarm communicator transmitters (DACTs) sent over the public switched telephone network. (SIG-SSS)

3.3.61 Digital Alarm Communicator System (DACS). A system in which signals are transmitted from a digital alarm communicator transmitter (DACT) located at the protected premises through the public switched telephone network to a digital alarm communicator receiver (DACR). (SIG-SSS)

3.3.62 Digital Alarm Communicator Transmitter (DACT). A system component at the protected premises to which initiating devices or groups of devices are connected. The DACT seizes the connected telephone line, dials a preselected number to connect to a DACR, and transmits signals indicating a status change of the initiating device. (SIG-SSS)

3.3.63 Digital Alarm Radio Receiver (DARR). A system component composed of two subcomponents: one that receives and decodes radio signals, the other that annunciates the decoded data. These two subcomponents can be coresident at the central station or separated by means of a data transmission channel. (SIG-SSS)

3.3.64 Digital Alarm Radio System (DARS). A system in which signals are transmitted from a digital alarm radio transmitter (DART) located at a protected premises through a radio channel to a digital alarm radio receiver (DARR). (SIG-SSS)

3.3.65 Digital Alarm Radio Transmitter (DART). A system component that is connected to or an integral part of a digital alarm communicator transmitter (DACT) that is used to provide an alternate radio transmission channel. (SIG-SSS)

3.3.66 Display. The visual representation of output data, other than printed copy. (SIG-NAS)

3.3.67 Distributed Recipient Mass Notification System (DRMNS). See 3.3.79, Emergency Communications System.

3.3.68 Donor Antenna. The outside antenna on the building where a public safety radio enhancement system operates. (SIG-ECS)

3.3.69 Donor Site. The repeater or base station site with which the public safety radio enhancement system communicates. (SIG-ECS)

3.3.70 Dormitory. A building or a space in a building in which group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room, or a series of closely associated rooms, under joint occupancy and single management, with or without meals, but without individual cooking facilities. [101, 2009] (SIG-HOU)

3.3.71* Double Doorway. A single opening that has no intervening wall space or door trim separating the two doors. (SIG-IDS)

3.3.72 Downlink. The radio signal from the base station transmitter to the portable public safety subscriber receiver. (SIG-ECS)

3.3.73 Dual Control. The use of two primary trunk facilities over separate routes or different methods to control one communications channel. (SIG-SSS)

3.3.74 Dwelling Unit. One or more rooms arranged for complete, independent housekeeping purposes with space for eating, living, and sleeping; facilities for cooking; and provisions for sanitation. [5000, 2009] (SIG-HOU)

3.3.74.1 Multiple Dwelling Unit. A building containing three or more dwelling units. (SIG-HOU)

3.3.74.2 Single Dwelling Unit. A building consisting solely of one dwelling unit. (SIG-HOU)

3.3.75 Effective Masked Threshold. The minimum sound level at which the tone signal is audible in ambient noise. (SIG-NAS)

3.3.76 Electrical Conductivity Heat Detector. See 3.3.59, Detector.

3.3.77* Ember. A particle of solid material that emits radiant energy due either to its temperature or the process of combustion on its surface. (See also 3.3.258, *Spark*.) (SIG-IDS)

3.3.78 Emergency Communications Control Unit (ECCU). See 3.3.53, Control Unit.

3.3.79 Emergency Communications System. A system for the protection of life by indicating the existence of an emergency situation and communicating information necessary to facilitate an appropriate response and action. (SIG-ECS)

3.3.79.1 One-Way Emergency Communications System. One-way emergency communications systems are intended to broadcast information, in an emergency, to people in one or more specified indoor or outdoor areas. It is intended that emergency messages be conveyed either by audible, visible, or textual means, or any combination thereof. (SIG-ECS)

3.3.79.1.1 Distributed Recipient Mass Notification System (DRMNS). A distributed recipient mass notification system is a system meant to communicate directly to targeted individuals and groups that might not be in a contiguous area. (SIG-ECS)

3.3.79.1.2 In-Building Fire Emergency Voice/Alarm Communications System. Dedicated manual or automatic equipment for originating and distributing voice instructions, as well as alert and evacuation signals pertaining to a fire emergency, to the occupants of a building. (SIG-ECS)

3.3.79.1.3 In-Building Mass Notification System. A system used to provide information and instructions to people in a building(s) or other space using intelligible voice communications and including visible signals, text, graphics, tactile, or other communication methods. (SIG-ECS)

3.3.79.1.4 Wide-Area Mass Notification System. Wide-area mass notification systems are generally installed to provide real-time information to outdoor areas and could have the capability to communicate with other notification systems provided for a campus, military base, municipality, or similar single or multiple contiguous areas. (SIG-ECS)

3.3.79.2 Two-Way Emergency Communications System. Two-way emergency communications systems are divided into two categories, those systems that are anticipated to be used by building occupants and those systems that are to be used by fire fighters, police, and other emergency services personnel. Two-way emergency communications systems are used to both exchange information and to communicate information such as, but not limited to, instructions, acknowledgement of receipt of messages, condition of local environment, and condition of persons, and to give assurance that help is on the way. (SIG-ECS)

3.3.80 Emergency Communications System — Central Control Station. A mass notification system facility(s) with communications and control equipment serving one or more buildings where responsible authorities receive information from premises sources or systems or from (higher level) regional or national sources or systems and then disseminate appropriate information to a building, multiple buildings, outside campus areas, or a combination of these in accordance with the emergency response plan established for the premises. (SIG-ECS)

3.3.81 Emergency Communications Systems — Combination. Various emergency communication systems such as fire alarm, mass notification, fire fighter communications, area of refuge communications, elevator communications, or others and which may be served through a single control system or through an interconnection of several control systems. (SIG-ECS)

3.3.82 Emergency Control Function Device. The fire alarm or signaling system component that directly interfaces with the system that controls the emergency function. (SIG-PRO)

3.3.83 Emergency Control Functions. Building, fire, and emergency control functions that are intended to increase the level of life safety for occupants or to control the spread of the harmful effects of fire. (SIG-PRO)

3.3.84 Emergency Response Plan. A documented set of actions to address response to natural, technological, and man-made disasters and other emergencies prepared by the stakeholders from information obtained during the risk analysis. (SIG-ECS)

3.3.85* Evacuation. The withdrawal of occupants from a building. (SIG-PRO)

3.3.86 Evacuation Signal. See 3.3.240, Signal.

3.3.87 Evacuation Signaling Zone. See 3.3.300, Zone.

3.3.88 Executive Software. See 3.3.255, Software.

3.3.89 Exit Marking Audible Notification Appliance. See 3.3.160, Notification Appliance.

3.3.90 Field of View. The solid cone that extends out from the detector within which the effective sensitivity of the detector is at least 50 percent of its on-axis, listed, or approved sensitivity. (SIG-IDS)

3.3.91 Fire Alarm Control Interface (FACI). See 3.3.127, Interface.

3.3.92* Fire Alarm Control Unit (FACU) A component of the fire alarm system, provided with primary and secondary power sources, which receives signals from initiating devices or other fire alarm control units, and processes these signals to determine part or all of the required fire alarm system output function(s). (SIG-PRO)

3.3.92.1 Master Fire Alarm Control Unit. A fire alarm control unit that serves the protected premises or portion of the protected premises as a local fire alarm control unit and accepts inputs from other fire alarm control units. (SIG-PRO)

3.3.92.2 Protected Premises (Local) Control Unit. A fire alarm control unit that serves the protected premises or a portion of the protected premises. (SIG-PRO)

3.3.92.2.1* Dedicated Function Fire Alarm Control Unit. A protected premises fire alarm control unit which is intended to provide operation of a specifically identified fire safety function. (SIG-PRO)

3.3.92.2.2 Releasing Service Fire Alarm Control Unit. A protected premises fire alarm control unit specifically listed for releasing service that is part of a fire suppression system and which provides control outputs to release a fire suppression agent based on either automatic or manual input. (SIG-PRO)

3.3.93 Fire Alarm/Evacuation Signal Tone Generator. A device that produces a fire alarm/evacuation tone upon command. (SIG-PRO)

3.3.94 Fire Alarm Signal. See 3.3.240, Signal.

3.3.95 Fire Alarm System. A system or portion of a combination system that consists of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals. (SIG-FUN)

3.3.95.1* Combination System. A fire alarm system in which components are used, in whole or in part, in common with a non-fire signaling system. (SIG-PRO)

3.3.95.2 Household Fire Alarm System. A system of devices that uses a fire alarm control unit to produce an alarm signal in the household for the purpose of notifying the occupants of the presence of a fire so that they will evacuate the premises. (SIG-HOU)

3.3.95.3 Municipal Fire Alarm System. A public emergency alarm reporting system. (SIG-PRS)

3.3.95.4* Protected Premises (Local) Fire Alarm System. A fire alarm system located at the protected premises. (SIG-PRO)

3.3.95.4.1 Building Fire Alarm System. A protected premises fire alarm system that includes any of the features identified in 23.3.3.1 and that serves the general fire alarm needs of a building or buildings and that provides fire department or occupant notification or both. (SIG-PRO)

3.3.95.4.2 Dedicated Function Fire Alarm System. A protected premises fire alarm system installed specifically to perform fire safety function(s) where a building fire alarm system is not required. (SIG-PRO)

3.3.95.4.3 Releasing Fire Alarm System. A protected premises fire alarm system that is part of a fire suppression system and/or which provides control inputs to a fire suppression system related to the fire suppression system's sequence of operations and outputs for other signaling and notification. (SIG-PRO)

3.3.96 Fire Command Center. The principal attended or unattended location where the status of the detection, alarm communications, and control systems is displayed and from which the system(s) can be manually controlled. (SIG-PRO)

3.3.97 Fire Extinguisher Electronic Monitoring Device. A device connected to a control unit that monitors the fire extinguisher in accordance with the requirements of NFPA 10, *Standard for Portable Fire Extinguishers*. (SIG-IDS)

3.3.98 Fire Safety Functions. See 3.3.83, Emergency Control Functions.

3.3.99 Fire Warden. A building staff member or a tenant trained to perform assigned duties in the event of a fire emergency. (SIG-PRO)

3.3.100 Fire Warning Equipment. Any detector, alarm, device, or material related to single- and multiple-station alarms or household fire alarm systems. (SIG-HOU)

3.3.101 Fire-Gas Detector. See 3.3.59, Detector.

3.3.102 Fixed-Temperature Detector. See 3.3.59, Detector.

3.3.103 Flame. A body or stream of gaseous material involved in the combustion process and emitting radiant energy at specific wavelength bands determined by the combustion chemistry of the fuel. In most cases, some portion of the emitted radiant energy is visible to the human eye. (SIG-IDS)

3.3.104 Flame Detector. See 3.3.59, Detector.

3.3.105 Flame Detector Sensitivity. The distance along the optical axis of the detector at which the detector can detect a fire of specified size and fuel within a given time frame. (SIG-IDS)

3.3.106 Frequency. Minimum and maximum time between events (SIG-TMS).

3.3.106.1 Weekly Frequency. Fifty-two times per year, once per calendar week.

3.3.106.2 Monthly Frequency. Twelve times per year, once per calendar month.

3.3.106.3 Quarterly Frequency. Four times per year with a minimum of 2 months, maximum of 4 months.

3.3.106.4 Semiannual Frequency. Twice per year with a minimum of 4 months, maximum of 8 months.

3.3.106.5 Annual Frequency. Once per year with a minimum of 9 months, maximum 15 months.

3.3.107 Gateway. A device that is used in the transmission of serial data (digital or analog) from the fire alarm control unit to other building system control units, equipment, or networks and/or from other building system control units to the fire alarm control unit. (SIG-PRO)

3.3.108 Girder. See 3.3.33, Ceiling Surfaces.

3.3.109 Guard's Tour Reporting Station. A device that is manually or automatically initiated to indicate the route being followed and the timing of a guard's tour. (SIG-IDS)

3.3.110 Guard's Tour Supervisory Signal. See 3.3.240, Signal.

3.3.111 Guest Room. An accommodation combining living, sleeping, sanitary, and storage facilities within a compartment. [101, 2009] (SIG-HOU)

3.3.112 Guest Suite. An accommodation with two or more contiguous rooms comprising a compartment, with or without doors between such rooms, that provides living, sleeping, sanitary, and storage facilities. [101, 2009] (SIG-HOU)

3.3.113* Hearing Loss. A full or partial decrease in the ability to detect or comprehend sounds. (SIG-NAS)

3.3.113.1 Profound Hearing Loss. A hearing threshold of greater than 90 dB.

3.3.114 Heat Alarm. A single or multiple station alarm responsive to heat. (SIG-IDS)

3.3.115 Heat Detector. See 3.3.59, Detector.

3.3.116 High Power Speaker Array (HPSA). High power speaker arrays provide capability for voice and tone communications to large outdoor areas. (SIG-ECS)



3.3.117 Hotel. A building or groups of buildings under the same management in which there are sleeping accommodations for more than 16 persons and primarily used by transients for lodging with or without meals. [101, 2009] (SIG-HOU)

3.3.118 Household Fire Alarm System. See 3.3.95, Fire Alarm System.

3.3.119 Hunt Group. A group of associated telephone lines within which an incoming call is automatically routed to an idle (not busy) telephone line for completion. (SIG-SSS)

3.3.120* Identified (as Applied to Equipment). Recognizable as suitable for the specific purpose, function, use, environment, application, and so forth, where described in a particular *Code* requirement. (SIG-PRS) [70, 2008]

3.3.121 In-Building Mass Notification System. See 3.3.79, Emergency Communications System.

3.3.122 Initiating Device. A system component that originates transmission of a change-of-state condition, such as in a smoke detector, manual fire alarm box, or supervisory switch. (SIG-IDS)

3.3.122.1 Analog Initiating Device (Sensor). An initiating device that transmits a signal indicating varying degrees of condition as contrasted with a conventional initiating device, which can only indicate an on-off condition. (SIG-IDS)

3.3.122.2 Automatic Extinguishing System Supervisory Device. A device that responds to abnormal conditions that could affect the proper operation of an automatic sprinkler system or other fire extinguishing system(s) or suppression system(s), including, but not limited to, control valves, pressure levels, liquid agent levels and temperatures, pump power and running, engine temperature and overspeed, and room temperature. (SIG-IDS)

3.3.122.3 Nonrestorable Initiating Device. A device in which the sensing element is designed to be destroyed in the process of operation. (SIG-IDS)

3.3.122.4 Restorable Initiating Device. A device in which the sensing element is not ordinarily destroyed in the process of operation, whose restoration can be manual or automatic. (SIG-IDS)

3.3.122.5 Supervisory Signal-Initiating Device. An initiating device such as a valve supervisory switch, water level indicator, or low air pressure switch on a dry-pipe sprinkler system in which the change of state signals an off-normal condition and its restoration to normal of a fire protection or life safety system; or a need for action in connection with guard tours, fire suppression systems or equipment, or maintenance features of related systems. (SIG-IDS)

3.3.123 Initiating Device Circuit. A circuit to which automatic or manual initiating devices are connected where the signal received does not identify the individual device operated. (SIG-PRO)

3.3.124 Inspection Personnel. See 3.3.177, Personnel.

3.3.125 Intelligibility. The quality or condition of being intelligible. (SIG-NAS)

3.3.126* Intelligible. Capable of being understood; comprehensible; clear. (SIG-NAS)

3.3.127 Interface.

3.3.127.1 Circuit Interface. A circuit component that interfaces initiating devices or control circuits, or both; notification appliances or circuits, or both; system control outputs; and other signaling line circuits to a signaling line circuit. (SIG-PRO)

3.3.127.1.1 Signaling Line Circuit Interface. A system component that connects a signaling line circuit to any combination of initiating devices, initiating device circuits, notification appliances, notification appliance circuits, system control outputs, and other signaling line circuits. (SIG-PRO)

3.3.127.2* Fire Alarm Control Interface. The fire alarm control interface coordinates signals to and from the fire alarm system and other systems. (SIG-ECS)

3.3.128 Ionization Smoke Detection. See 3.3.252, Smoke Detection.

3.3.129 Leg Facility. The portion of a communications channel that connects not more than one protected premises to a primary or secondary trunk facility. The leg facility includes the portion of the signal transmission circuit from its point of connection with a trunk facility to the point where it is terminated within the protected premises at one or more transponders. (SIG-SSS)

3.3.130 Level Ceilings. See 3.3.31, Ceiling.

3.3.131 Life Safety Network. A type of combination system that transmits fire safety control data through gateways to other building system control units. (SIG-PRO)

3.3.132 Line-Type Detector. See 3.3.59, Detector.

3.3.133 Living Area. Any normally occupiable space in a residential occupancy, other than sleeping rooms or rooms that are intended for combination sleeping/living, bathrooms, toilet compartments, kitchens, closets, halls, storage or utility spaces, and similar areas. [101, 2009] (SIG-HOU)

3.3.134 Loading Capacity. The maximum number of discrete elements of fire alarm systems permitted to be used in a particular configuration. (SIG-SSS)

3.3.135 Local Energy Type Auxiliary Alarm System. See 3.3.199, Public Emergency Alarm Reporting System.

3.3.136* Local Operating Console (LOC). A station used by authorized personnel and emergency responders to activate and operate an in-building mass notification system. (SIG-ECS)

3.3.137 Lodging or Rooming House. A building or portion thereof that does not qualify as a one- or two-family dwelling, that provides sleeping accommodations for a total of 16 or fewer people on a transient or permanent basis, without personal care services, with or without meals, but without separate cooking facilities for individual occupants. [101, 2009] (SIG-HOU)

3.3.138 Loss of Power. The reduction of available voltage at the load below the point at which equipment can function as designed. (SIG-FUN)

3.3.139 Low-Power Radio Transmitter. Any device that communicates with associated control/receiving equipment by low-power radio signals. (SIG-PRO)

3.3.140 Maintenance. Work, including, but not limited to, repair, replacement, and service, performed to ensure that equipment operates properly. (SIG-TMS)

3.3.141* Managed Facilities-Based Voice Network (MFVN). A physical facilities-based network capable of transmitting real time signals with formats unchanged that is managed, operated, and maintained by the service provider to ensure service quality and reliability from the subscriber location to public switched telephone network (PSTN) interconnection points or other MFVN peer networks. (SIG-SSS)

Subsection 3.3.141 was revised by a tentative interim amendment (TIA). See page 1.

3.3.142 Manual Fire Alarm Box. See 3.3.8, Alarm Box.

3.3.143* Mass Notification Priority Mode. The mode of operation whereby all fire alarm occupant notification is superseded by emergency mass notification action. (SIG-ECS)

3.3.144* Mass Notification System. See 3.3.79.1.3, In-Building Mass Notification System. (SIG-PRO)

3.3.145 Master Box. See 3.3.8, Alarm Box.

3.3.146 Master Fire Alarm Control Unit. See 3.3.92, Fire Alarm Control Unit.

3.3.147 Multi-Criteria Detector. See 3.3.59, Detector.

3.3.148 Multiple Dwelling Unit. See 3.3.74, Dwelling Unit.

3.3.149 Multiple Station Alarm. A single station alarm capable of being interconnected to one or more additional alarms so that the actuation of one causes the appropriate alarm signal to operate in all interconnected alarms. (SIG-HOU)

3.3.150 Multiple Station Alarm Device. Two or more single station alarm devices that can be interconnected so that actuation of one causes all integral or separate audible alarms to operate; or one single station alarm device having connections to other detectors or to a manual fire alarm box. (SIG-HOU)

3.3.151 Multiplexing. A signaling method characterized by simultaneous or sequential transmission, or both, and reception of multiple signals on a signaling line circuit, a transmission channel, or a communications channel, including means for positively identifying each signal. (SIG-SSS)

3.3.152 Multi-Sensor Detector. See 3.3.59, Detector.

3.3.153 Municipal Fire Alarm Box (Street Box). A publicly accessible alarm box. See 3.3.8, Alarm Box.

3.3.154 Municipal Fire Alarm System. See 3.3.95, Fire Alarm System.

3.3.155 Net-Centric Alerting System (NCAS). A net-centric alerting system incorporates web-based management and alert activation application through which all operators and administrators could gain access to the system's capabilities based on the users' permissions and the defined access policy. (SIG-ECS)

3.3.156 Network Architecture. The physical and logical design of a network, and the inherent ability of the design to carry data from one point to another. [SIG-ECS]

3.3.157 Noncontiguous Property. See 3.3.191, Property.

3.3.158* Nonrequired. A fire alarm system component or group of components that is installed at the option of the owner, and is not installed due to a building or fire code requirement. (SIG-FUN)

3.3.159 Nonrestorable Initiating Device. See 3.3.122, Initiating Device.

3.3.160 Notification Appliance. A fire alarm system component such as a bell, horn, speaker, light, or text display that provides audible, tactile, or visible outputs, or any combination thereof. (SIG-NAS)

3.3.160.1 Audible Notification Appliance. A notification appliance that alerts by the sense of hearing. (SIG-NAS)

3.3.160.1.1 Exit Marking Audible Notification Appliance. An audible notification appliance that marks building exits and areas of refuge by the sense of hearing for the purpose of evacuation or relocation. (SIG-NAS)

3.3.160.1.2* Textual Audible Notification Appliance. A notification appliance that conveys a stream of audible information. (SIG-NAS)

3.3.160.2 Tactile Notification Appliance. A notification appliance that alerts by the sense of touch or vibration. (SIG-NAS)

3.3.160.3 Visible Notification Appliance. A notification appliance that alerts by the sense of sight. (SIG-NAS)

3.3.160.3.1 Textual Visible Notification Appliance. A notification appliance that conveys a stream of visible information that displays an alphanumeric or pictorial message. Textual visible notification appliances provide temporary text, permanent text, or symbols. Textual visible notification appliances include, but are not limited to, annunciators, monitors, CRTs, displays, and printers. (SIG-NAS)

3.3.161 Notification Appliance Circuit. A circuit or path directly connected to a notification appliance(s). (SIG-PRO)

3.3.162 Notification Zone. See 3.3.300, Zone.

3.3.163* Octave Band. The bandwidth of a filter that comprises a frequency range of a factor of 2. (SIG-NAS)

3.3.163.1 One-Third Octave Band. The bandwidth of a filter that comprises a frequency range of a factor of $2^{1/3}$. (SIG-NAS)

3.3.164 Off-Hook. To make connection with the public-switched telephone network in preparation for dialing a telephone number. (SIG-SSS)

3.3.165 One-Third Octave Band. See 3.3.163, Octave Band.

3.3.166 One-Way Emergency Communications System. See 3.3.79, Emergency Communications System.

3.3.167 On-Hook. To disconnect from the public-switched telephone network. (SIG-SSS)

3.3.168 Open Area Detection (Protection). Protection of an area such as a room or space with detectors to provide early warning of fire. (SIG-IDS)



3.3.169 Operating Mode.

3.3.169.1 Private Operating Mode. Audible or visible signaling only to those persons directly concerned with the implementation and direction of emergency action initiation and procedure in the area protected by the fire alarm system. (SIG-NAS)

3.3.169.2 Public Operating Mode. Audible or visible signaling to occupants or inhabitants of the area protected by the fire alarm system. (SIG-NAS)

3.3.170 Other Fire Detectors. See 3.3.59, Detector.

3.3.171* Ownership. Any property or building or its contents under legal control by the occupant, by contract, or by holding of a title or deed. (SIG-SSS)

3.3.172 Paging System. A system intended to page one or more persons by such means as voice over loudspeaker, coded audible signals or visible signals, or lamp annunciators. (SIG-PRO)

3.3.173 Parallel Telephone System. A telephone system in which an individually wired circuit is used for each fire alarm box. (SIG-SSS)

3.3.174 Path (Pathways). Any circuit, conductor, optic fiber, radio carrier, or other means connecting two or more locations. (SIG-PRO)

3.3.175 Pathway Survivability. The ability of any conductor, optic fiber, radio carrier, or other means for transmitting system information to remain operational during fire conditions. [SIG-ECS]

3.3.176 Permanent Visual Record (Recording). An immediately readable, not easily alterable, print, slash, or punch record of all occurrences of status change. (SIG-SSS)

3.3.177 Personnel.

3.3.177.1 Inspection Personnel. Individuals who conduct a visual examination of a system or portion thereof to verify that it appears to be in operating condition, in proper location, and is free of physical damage or conditions that impair operation. (SIG-TMS)

3.3.177.2 Service Personnel. Individuals who perform those procedures, adjustments, replacement of components, system programming, and maintenance as described in the manufacturer's service instructions that can affect any aspect of the performance of the system. (SIG-TMS)

3.3.177.3 Testing Personnel. Individuals who perform procedures used to determine the status of a system as intended by conducting acceptance, reacceptance, or periodic physical checks on systems. (SIG-TMS)

3.3.178 Photoelectric Light Obscuration Smoke Detection. See 3.3.252, Smoke Detection.

3.3.179 Photoelectric Light-Scattering Smoke Detection. See 3.3.252, Smoke Detection.

3.3.180 Plant. One or more buildings under the same ownership or control on a single property. (SIG-SSS)

3.3.181 Pneumatic Rate-of-Rise Tubing Heat Detector. See 3.3.59, Detector.

3.3.182 Positive Alarm Sequence. An automatic sequence that results in an alarm signal, even when manually delayed for investigation, unless the system is reset. (SIG-PRO)

3.3.183 Power Supply. A source of electrical operating power, including the circuits and terminations connecting it to the dependent system components. (SIG-FUN)

3.3.184 Primary Battery (Dry Cell). A nonrechargeable battery requiring periodic replacement. (SIG-FUN)

3.3.185 Primary Trunk Facility. That part of a transmission channel connecting all leg facilities to a supervising or subsidiary station. (SIG-SSS)

3.3.186 Prime Contractor. The one company contractually responsible for providing central station services to a subscriber as required by this Code. The prime contractor can be either a listed central station or a listed alarm service—local company. (SIG-SSS)

3.3.187 Private Operating Mode. See 3.3.169, Operating Mode.

3.3.188 Private Radio Signaling. A radio system under control of the proprietary supervising station. (SIG-SSS)

3.3.189 Profound Hearing Loss. See 3.3.113, Hearing Loss.

3.3.190 Projected Beam-Type Detector. See 3.3.59, Detector.

3.3.191 Property.

3.3.191.1 Contiguous Property. A single-owner or single-user protected premises on a continuous plot of ground, including any buildings thereon, that is not separated by a public thoroughfare, transportation right-of-way, property owned or used by others, or body of water not under the same ownership. (SIG-SSS)

3.3.191.2 Noncontiguous Property. An owner- or user-protected premises where two or more protected premises, controlled by the same owner or user, are separated by a public thoroughfare, body of water, transportation right-of-way, or property owned or used by others. (SIG-SSS)

3.3.192 Proprietary Supervising Station. See 3.3.266, Supervising Station.

3.3.193 Proprietary Supervising Station Alarm System. See 3.3.267, Supervising Station Alarm System.

3.3.194 Proprietary Supervising Station Service. See 3.3.268, Supervising Station Service.

3.3.195 Protected Premises. The physical location protected by a fire alarm system. (SIG-PRO)

3.3.196 Protected Premises (Local) Control Unit. See 3.3.92, Fire Alarm Control Unit.

3.3.197 Protected Premises (Local) Fire Alarm System. See 3.3.95, Fire Alarm System.

3.3.198 Public Address System. An electronic amplification system with a mixer, amplifier, and loudspeakers, used to reinforce a given sound and distributing the "sound" to the general public around a building. [SIG-ECS]

3.3.199 Public Emergency Alarm Reporting System. A system of alarm-initiating devices, transmitting and receiving equipment, and communication infrastructure (other than a public telephone network) used to communicate with the communications center to provide any combination of manual or auxiliary alarm service. (SIG-PRS)

3.3.199.1* Auxiliary Alarm System. A protected premises fire alarm system or other emergency system at the protected premises and the system used to connect the protected premises system to a public emergency alarm reporting system for transmitting an alarm to the communications center. (SIG-PRS)

3.3.199.1.1 Local Energy Type Auxiliary Alarm System. An auxiliary system that employs a locally complete arrangement of parts, initiating devices, relays, power supply, and associated components to automatically activate a master box or auxiliary box over circuits that are electrically isolated from the public emergency alarm reporting system circuits. (SIG-PRS)

3.3.199.1.2 Shunt-Type Auxiliary Alarm System. An auxiliary system electrically connected to the public emergency alarm reporting system extending a public emergency alarm reporting circuit to interconnect initiating devices within a protected premises, which, when operated, opens the public emergency alarm reporting circuit shunted around the trip coil of the master box or auxiliary box. The master box or auxiliary box is thereupon energized to start transmission without any assistance from a local source of power. (SIG-PRS)

3.3.199.2 Type A Public Emergency Alarm Reporting System. A system in which an alarm from an alarm box is received and is retransmitted to fire stations either manually or automatically. (SIG-PRS)

3.3.199.3 Type B Public Emergency Alarm Reporting System. A system in which an alarm from an alarm box is automatically transmitted to fire stations and, if used, is transmitted to supplementary alerting devices. (SIG-PRS)

3.3.200 Public Operating Mode. See 3.3.169, Operating Mode.

3.3.201 Public Safety Agency. A fire, emergency medical services, or law enforcement agency. (SIG-ECS)

3.3.202 Public Safety Radio Enhancement System. A system installed to assure the effective operation of radio communication systems used by fire, emergency medical services, or law enforcement agencies. (SIG-ECS)

3.3.203 Public Safety Radio System. A radio communication system used by fire, emergency medical services, or law enforcement agencies. (SIG-ECS)

3.3.204 Public Switched Telephone Network. See 3.3.273, Switched Telephone Network.

3.3.205 Publicly Accessible Fire Alarm Box. See 3.3.8, Fire Alarm Box.

3.3.206* Qualified. A competent and capable person or company that has met the requirements and training for a given field acceptable to the authority having jurisdiction. [96, 2008] (SIG-TMS)

3.3.207 Radiant Energy-Sensing Fire Detector. See 3.3.59, Detector.

3.3.208 Radio Alarm Repeater Station Receiver (RARSR). A system component that receives radio signals and resides at a repeater station that is located at a remote receiving location. (SIG-SSS)

3.3.209 Radio Alarm Supervising Station Receiver (RASSR). A system component that receives data and annunciates that data at the supervising station. (SIG-SSS)

3.3.210 Radio Alarm System (RAS). A system in which signals are transmitted from a radio alarm transmitter (RAT) located at a protected premises through a radio channel to two or more radio alarm repeater station receivers (RARSR) and that are annunciated by a radio alarm supervising station receiver (RASSR) located at the central station. (SIG-SSS)

3.3.211 Radio Alarm Transmitter (RAT). A system component at the protected premises to which initiating devices or groups of devices are connected that transmits signals indicating a status change of the initiating devices. (SIG-SSS)

3.3.212 Radio Channel. See 3.3.40, Channel.

3.3.213 Rate Compensation Detector. See 3.3.59, Detector.

3.3.214 Rate-of-Rise Detector. See 3.3.59, Detector.

3.3.215 Record Drawings. Drawings (as-built) that document the location of all devices, appliances, wiring sequences, wiring methods, and connections of the components of the fire alarm system as installed. (SIG-FUN)

3.3.216 Record of Completion. A document that acknowledges the features of installation, operation (performance), service, and equipment with representation by the property owner, system installer, system supplier, service organization, and the authority having jurisdiction. (SIG-FUN)

3.3.217 Regional Operations Center (ROC). A network control center that covers multiple geographically separated facilities and installations. (SIG-ECS)

3.3.218 Releasing Fire Alarm System. See 3.3.95, Fire Alarm System.

3.3.219 Releasing Service Fire Alarm Control Unit. See 3.3.92, Fire Alarm Control Unit.

3.3.220 Relocation. The movement of occupants from a fire zone to a safe area within the same building. (SIG-PRO)

3.3.221 Remote Supervising Station. See 3.3.266, Supervising Station.

3.3.222 Remote Supervising Station Alarm System. See 3.3.267, Supervising Station Alarm System.

3.3.223 Remote Supervising Station Service. See 3.3.268, Supervising Station Service.

3.3.224 Repeater Station. The location of the equipment needed to relay signals between supervising stations, subsidiary stations, and protected premises. (SIG-SSS)

3.3.225 Reset. A control function that attempts to return a system or device to its normal, nonalarm state. (SIG-FUN)

3.3.226 Residential Board and Care Occupancy. A building or portion thereof that is used for lodging and boarding of four or more residents, not related by blood or marriage to the owners or operators, for the purpose of providing personal care services. [101, 2009] (SIG-HOU)

3.3.227 Residential Occupancy. An occupancy that provides sleeping accommodations for purposes other than health care or detention and correctional. [101, 2009] (SIG-HOU)

3.3.228 Restorable Initiating Device. See 3.3.122, Initiating Device.

3.3.229 Risk Analysis. A process to characterize the likelihood, vulnerability, and magnitude of incidents associated with natural, technological, and manmade disasters and other emergencies that address scenarios of concern, their probability, and their potential consequences. [SIG-ECS]

3.3.230 Runner. A person other than the required number of operators on duty at central, supervising, or runner stations (or otherwise in contact with these stations) available for prompt dispatching, when necessary, to the protected premises. (SIG-SSS)

3.3.231 Runner Service. The service provided by a runner at the protected premises, including restoration, resetting, and silencing of all equipment transmitting fire alarm or supervisory or trouble signals to an off-premises location. (SIG-SSS)

3.3.232 Scanner. Equipment located at the telephone company wire center that monitors each local leg and relays status changes to the alarm center. Processors and associated equipment might also be included. (SIG-SSS)

3.3.233 Secondary Trunk Facility. That part of a transmission channel connecting two or more, but fewer than all, leg facilities to a primary trunk facility. (SIG-SSS)

3.3.234 Selective Talk Mode. See 3.3.277, Talk Mode.

3.3.235 Separate Sleeping Area. The area of a dwelling unit where the bedrooms or sleeping rooms are located. [720, 2009] (SIG-HOU)

3.3.236 Service Personnel. See 3.3.177, Personnel.

3.3.237 Shapes of Ceilings. The shapes of ceilings can be classified as sloping or smooth. (SIG-IDS)

3.3.238 Shop Drawings. Documents that provide information pertaining to the system, such as property location, scaled floor plans, equipment wiring details, typical equipment installation details, riser details, conduit/conductor size and routing information, and other information necessary for the installer to complete the fire alarm installation. (SIG-FUN)

3.3.239 Shunt-Type Auxiliary Alarm System. See 3.3.199, Public Emergency Alarm Reporting System.

3.3.240 Signal. A status indication communicated by electrical or other means. (SIG-FUN)

3.3.240.1 Alarm Signal. A signal indicating an emergency condition or an alert that requires action. (SIG-FUN)

3.3.240.2 Delinquency Signal. A signal indicating the need for action in connection with the supervision of guards or system attendants. (SIG-PRO)

3.3.240.3 Evacuation Signal. A distinctive signal intended to be recognized by the occupants as requiring evacuation of the building. (SIG-PRO)

3.3.240.4 Fire Alarm Signal. A signal initiated by a fire alarm-initiating device such as a manual fire alarm box, automatic fire detector, waterflow switch, or other device in which activation is indicative of the presence of a fire or fire signature. (SIG-FUN)

3.3.240.5 Guard's Tour Supervisory Signal. A supervisory signal monitoring the performance of guard patrols. (SIG-PRO)

3.3.240.6 Supervisory Signal. A signal indicating the need for action in connection with the supervision of guard tours, the fire suppression systems or equipment, or the maintenance features of related systems. (SIG-FUN)

3.3.240.7 Trouble Signal. A signal initiated by a system or device indicative of a fault in a monitored circuit, system, or component. (SIG-FUN)

3.3.241 Signal Transmission Sequence. A DACT that obtains dial tone, dials the number(s) of the DACR, obtains verification that the DACR is ready to receive signals, transmits the signals, and receives acknowledgment that the DACR has accepted that signal before disconnecting (going on-hook). (SIG-SSS)

3.3.242 Signaling Line Circuit. A circuit path between any combination of addressable appliances or devices, circuit interfaces, control units, or transmitters over which multiple system input signals or output signals or both are carried. (SIG-PRO)

3.3.243 Signaling Line Circuit Interface. See 3.3.127, Interface.

3.3.244 Single Dwelling Unit. See 3.3.74, Dwelling Unit.

3.3.245 Single Station Alarm. A detector comprising an assembly that incorporates a sensor, control components, and an alarm notification appliance in one unit operated from a power source either located in the unit or obtained at the point of installation. (SIG-HOU)

3.3.246 Single Station Alarm Device. An assembly that incorporates the detector, the control equipment, and the alarm-sounding device in one unit operated from a power supply either in the unit or obtained at the point of installation. (SIG-HOU)

3.3.247 Site-Specific Software. See 3.3.255, Software.

3.3.248 Sloping Ceiling. See 3.3.31, Ceiling.

3.3.249 Sloping Peaked-Type Ceiling. See 3.3.31, Ceiling.

3.3.250 Sloping Shed-Type Ceiling. See 3.3.31, Ceiling.

3.3.251 Smoke Alarm. A single or multiple station alarm responsive to smoke. (SIG-HOU)

3.3.252 Smoke Detection.

3.3.252.1 Cloud Chamber Smoke Detection. The principle of using an air sample drawn from the protected area into a high-humidity chamber combined with a lowering of chamber pressure to create an environment in which the resultant moisture in the air condenses on any smoke particles present, forming a cloud. The cloud density is measured by a photoelectric principle. The density signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

3.3.252.2* Ionization Smoke Detection. The principle of using a small amount of radioactive material to ionize the air between two differentially charged electrodes to sense the presence of smoke particles. Smoke particles entering the ionization volume decrease the conductance of the air by reducing ion mobility. The reduced conductance signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

3.3.252.3* Photoelectric Light Obscuration Smoke Detection. The principle of using a light source and a photosensitive sensor onto which the principal portion of the source emissions is focused. When smoke particles enter the light path, some of the light is scattered and some is absorbed, thereby reducing the light reaching the receiving sensor. The light reduction signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

3.3.252.4* Photoelectric Light-Scattering Smoke Detection. The principle of using a light source and a photosensitive sensor arranged so that the rays from the light source do not normally fall onto the photosensitive sensor. When smoke particles enter the light path, some of the light is scattered by reflection and refraction onto the sensor. The light signal is processed and used to convey an alarm condition when it meets preset criteria. (SIG-IDS)

3.3.252.5* Video Image Smoke Detection (VISED). The principle of using automatic analysis of real-time video images to detect the presence of smoke. (SIG-IDS)

3.3.253 Smoke Detector. See 3.3.59, Detector.

3.3.254 Smooth Ceiling. See 3.3.33, Ceiling Surfaces.

3.3.255 Software. Programs, instruments, procedures, data, and the like that are executed by a central processing unit of a product and that influences the functional performance of that product. For the purpose of this Code, software is one of two types: executive software and site-specific software. (SIG-TMS)

3.3.255.1 Executive Software. Control and supervisory program which manages the execution of all other programs and directly or indirectly causes the required functions of the product to be performed. Executive software is sometimes referred to as firmware, BIOS, or executive program. (SIG-TMS)

3.3.255.2 Site-Specific Software. Program that is separate from, but controlled by, the executive software which allows inputs, outputs, and system configuration to be selectively defined to meet the needs of a specific installation. Typically it defines the type and quantity of hardware, customized labels and the specific operating features of a system. (SIG-TMS)

3.3.256 Solid Joist Construction. See 3.3.33, Ceiling Surfaces.

3.3.257 Spacing. A horizontally measured dimension related to the allowable coverage of fire detectors. (SIG-IDS)

3.3.258* Spark. A moving particle of solid material that emits radiant energy due either to its temperature or the process of combustion on its surface. [654, 2006] (SIG-IDS)

3.3.259 Spark/Ember Detector. See 3.3.59, Detector.

3.3.260 Spark/Ember Detector Sensitivity. The number of watts (or the fraction of a watt) of radiant power from a point source radiator, applied as a unit step signal at the wavelength of maximum detector sensitivity, necessary to produce an alarm signal from the detector within the specified response time. (SIG-IDS)

3.3.261 Spot-Type Detector. See 3.3.59, Detector.

3.3.262 Stakeholder. Any individual, group, or organization that might affect, be affected by, or perceive itself to be affected by the risk. (SIG-ECS)

3.3.263 Stratification. The phenomenon where the upward movement of smoke and gases ceases due to the loss of buoyancy. (SIG-IDS)

3.3.264 Subscriber. The recipient of a contractual supervising station signal service(s). In case of multiple, noncontiguous properties having single ownership, the term refers to each protected premises or its local management. (SIG-SSS)

3.3.265 Subsidiary Station. A subsidiary station is a normally unattended location that is remote from the supervising station and is linked by a communications channel(s) to the supervising station. Interconnection of signals on one or more transmission channels from protected premises with a communications channel(s) to the supervising station is performed at this location. (SIG-SSS)

3.3.266 Supervising Station. A facility that receives signals from protected premises fire alarm systems and at which personnel are in attendance at all times to respond to these signals. (SIG-SSS)

3.3.266.1 Central Supervising Station. A supervising station that is listed for central station service and that also commonly provides less stringent supervising station services such as remote supervising services. (SIG-SSS)

3.3.266.2 Proprietary Supervising Station. A supervising station under the same ownership as the protected premises fire alarm system(s) that it supervises (monitors) and to which alarm, supervisory, or trouble signals are received and where personnel are in attendance at all times to supervise operation and investigate signals. (SIG-SSS)

3.3.266.3 Remote Supervising Station. A supervising station to which alarm, supervisory, or trouble signals or any combination of those signals emanating from protected premises fire alarm systems are received and where personnel are in attendance at all times to respond. (SIG-SSS)

3.3.267 Supervising Station Alarm Systems.

3.3.267.1 Central Station Service Alarm System. A system or group of systems in which the operations of circuits and devices are transmitted automatically to, recorded in, maintained by, and supervised from a listed central station that has competent and experienced servers and operators who, upon receipt of a signal, take such action as required by this Code. Such service is to be controlled and operated by a person, firm, or corporation whose business is the furnishing, maintaining, or monitoring of supervised alarm systems. (SIG-SSS)

3.3.267.2 Proprietary Supervising Station Alarm System. An installation of an alarm system that serves contiguous and noncontiguous properties, under one ownership, from a proprietary supervising station located at the protected premises, or at one of multiple non-contiguous protected premises, at which trained, competent personnel are in constant attendance. This includes the protected premises fire alarm system(s); proprietary supervising station; power supplies; signal-initiating devices; initiating device circuits; signal notification appliances; equipment for the automatic, permanent visual recording of signals; and equipment for initiating the operation of emergency building control services. (SIG-SSS)

3.3.267.3 Remote Supervising Station Alarm System. A protected premises fire alarm system (exclusive of any connected to a public emergency reporting system) in which alarm, supervisory, or trouble signals are transmitted automatically to, recorded in, and supervised from a remote supervising station that has competent and experienced servers and operators who, upon receipt of a signal, take such action as required by this Code. (SIG-SSS)

3.3.268 Supervising Station Service.

3.3.268.1 Central Station Service. The use of a system or a group of systems including the protected premises fire alarm system(s) in which the operations of circuits and devices are signaled to, recorded in, and supervised from a listed central station that has competent and experienced operators who, upon receipt of a signal, take such action as required by this Code. Related activities at the protected premises, such as equipment installation, inspection, testing, maintenance, and runner service, are the responsibility of the central station or a listed alarm service local company. Central station service is controlled and operated by a person, firm, or corporation whose business is the furnishing of such contracted services or whose properties are the protected premises. (SIG-SSS)

3.3.268.2 Proprietary Supervising Station Service. The use of a system or a group of systems including the protected premises fire alarm system(s) in which the operations of circuits and devices are signaled to, recorded in, and supervised from a supervising station under the same ownership as the protected premises that has competent and experienced operators who, upon receipt of a signal, take such action as required by this Code. Related activities at the protected premises, such as equipment installation, inspection, testing, maintenance, and runner service, are the responsibility of the owner. Proprietary supervising station service is controlled and operated by the entity whose properties are the protected premises. (SIG-SSS)

3.3.268.3 Remote Supervising Station Service. The use of a system including the protected premises fire alarm system(s) in which the operations of circuits and devices are signaled to, recorded in, and supervised from a supervising station that has competent and experienced operators who, upon receipt of a signal, take such action as required by this Code. Related activities at the protected premises, such as equipment installation, inspection, testing, and maintenance, are the responsibility of the owner. (SIG-SSS)

3.3.269 Supervisory Service. The service required to monitor performance of guard tours and the operative condition of fixed suppression systems or other systems for the protection of life and property. (SIG-PRO)

3.3.270 Supervisory Signal. See 3.3.240, Signal.

3.3.271 Supervisory Signal-Initiating Device. See 3.3.122, Initiating Device.

3.3.272 Supplementary. As used in this Code, *supplementary* refers to equipment or operations not required by this Code and designated as such by the authority having jurisdiction. (SIG-FUN)

3.3.273 Switched Telephone Network.

3.3.273.1 Loop Start Telephone Circuit. A loop start telephone circuit is an analog telephone circuit that supports loop start signaling as specified in either Telcordia *GR-506-*

CORE, LATA Switching Systems Generic Requirements: Signaling for Analog Interface, or Telcordia *GR-909-CORE, Fiber in the Loop Systems Generic Requirements*. (SIG-SSS)

3.3.273.2 Public Switched Telephone Network. An assembly of communications equipment and telephone service providers that utilize managed facilities-based voice networks (MFVN) to provide the general public with the ability to establish communications channels via discrete dialing codes. (SIG-SSS)

Subsection 3.3.273 was revised by a tentative interim amendment (TIA). See page 1.

3.3.274 System Operator. An individual trained to operate and or initiate a mass notification system. (SIG-ECS)

3.3.275 System Unit. The active subassemblies at the supervising station used for signal receiving, processing, display, or recording of status change signals; a failure of one of these subassemblies causes the loss of a number of alarm signals by that unit. (SIG-SSS)

3.3.276 Tactile Notification Appliance. See 3.3.160, Notification Appliance.

3.3.277 Talk Mode. A means of communications within a building normally dedicated to emergency functions. Commonly referred to as fire fighters' phones, but can also be used for communications with fire fighters and/or fire wardens, including occupants, during an emergency, such as between a fire command center and a designated location, such as a stair, stairwell, or location of emergency equipment. (SIG-ECS)

3.3.277.1 Common Talk Mode. The ability to conference multiple telephones in a single conversation. This is similar to what was referred to as a party line. (SIG-ECS)

3.3.277.2 Selective Talk Mode. The ability for personnel at the fire command center to receive indication of incoming calls and choose which call to answer. This includes the ability to transfer between incoming calls and conference multiple phone locations. Selective calling may include the ability to initiate calls to emergency phone locations. (SIG-ECS)

3.3.278 Testing Personnel. See 3.3.177, Personnel.

3.3.279 Textual Audible Notification Appliance. See 3.3.160, Notification Appliance.

3.3.280 Textual Visible Notification Appliance. See 3.3.160, Notification Appliance.

3.3.281 Transmission Channel. See 3.3.40, Channel.

3.3.282 Transmitter. A system component that provides an interface between signaling line circuits, initiating device circuits, or control units and the transmission channel. (SIG-SSS)

3.3.283 Transponder. A multiplex alarm transmission system functional assembly located at the protected premises. (SIG-SSS)

3.3.284 Trouble Signal. See 3.3.240, Signal.

3.3.285 Two-Way Emergency Communications System. See 3.3.79, Emergency Communications System.

3.3.286 Type A Public Emergency Alarm Reporting System.

See 3.3.199, Public Emergency Alarm Reporting System.

3.3.287 Type B Public Emergency Alarm Reporting System.

See 3.3.199, Public Emergency Alarm Reporting System.

3.3.288 Uplink. The radio signal from the portable public safety subscriber transmitter to the base station receiver. (SIG-ECS)

3.3.289* Video Image Flame Detection (VIFD). The principle of using automatic analysis of real-time video images to detect the presence of flame. (SIG-IDS)

3.3.290 Video Image Smoke Detection (VISD). See 3.3.252, Smoke Detection.

3.3.291 Visible Notification Appliance. See 3.3.160, Notification Appliance.

3.3.292 Voice Message Priority. A scheme for prioritizing mass notification messages. (SIG-ECS)

3.3.293 WATS (Wide Area Telephone Service). Telephone company service allowing reduced costs for certain telephone call arrangements. In-WATS or 800-number service calls can be placed from anywhere in the continental United States to the called party at no cost to the calling party. Out-WATS is a service whereby, for a flat-rate charge, dependent on the total duration of all such calls, a subscriber can make an unlimited number of calls within a prescribed area from a particular telephone terminal without the registration of individual call charges. (SIG-SSS)

3.3.294* Wavelength. The distance between the peaks of a sinusoidal wave. All radiant energy can be described as a wave having a wavelength. Wavelength serves as the unit of measure for distinguishing between different parts of the spectrum. Wavelengths are measured in microns (μm), nanometers (nm), or angstroms ($\text{\AA}$). (SIG-IDS)

3.3.295 Wide-Area Mass Notification System. See 3.3.79, Emergency Communications System.

3.3.296 Wide Area Signaling. Signaling intended to provide alerting or information to exterior open spaces, such as campuses, neighborhood streets, a city, a town, or a community. (SIG-NAS)

3.3.297 Wireless Control Unit. See 3.3.53, Control Unit.

3.3.298 Wireless Protection System. A system or a part of a system that can transmit and receive signals without the aid of interconnection wiring. It can consist of either a wireless control unit or a wireless repeater. (SIG-PRO)

3.3.299 Wireless Repeater. A component used to relay signals among wireless devices, appliances, and control units. (SIG-PRO)

3.3.300 Zone. A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent, or an area in which a form of control can be executed. (SIG-FUN)

3.3.300.1* Evacuation Signaling Zone. A discrete area of a building, bounded by smoke or fire barriers, from which occupants are intended to relocate or evacuate. (SIG-PRO)

3.3.300.2 Notification Zone. An area covered by notification appliances that are activated simultaneously. (SIG-PRO)

Chapter 4 Reserved

Chapter 5 Reserved

Chapter 6 Reserved

Chapter 7 Reserved

Chapter 8 Reserved

Chapter 9 Reserved

Chapter 10 Fundamentals

10.1 Application.

10.1.1 The basic functions of a complete fire alarm or signaling system shall comply with the requirements of this chapter.

10.1.2 The requirements of this chapter shall apply to systems, equipment, and components addressed in Chapters 12, 14, 17, 18, 21, 23, 24, 26 and 27.

10.2 Purpose. The purpose of fire alarm and signaling systems shall be primarily to provide notification of alarm, supervisory, and trouble conditions; to alert the occupants; to summon aid; and to control emergency control functions.

10.3 Equipment.

10.3.1 Equipment constructed and installed in conformity with this Code shall be listed for the purpose for which it is used.

10.3.2 System components shall be installed, tested, and maintained in accordance with the manufacturer's published instructions and this Code.

10.3.3* All devices and appliances that receive their power from the initiating device circuit or signaling line circuit of a control unit shall be listed for use with the control unit.

10.4 Personnel Qualifications.

10.4.1 System Designer.

10.4.1.1 Fire alarm system and emergency communications system plans and specifications shall be developed in accordance with this Code by persons who are experienced in the proper design, application, installation, and testing of the systems.

10.4.1.2 State or local licensure regulations shall be followed to determine qualified personnel. Depending on state or local licensure regulations, qualified personnel shall include, but not be limited to, one or more of the following:

- (1) Personnel who are registered, licensed, or certified by a state or local authority



- (2) Personnel who are certified by a nationally recognized certification organization acceptable to the authority having jurisdiction
- (3) Personnel who are factory trained and certified for fire alarm system design and emergency communications system design of the specific type and brand of system and who are acceptable to the authority having jurisdiction

10.4.1.3 The system designer shall provide evidence of their qualifications and/or certifications when requested by the authority having jurisdiction.

10.4.1.4 The system designer shall be identified on the system design documents.

10.4.2 System Installer.

10.4.2.1 Fire alarm systems and emergency communications systems installation personnel shall be qualified or shall be supervised by persons who are qualified in the installation, inspection, and testing of the systems.

10.4.2.2 State or local licensure regulations shall be followed to determine qualified personnel. Depending on state or local licensure regulations, qualified personnel shall include, but not be limited to, one or more of the following:

- (1) Personnel who are registered, licensed, or certified by a state or local authority
- (2) Personnel who are certified by a nationally recognized certification organization acceptable to the authority having jurisdiction
- (3) Personnel who are factory trained and certified for fire alarm system installation and emergency communications system installation of the specific type and brand of system and who are acceptable to the authority having jurisdiction

10.4.2.3 The system installer shall provide evidence of their qualifications and/or certifications when requested by the authority having jurisdiction.

10.4.3 Inspection, Testing, and Maintenance Personnel. (SIG-TMS)

10.4.3.1* Service personnel shall be qualified and experienced in the inspection, testing, and maintenance of systems addressed within the scope of this Code. Qualified personnel shall include, but not be limited to, one or more of the following:

- (1)*Personnel who are factory trained and certified for the specific type and brand of system being serviced
- (2)*Personnel who are certified by a nationally recognized certification organization acceptable to the authority having jurisdiction
- (3)*Personnel who are registered, licensed, or certified by a state or local authority to perform service on systems addressed within the scope of this Code
- (4) Personnel who are employed and qualified by an organization listed by a nationally recognized testing laboratory for the servicing of systems within the scope of this Code

10.4.3.2 Evidence of qualifications shall be provided to the authority having jurisdiction upon request.

10.4.4 Supervising Station Operators. (SIG-SSS)

10.4.4.1 All operators in the supervising station shall demonstrate competence in all tasks required of them in Chapter 26 by one or more of the following:

- (1) Certified by the manufacturer of the receiving system or equipment or the alarm-monitoring automation system
- (2)*Certified by an organization acceptable to the authority having jurisdiction
- (3) Licensed or certified by a state or local authority
- (4) Other training or certification approved by the authority having jurisdiction

10.4.4.2 Evidence of qualifications and/or certification shall be provided when requested by the authority having jurisdiction. A license or qualification listing shall be current in accordance with the requirements of the issuing authority or organization.

10.4.4.3 Operator trainees shall be under the direct supervision of a qualified operator until qualified as required by 10.4.4.1.

10.5 Power Supplies.

10.5.1 Scope. The provisions of this section shall apply to power supplies used for protected premises fire alarm systems, supervising station alarm systems, public emergency alarm reporting systems, and emergency communications systems and equipment.

10.5.2 Code Conformance. All power supplies shall be installed in conformity with the requirements of *NFPA 70, National Electrical Code*, for such equipment and with the requirements indicated in this subsection.

10.5.3 Power Supply Sources.

10.5.3.1 Power shall be supplied in compliance with either 10.5.3.2 or 10.5.4.

10.5.3.2 Unless configured in compliance with 10.5.4, at least two independent and reliable power supplies shall be provided, one primary and one secondary.

10.5.3.3 Each power supply shall be of adequate capacity for the application.

10.5.3.4 Monitoring the integrity of power supplies shall be in accordance with 10.17.3.

10.5.4 Uninterruptible Power Supplies (UPS).

10.5.4.1 The UPS device shall be configured in compliance with NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, for a Type 0, Class 24, Level 1 system.

10.5.4.2 The UPS device shall be supplied by a dedicated branch circuit as described in 10.5.5.1.

10.5.4.3 Failure of the UPS shall result in the initiation of a trouble signal in accordance with Section 10.12.

10.5.5 Primary Power Supply.

10.5.5.1 Dedicated Branch Circuit. A dedicated branch circuit of one of the following shall supply primary power:

- (1) Commercial light and power
- (2) An engine-driven generator or equivalent in accordance with 10.5.10.2, where a person specifically trained in its operation is on duty at all times
- (3) An engine-driven generator or equivalent arranged for cogeneration with commercial light and power in accordance with 10.5.10.2, where a person specifically trained in its operation is on duty at all times

10.5.5.2 Circuit Identification and Accessibility.

10.5.5.2.1 The location of the dedicated branch circuit disconnecting means shall be permanently identified at the control unit.

10.5.5.2.2 For fire alarm systems the circuit disconnecting means shall be identified as "FIRE ALARM CIRCUIT."

10.5.5.2.3 For fire alarm systems the circuit disconnecting means shall have a red marking.

10.5.5.2.4 The circuit disconnecting means shall be accessible only to authorized personnel.

10.5.5.3 Mechanical Protection. The dedicated branch circuit(s) and connections shall be protected against physical damage.

10.5.5.4 Overcurrent Protection. An overcurrent protective device of suitable current-carrying capacity that is capable of interrupting the maximum short-circuit current to which it can be subject shall be provided in each ungrounded conductor.

10.5.6 Secondary Power Supply.**10.5.6.1* Secondary Power Supply for Protected Premises Fire Alarm Systems and Emergency Communications Systems.**

10.5.6.1.1 The secondary power supply shall consist of one of the following:

- (1) A storage battery dedicated to the system arranged in accordance with 10.5.9
- (2) An automatic-starting, engine-driven generator serving the dedicated branch circuit specified in 10.5.5.1 and arranged in accordance with 10.5.10.3.1, and storage batteries dedicated to the system with 4 hours of capacity arranged in accordance with 10.5.9

10.5.6.1.2 Secondary circuits that provide power to the control unit and are not integral to the unit shall be protected against physical damage.

10.5.6.2 Secondary Power Supply for Supervising Station Facilities.

10.5.6.2.1 The secondary power supply shall consist of one of the following:

- (1) Storage batteries dedicated to the supervising station equipment arranged in accordance with 10.5.9
- (2) A dedicated branch circuit of an automatic-starting, engine-driven generator arranged in accordance with 10.5.10.3.2.1 and 10.5.10.3.2.2, and storage batteries dedicated to the supervising station equipment with 4 hours of capacity arranged in accordance with 10.5.9
- (3) A dedicated branch circuit of multiple engine-driven generators, at least one of which is arranged for automatic starting in accordance with 10.5.10.3.2.1 and 10.5.10.3.2.2

10.5.6.2.2 Where 10.5.6.2.1(3) is used, the following shall apply:

- (1) Each generator shall be capable of supplying the energy required.
- (2) Generators that are started manually shall be arranged in accordance with 10.5.10.3.2.3 and 10.5.10.3.2.4.
- (3) When manual-start generators are employed, a person trained in the procedure of starting the generator shall be on duty at all times.

10.5.6.3* Capacity.

10.5.6.3.1 The secondary power supply shall have sufficient capacity to operate the system under quiescent load (system operating in a nonalarm condition) for a minimum of 24 hours and, at the end of that period, shall be capable of operating all alarm notification appliances used for evacuation or to direct aid to the location of an emergency for 5 minutes, unless otherwise permitted or required by the following:

- (1) Battery calculations shall include a 20 percent safety margin to the calculated amp-hour rating.
- (2) The secondary power supply for in-building fire emergency voice/alarm communications service shall be capable of operating the system under quiescent load for a minimum of 24 hours and then shall be capable of operating the system during a fire or other emergency condition for a period of 15 minutes at maximum connected load.
- (3) The secondary power supply capacity for supervising station facilities and equipment shall be capable of supporting operations for a minimum of 24 hours.
- (4) The secondary power supply for high-power speaker arrays used for wide-area mass notification systems shall be in accordance with 24.4.3.4.2.2.
- (5) The secondary power supply for textual visible appliances shall be in accordance with 24.4.3.4.7.1.
- (6) The secondary power supply capacity for central control stations of a wide-area mass notification systems shall be capable of supporting operations for a minimum of 24 hours.
- (7) The secondary power supply for in-building mass notification systems shall be capable of operating the system under quiescent load for a minimum of 24 hours and then shall be capable of operating the system during emergency condition for a period of 15 minutes at maximum connected load.

10.5.6.3.2 The secondary power supply capacity required shall include all power supply loads that are not automatically disconnected upon the transfer to secondary power supply.

10.5.6.4 Secondary Power Operation.

10.5.6.4.1 Operation on secondary power shall not affect the required performance of a system or supervising station facility, including alarm, supervisory, and trouble signals and indications.

10.5.6.4.2 Systems operating on secondary power shall comply with Section 10.17.

10.5.6.4.3 While operating on secondary power, audio amplifier monitoring shall comply with 10.17.2.1.2.

10.5.7* Continuity of Power Supplies.

10.5.7.1 The secondary power supply shall automatically provide power to the protected premises system within 10 seconds whenever the primary power supply fails to provide the minimum voltage required for proper operation.

10.5.7.2 The secondary power supply shall automatically provide power to the supervising station facility and equipment within 60 seconds whenever the primary power supply fails to provide the minimum voltage required for proper operation.

10.5.7.3 Required signals shall not be lost, interrupted, or delayed by more than 10 seconds as a result of the primary power failure.



10.5.7.3.1 Storage batteries dedicated to the system or UPS arranged in accordance with the provisions of NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, shall be permitted to supplement the secondary power supply to ensure required operation during the transfer period.

10.5.7.3.2 Where a UPS is employed in 10.5.7.3.1, a positive means for disconnecting the input and output of the UPS system while maintaining continuity of power supply to the load shall be provided.

10.5.8 Power Supply for Remotely Located Control Equipment.

10.5.8.1 Additional power supplies, where provided for control units, circuit interfaces, or other equipment essential to system operation, and located remotely from the main control unit, shall be comprised of a primary and secondary power supply that shall meet the same requirements as those of 10.5.1 through 10.5.7 and 10.17.3.

10.5.8.2 The location of any remotely located power supply shall be identified at the master control unit.

10.5.8.3 The master control unit display shall be permitted to satisfy the requirement of 10.5.8.2.

10.5.8.4 The location of any remotely located power supply shall be identified on the record drawings.

10.5.9* Storage Batteries.

10.5.9.1 Marking.

10.5.9.1.1 Batteries shall be marked with the month and year of manufacture using the month/year format.

10.5.9.1.2 Where the battery is not marked with the month/year by the manufacturer, the installer shall obtain the date-code and mark the battery with the month/year of battery manufacture.

10.5.9.2 Location. Storage batteries shall be located so that the equipment, including overcurrent devices, are not adversely affected by battery gases and shall conform to the requirements of NFPA 70, *National Electrical Code*, Article 480.

10.5.9.2.1 Cells shall be suitably insulated against grounds.

10.5.9.2.2 Cells shall be suitably insulated against crosses.

10.5.9.2.3 Cells shall be mounted in such a manner so as to be protected from physical damage.

10.5.9.2.4 Racks shall be suitably protected against deterioration.

10.5.9.2.5 If not located in or adjacent to the control unit, the batteries and their charger location shall be permanently identified at the control unit.

10.5.9.3 Battery Charging.

10.5.9.3.1 Adequate facilities shall be provided to automatically maintain the battery fully charged under all conditions of normal operation.

10.5.9.3.2 Adequate facilities shall be provided to recharge batteries within 48 hours after fully charged batteries have been subject to a single discharge cycle as specified in 10.5.6.3.

10.5.9.3.3 Upon attaining a fully charged condition, the charge rate shall not be so excessive as to result in battery damage.

10.5.9.3.4* Batteries shall be either trickle- or float-charged.

10.5.9.3.5 Supervising stations shall maintain spare parts or units available, which shall be used to restore failed charging capacity prior to the consumption of one-half of the capacity of the batteries for the supervising station equipment.

10.5.9.4 Overcurrent Protection.

10.5.9.4.1 The batteries shall be protected against excessive load current by overcurrent devices.

10.5.9.4.2 The batteries shall be protected from excessive charging current by overcurrent devices or by automatic current-limiting design of the charging source.

10.5.9.5 Metering. The charging equipment shall provide either integral meters or readily accessible terminal facilities for the connection of portable meters by which the battery voltage and charging current can be determined.

10.5.9.6 Monitoring Integrity of Battery Charger.

10.5.9.6.1 Means for monitoring integrity appropriate for the batteries and charger employed shall be provided to detect a battery charger failure.

10.5.9.6.2 Failure of the battery charger shall result in the initiation of a trouble signal in accordance with Section 10.12.

10.5.10 Engine-Driven Generators.

10.5.10.1 Application and Installation. The application and installation of engine-driven generators shall be as specified in 10.5.10.2 through 10.5.10.7.

10.5.10.2 Primary Power Supply.

10.5.10.2.1 Engine-driven generators arranged as the primary supply shall be designed in an approved manner.

10.5.10.2.2 Engine-driven generators arranged as the primary supply shall be installed in an approved manner.

10.5.10.3 Secondary Power Supplies.

10.5.10.3.1 Protected Premises.

10.5.10.3.1.1 Engine-driven generators used to provide secondary power for a protected premises fire alarm system or an emergency communications system shall comply with NFPA 110, *Standard for Emergency and Standby Power Systems*, Chapter 4, requirements for a Type 10, Class 24, Level 1 system.

10.5.10.3.1.2 Installation of engine-driven generators used to provide secondary power for a protected premises fire alarm system or an emergency communications system shall be in accordance with NFPA 70, *National Electrical Code*, Article 700.

10.5.10.3.1.3 Where survivability of circuits is required by another section of the Code, equal protection shall be provided for power supply circuits.

10.5.10.3.2 Supervising Station.

10.5.10.3.2.1 Automatic-starting, engine-driven generators used to provide secondary power for a supervising station shall comply with NFPA 110, *Standard for Emergency and Standby Power Systems*, Chapter 4, requirements for a Type 60, Class 24, Level 2 system.

10.5.10.3.2.2 Installation of automatic-starting, engine-driven generators used to provide secondary power for a supervising station shall be in accordance with NFPA 70, *National Electrical Code*, Article 701.

10.5.10.3.2.3 Manual-starting, engine-driven generators used to provide secondary power for a supervising station shall comply with NFPA 110, *Standard for Emergency and Standby Power Systems*, Chapter 10, requirements for a Type M, Class 24, Level 2 system.

10.5.10.3.2.4 Installation of manual-starting, engine-driven generators used to provide secondary power for a supervising station shall be in accordance with NFPA 70, *National Electrical Code*, Article 702.

10.5.10.4 Performance, Operation, Testing, and Maintenance. The requirements for performance, operation, testing, and maintenance of engine-driven generators shall conform to the applicable provisions of NFPA 110, *Standard for Emergency and Standby Power Systems*.

10.5.10.5 Capacity. The unit shall be of a capacity that is sufficient to operate the system under the maximum normal load conditions in addition to all other demands placed upon the unit.

10.5.10.6 Fuel. Unless otherwise required or permitted in 10.5.10.6.1 through 10.5.10.6.3, fuel shall be available in storage sufficient for 6 months of testing plus the capacity specified in 10.5.6.

10.5.10.6.1 For public emergency alarm reporting systems, the requirements of Chapter 27 shall apply.

10.5.10.6.2 If a reliable source of supply is available at any time on a 2-hour notice, it shall be permitted to have fuel in storage sufficient for 12 hours of operation at full load.

10.5.10.6.3 Fuel systems using natural or manufactured gas supplied through reliable utility mains shall not be required to have fuel storage tanks unless located in seismic risk zone 3 or greater as defined in ANSI A-58.1, *Building Code Requirements for Minimum Design Loads in Buildings and Other Structures*.

10.5.10.7 Battery and Charger. A separate storage battery and separate automatic charger shall be provided for starting the engine-driven generator and shall not be used for any other purpose.

10.6 Signal Priority. The priority of signals shall be in accordance with Section 10.6.

10.6.1 ECS priority signals when evaluated by stakeholders through a risk analysis in accordance with 24.4.2.2 shall be permitted to take precedence over all other signals.

10.6.2 Fire alarm signals shall take precedence over all other signals, except as permitted by 10.6.1 or 10.6.3.

10.6.3* Emergency mass notification signals and messages shall be permitted to have priority over fire alarm notification signals in accordance with the requirements of Chapter 24.

10.6.4 Emergency mass notification signals and messages shall have priority over supervisory and trouble signals in accordance with the requirements of Chapter 24.

10.6.5 Supervisory signals shall take precedence over trouble signals.

10.6.6 Hold-up alarms or other life-threatening signals shall be permitted to take precedence over supervisory and trouble signals where acceptable to the authority having jurisdiction.

10.6.7* Where separate systems are installed, they shall be permitted to achieve the priority of signals in accordance with Section 10.6.

10.7 Distinctive Signals.

10.7.1 Priority alarms, fire alarms, supervisory signals, and trouble signals shall be distinctively and descriptively annunciated.

10.7.2 Audible alarm notification appliances for a fire alarm system shall produce signals that are distinctive from other similar appliances used for other purposes in the same area that are not part of the fire alarm or emergency communications system.

10.7.3* Audible signals on a control unit, or on multiple control units that are interconnected to form a system, or at a remote location, shall be permitted to have the same audible characteristics for all alerting functions including, but not limited to, alarm, trouble, and supervisory, provided that the distinction between signals shall be by other appropriate means, such as visible annunciation.

10.7.4* Supervisory signals shall be distinctive in sound from other signals, and their sound shall not be used for any other purpose except as permitted in 10.7.3.

10.7.5 Trouble signals required to indicate at the protected premises shall be indicated by distinctive audible signals, which shall be distinctive from alarm signals except as permitted in 10.7.3.

10.7.6 Fire alarm evacuation signals shall be distinctive in sound from other signals, shall comply with the requirements of 18.4.2.1, and their sound shall not be used for any other purpose.

10.8* ECS Priority Signals. Visible indication of priority signals shall be automatically indicated within 10 seconds at the fire alarm control unit or other designated location. (SIG-ECS)

10.9 Fire Alarm Signals.

10.9.1 Fire alarm signals shall be distinctive in sound from other signals, shall comply with the requirements of 18.4.2.1, and their sound shall not be used for any other purpose.

10.9.2 Actuation of alarm notification appliances or emergency voice communications, emergency control functions, and annunciation at the protected premises shall occur within 10 seconds after the activation of an initiating device.

10.9.3* A coded alarm signal shall consist of not less than three complete rounds of the number transmitted.

10.9.4 Each round of a coded alarm signal shall consist of not less than three impulses.

10.10* Fire Alarm Signal Deactivation.

10.10.1 A means for turning off activated alarm notification appliance(s) shall be permitted only if it complies with 10.10.3 through 10.10.7.

10.10.2 When an alarm signal deactivation means is actuated, both audible and visible notification appliances shall be simultaneously deactivated.

10.10.3 The means shall be key-operated or located within a locked cabinet, or arranged to provide equivalent protection against unauthorized use.

10.10.4 The means shall provide a visible zone alarm indication or the equivalent as specified in 10.16.1.

10.10.5 Subsequent actuation of initiating devices on other initiating device circuits or subsequent actuation of address-



able initiating devices on signaling line circuits shall cause the notification appliances to reactivate.

Exception: Subsequent actuation of another addressable initiating device of the same type in the same room or space shall not be required to cause the notification appliance(s) to reactivate.

10.10.6 A means that is left in the “off” position when there is no alarm shall operate an audible trouble signal until the means is restored to normal.

10.10.7* Resetting of alarm signals shall comply with the requirements of 23.8.2.2.

10.11 Supervisory Signals.

10.11.1 Coded Supervisory Signal.

10.11.1.1 A coded supervisory signal shall be permitted to consist of two rounds of the number transmitted to indicate a supervisory off-normal condition.

10.11.1.2 A coded supervisory signal shall be permitted to consist of one round of the number transmitted to indicate the restoration of the supervisory condition to normal.

10.11.2 Combined Coded Alarm and Supervisory Signal Circuits. Where both coded sprinkler supervisory signals and coded fire or waterflow alarm signals are transmitted over the same signaling line circuit, provision shall be made to obtain either alarm signal precedence or sufficient repetition of the alarm signal to prevent the loss of an alarm signal.

10.11.3 Self-Restoring Supervisory Signal Indication. Visible and audible indication of self-restoring supervisory signals and visible indication of their restoration to normal shall be automatically indicated within 90 seconds at the following locations:

- (1) Fire alarm control unit for local fire alarm systems
- (2) Building fire command center for in-building fire emergency voice/alarm communications systems
- (3) Supervising station location for systems installed in compliance with Chapter 26

10.11.4 Latching Supervisory Signal Indication.

10.11.4.1 Visible and audible indication of latching supervisory signals shall be indicated within 90 seconds at the locations specified in 10.11.3.

10.11.4.2 Restoration of latching supervisory signals shall be indicated within 90 seconds at the locations specified in 10.11.3.

10.11.5 Supervisory Signal Silencing.

10.11.5.1 A means for silencing a supervisory signal notification appliance(s) shall be permitted only if it complies with 10.11.5.2 through 10.11.5.5.

10.11.5.2 The means shall be key-operated or located within a locked cabinet, or arranged to provide equivalent protection against unauthorized use.

10.11.5.3 The means shall transfer the supervisory indication to a lamp or other visible indicator, and subsequent supervisory signals in other zones shall cause the supervisory notification appliance(s) to re-sound.

10.11.5.4 A means that is left in the “silence” position where there is no supervisory off-normal signal shall operate a visible signal silence indicator.

10.11.5.5 A means that is left in the “silence” position shall cause the trouble signal to sound until the silencing means is restored to normal position.

10.12 Trouble Signals.

10.12.1 Trouble signals and their restoration to normal shall be indicated within 200 seconds at the locations identified in 10.12.6 or 10.12.7.

10.12.2 Indication of primary power failure trouble signals transmitted to a supervising station shall be delayed in accordance with 10.17.3.3.

10.12.3 If an intermittent signal is used, it shall sound at least once every 10 seconds, with a minimum duration of ½ second.

10.12.4 A single audible trouble signal shall be permitted to annunciate multiple fault conditions.

10.12.5 The trouble signal(s) shall be located in an area where it is likely to be heard.

10.12.6 Visible and audible trouble signals and visible indication of their restoration to normal shall be indicated at the following locations:

- (1) Fire alarm control unit for protected premises alarm systems
- (2) Building fire command center for in-building fire emergency voice/alarm communications systems
- (3) Central station or remote station location for systems installed in compliance with Chapter 26

10.12.7 Trouble signals and their restoration to normal shall be visibly and audibly indicated at the proprietary supervising station for systems installed in compliance with Chapter 26.

10.12.8 Audible Trouble Signal Silencing Means.

10.12.8.1 A means for silencing the trouble notification appliance(s) shall be permitted only if it complies with the following:

- (1) The means shall be key-operated or located within a locked cabinet, or arranged to provide equivalent protection against unauthorized use.
- (2) The means shall transfer the trouble indication to a suitably identified lamp or other acceptable visible indicator.
- (3) The visible indication specified in 10.12.8.1(2) shall persist until the trouble condition has been corrected.
- (4) The audible trouble signal shall sound when the silencing means is in its silence position and no trouble exists.

10.12.8.2 If an audible trouble notification appliance is also used to indicate a supervisory condition, as permitted by 10.7.3, a trouble signal silencing switch shall not prevent subsequent sounding of supervisory signals.

10.12.8.3* An audible trouble signal that has been silenced at the protected premises shall comply with the following:

- (1) The audible trouble signal shall automatically re-sound every 24 hours or less until fault conditions are restored to normal.
- (2) The audible trouble signal shall sound until it is manually silenced or acknowledged.
- (3) The re-sounded trouble signal shall also be automatically retransmitted to any supervising station to which the original trouble signal was transmitted.

10.12.8.4* If permitted by the authority having jurisdiction, the requirement for a 24-hour re-sound of an audible trouble

signal shall be permitted to occur only at a supervising station that meets the requirements of Chapter 26 and not at the protected premises.

10.13 Emergency Control Function Status Indicators.

10.13.1 All controls provided specifically for the purpose of manually overriding any automatic emergency control function shall provide visible indication of the status of the associated control circuits.

10.13.2* Where status indicators are provided for emergency equipment or control functions, they shall be arranged to reflect the actual status of the associated equipment or function.

10.14 Performance and Limitations.

10.14.1 Voltage, Temperature, and Humidity Variation. Equipment shall be designed so that it is capable of performing its intended functions under the following conditions:

- (1)*At 85 percent and at 110 percent of the nameplate primary (main) and secondary (standby) input voltage(s)
- (2) At ambient temperatures of 0°C (32°F) and 49°C (120°F)
- (3) At a relative humidity of 85 percent and an ambient temperature of 30°C (86°F)

10.14.2 Installation and Design.

10.14.2.1* All systems shall be installed in accordance with the specifications and standards approved by the authority having jurisdiction.

10.14.2.2 Devices and appliances shall be located and mounted so that accidental operation or failure is not caused by vibration or jarring.

10.14.2.3 All apparatus requiring rewinding or resetting to maintain normal operation shall be restored to normal as promptly as possible after each alarm and kept in normal condition for operation.

10.14.2.4 Equipment shall be installed in locations where conditions do not exceed the voltage, temperature, and humidity limits specified in the manufacturer's published instructions.

10.14.3 Initiating Devices.

10.14.3.1 Initiating devices of the manual or automatic type shall be selected and installed so as to minimize nuisance alarms.

10.14.3.2 Manual fire alarm boxes shall comply with Section 17.14 and 23.8.5.2.1.

10.15* Protection of Fire Alarm System. In areas that are not continuously occupied, automatic smoke detection shall be provided at the location of each fire alarm control unit(s), notification appliance circuit power extenders, and supervising station transmitting equipment to provide notification of fire at that location.

Exception: Where ambient conditions prohibit installation of automatic smoke detection, automatic heat detection shall be permitted.

10.16 Annunciation and Annunciation Zoning.

10.16.1 Alarm Annunciation.

10.16.1.1 Where required by other governing laws, codes, or standards, the location of an operated initiating device shall be annunciated by visible means.

10.16.1.1.1 Visible annunciation of the location of an operated initiating device shall be by an indicator lamp, alphanumeric display, printout, or other approved means.

10.16.1.1.2 The visible annunciation of the location of operated initiating devices shall not be canceled by the means used to deactivate alarm notification appliances.

10.16.2 Supervisory and Trouble Annunciation.

10.16.2.1 Where required by other governing laws, codes, or standards, supervisory and/or trouble conditions shall be annunciated by visible means.

10.16.2.1.1 Visible annunciation shall be by an indicator lamp, an alphanumeric display, a printout, or other means.

10.16.2.1.2 The visible annunciation of supervisory and/or trouble conditions shall not be canceled by the means used to deactivate supervisory or trouble notification appliances.

10.16.3* Annunciator Access and Location.

10.16.3.1 All required annunciation means shall be readily accessible to responding personnel.

10.16.3.2 All required annunciation means shall be located as required by the authority having jurisdiction to facilitate an efficient response to the fire situation.

10.16.4 Alarm Annunciation Display. Visible annunciators shall be capable of displaying all zones in alarm.

10.16.4.1 If all zones in alarm are not displayed simultaneously, the zone of origin shall be displayed.

10.16.4.2 If all zones in alarm are not displayed simultaneously, there shall be an indication that other zones are in alarm.

10.16.5 Fire Command Center. Annunciation at the fire command center shall be by means of audible and visible indicators.

10.16.6* Annunciation Zoning.

10.16.6.1 For the purpose of alarm annunciation, each floor of the building shall be considered as a separate zone.

10.16.6.2 For the purposes of alarm annunciation, if a floor of the building is subdivided into multiple zones by fire or smoke barriers and the fire plan for the protected premises allows relocation of occupants from the zone of origin to another zone on the same floor, each zone on the floor shall be annunciated separately.

10.16.6.3 Where the system serves more than one building, each building shall be annunciated separately.

10.17 Monitoring Integrity.

10.17.1* Monitoring Integrity of Installation Conductors and Other Signaling Channels.

10.17.1.1 Unless otherwise permitted or required by 10.17.1.3 through 10.17.1.14, all means of interconnecting equipment, devices, and appliances and wiring connections shall be monitored for the integrity of the interconnecting conductors or equivalent path so that the occurrence of a single open or a single ground-fault condition in the installation conductors or other signaling channels is automatically indicated within 200 seconds.

10.17.1.2 Unless otherwise permitted or required by 10.17.1.3 through 10.17.1.14, all means of interconnecting equipment, devices, and appliances and wiring connections shall be monitored for the integrity of the interconnecting conductors or equivalent



path so that the restoration to normal of a single open or a single ground-fault condition in the installation conductors or other signaling channels is automatically indicated within 200 seconds.

10.17.1.3 Shorts between conductors shall not be required to be monitored for integrity, unless required by 10.17.1.18, 10.17.1.19 and 10.17.2.2.

10.17.1.4 Monitoring for integrity shall not be required for a noninterfering shunt circuit, provided that a fault circuit condition on the shunt circuit wiring results only in the loss of the noninterfering feature of operation.

10.17.1.5 Monitoring for integrity shall not be required for connections to and between supplementary system components, provided that single open, ground, or short-circuit conditions of the supplementary equipment or interconnecting means, or both, do not affect the required operation of the fire alarm system.

10.17.1.6 Monitoring for integrity shall not be required for the circuit of an alarm notification appliance installed in the same room with the central control equipment, provided that the notification appliance circuit conductors are installed in conduit or are equivalently protected against mechanical injury.

10.17.1.7 Monitoring for integrity shall not be required for a trouble signal circuit.

10.17.1.8* Monitoring for integrity shall not be required for the interconnection between listed equipment within a common enclosure.

10.17.1.9 Monitoring for integrity shall not be required for the interconnection between enclosures containing control equipment located within 20 ft (6 m) of each other where the conductors are installed in conduit or equivalently protected against mechanical injury.

10.17.1.10 Monitoring for integrity shall not be required for the conductors for ground detection where a single ground does not prevent the required normal operation of the system.

10.17.1.11 Monitoring for integrity shall not be required for central station circuits serving notification appliances within a central station.

10.17.1.12 Monitoring for integrity shall not be required for pneumatic rate-of-rise systems of the continuous line type in which the wiring terminals of such devices are connected in multiple across electrically supervised circuits.

10.17.1.13 Monitoring for integrity shall not be required for the interconnecting wiring of a stationary computer and the computer's keyboard, video monitor, mouse-type device, or touch screen, as long as the interconnecting wiring does not exceed 8 ft (2.4 m) in length; is a listed computer/data processing cable as permitted by *NFPA 70, National Electrical Code*, and failure of cable does not cause the failure of the required system functions not initiated from the keyboard, mouse, or touch screen.

10.17.1.14 Monitoring for integrity of the installation conductors for a ground-fault condition shall not be required for the communications and transmission channels extending from a supervising station to a subsidiary station(s) or protected premises, or both, that comply with the requirements of Chapter 26 and are electrically isolated from the fire alarm system (or circuits) by a transmitter(s), provided that a single ground condition does not affect the required operation of the fire alarm system.

10.17.1.15 Interconnection means shall be arranged so that a single break or single ground fault does not cause an alarm signal.

10.17.1.16 Unacknowledged alarm signals shall not be interrupted if a fault on an initiating device circuit or a signaling line circuit occurs while there is an alarm condition on that circuit.

Exception: Circuits used to interconnect fire alarm control units.

10.17.1.17 An open, ground, or short-circuit fault on the installation conductors of one alarm notification appliance circuit shall not affect the operation of any other alarm notification circuit.

10.17.1.17.1* Notification alarm circuits that do not have notification appliances tied directly to the circuit shall be considered control circuits.

10.17.1.17.2 Control circuits shall not be required to comply with 10.17.1.17, provided that the circuit is monitored for integrity in accordance with 10.17.1 and a fault in the installation conductors shall result in a trouble signal in accordance with Section 10.12.

10.17.1.18 A wire-to-wire short-circuit fault on any alarm notification appliance circuit shall result in a trouble signal in accordance with Section 10.12, except as permitted by 10.17.1.5, 10.17.1.6, or 10.17.1.11.

10.17.1.19 Where two or more systems are interconnected, the interconnecting circuit conductors shall be monitored for integrity so that open, short, or ground-fault conditions that affect the required normal operation of either system are indicated as a trouble condition.

10.17.2 Monitoring Integrity of In-Building Fire Emergency Voice/Alarm Communications Systems.

10.17.2.1* Speaker Amplifier and Tone-Generating Equipment. If speakers are used to produce audible fire alarm signals, the required trouble signal for 10.17.2.1.1 through 10.17.2.1.3 shall be in accordance with Section 10.12.

10.17.2.1.1 When primary power is available, failure of any audio amplifier shall result in a trouble signal.

10.17.2.1.2 When an alarm is present and primary power is not available (i.e., system is operating from the secondary power source), failure of any audio amplifier shall result in a trouble signal.

10.17.2.1.3 Failure of any tone-generating equipment shall result in a trouble signal, unless the tone-generating and amplifying equipment are enclosed as integral parts and serve only a single, listed loudspeaker.

10.17.2.2 Two-Way Telephone Communications Circuits.

10.17.2.2.1 Two-way telephone communications circuit installation conductors shall be monitored for open circuit fault conditions that would cause the telephone communications circuit to become fully or partially inoperative.

10.17.2.2.2 Two-way telephone communications circuit installation conductors shall be monitored for short circuit fault conditions that would cause the telephone communications circuit to become fully or partially inoperative.

10.17.2.2.3 Two-way telephone communications circuit fault conditions shall result in a trouble signal in accordance with Section 10.12.

10.17.3 Monitoring Integrity of Power Supplies.

10.17.3.1 Unless otherwise permitted or required by 10.17.3.1.3 and 10.17.3.1.6, all primary and secondary power supplies shall be monitored for the presence of voltage at the point of connection to the system.

10.17.3.1.1 Failure of either supply shall result in a trouble signal in accordance with Section 10.12.

10.17.3.1.2 Where the digital alarm communicator transmitter (DACT) is powered from a protected premises fire alarm system control unit, power failure indication shall be in accordance with 10.17.3.1.

10.17.3.1.3 Monitoring shall not be required for a power supply for supplementary equipment.

10.17.3.1.4 Monitoring shall not be required for the neutral of a three-, four-, or five-wire alternating current (ac) or direct current (dc) supply source.

10.17.3.1.5 Monitoring shall not be required for the main power supply in a central station, provided that the fault condition is otherwise indicated so as to be obvious to the operator on duty.

10.17.3.1.6 Monitoring shall not be required for the output of an engine-driven generator that is part of the secondary power supply, provided that the generator is tested weekly in accordance with Chapter 14.

10.17.3.2* Power supply sources and electrical supervision for digital alarm communications systems shall be in accordance with Sections 10.5 and 10.17.

10.17.3.3* Unless prohibited by the authority having jurisdiction, supervising station alarm systems shall be arranged to delay transmission of primary power failure signals for a period ranging from 60 minutes to 180 minutes.

10.17.3.4 Power supervisory devices shall be arranged so as not to impair the receipt of fire alarm or supervisory signals.

10.18 Documentation.

10.18.1 Approval and Acceptance.

10.18.1.1 The authority having jurisdiction shall be notified prior to installation or alteration of equipment or wiring.

10.18.1.2* At the authority having jurisdiction's request, complete information regarding the system or system alterations, including specifications, type of system or service, shop drawings, input/output matrix, battery calculations, and notification appliance circuit voltage drop calculations, shall be submitted for approval.

10.18.1.3 Before requesting final approval of the installation, if required by the authority having jurisdiction, the installing contractor shall furnish a written statement stating that the system has been installed in accordance with approved plans and tested in accordance with the manufacturer's published instructions and the appropriate NFPA requirements.

10.18.1.4* The record of completion form, Figure 10.18.2.1.1, shall be permitted to be a part of the written statement required in 10.18.1.3. When more than one contractor has been respon-

sible for the installation, each contractor shall complete the portions of the form for which that contractor had responsibility.

10.18.1.5 The record of completion form, Figure 10.18.2.1.1, shall be permitted to be a part of the documents that support the requirements of 10.18.2.4.

10.18.2 Completion Documents.

10.18.2.1 Preparation.

10.18.2.1.1* The preparation of a record of completion, Figure 10.18.2.1.1, shall be the responsibility of the qualified and experienced person described in 10.4.2.

10.18.2.1.2 The preparation of a record of completion, Figure 10.18.2.1.1 shall be in accordance with 10.18.2.1.2.1 through 10.18.2.1.2.8.

10.18.2.1.2.1 Parts 1 through 14 of the record of completion shall be completed after the system is installed and the installation wiring has been checked.

10.18.2.1.2.2 Parts 15 and 16 of the record of completion shall be completed after the operational acceptance tests have been completed.

10.18.2.1.2.3 A preliminary copy of the record of completion shall be given to the system owner and, if requested, to other authorities having jurisdiction after completion of the installation wiring tests.

10.18.2.1.2.4 A final copy of the record of completion shall be provided after completion of the operational acceptance tests.

10.18.2.1.2.5 One copy of the record of completion shall be stored at the fire alarm control unit or other approved location.

10.18.2.1.2.6 This copy shall be updated to reflect all system additions or modifications and maintained in a current condition at all times.

10.18.2.1.2.7 Where not stored at the main fire alarm control unit, the location of these documents shall be identified at the main fire alarm control unit.

10.18.2.1.2.8 If the documents are located in a separate enclosure or cabinet, the separate enclosure or cabinet shall be prominently labeled FIRE ALARM DOCUMENTS.

10.18.2.2 Revision. All fire alarm system modifications made after the initial installation shall be recorded on a revised version of the original record of completion.

10.18.2.2.1 All changes from the original information shall be shown.

10.18.2.2.2 The revised record of completion shall include a revision date.

10.18.2.3 Documentation Required. Every system shall include the following documentation, which shall be delivered to the owner or the owner's representative upon final acceptance of the system:

- (1)*An owner's manual and manufacturer's published instructions covering all system equipment
- (2) Record drawings
- (3) For software-based systems, record copy of the site-specific software
- (4) A written sequence of operation



FIRE ALARM AND EMERGENCY COMMUNICATION SYSTEM RECORD OF COMPLETION

*To be completed by the system installation contractor at the time of system acceptance and approval.
It shall be permitted to modify this form as needed to provide a more complete and/or clear record.*

Insert N/A in all unused lines.

Attach additional sheets, data, or calculations as necessary to provide a complete record.

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

Description of property: _____

Occupancy type: _____

Name of property representative: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Authority having jurisdiction over this property: _____

Phone: _____ Fax: _____ E-mail: _____

2. INSTALLATION, SERVICE, AND TESTING CONTRACTOR INFORMATION

Installation contractor for this equipment: _____

Address: _____

License or certification number: _____

Phone: _____ Fax: _____ E-mail: _____

Service organization for this equipment: _____

Address: _____

License or certification number: _____

Phone: _____ Fax: _____ E-mail: _____

A contract for test and inspection in accordance with NFPA standards is in effect as of: _____

Contracted testing company: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Contract expires: _____ Contract number: _____ Frequency of routine inspections: _____

3. DESCRIPTION OF SYSTEM OR SERVICE

☐ Fire alarm system (nonvoice)

☐ Fire alarm with in-building fire emergency voice alarm communication system (EVACS)

☐ Mass notification system (MNS)

☐ Combination system, with the following components:

☐ Fire alarm ☐ EVACS ☐ MNS ☐ Two-way, in-building, emergency communication system

☐ Other (specify): _____

FIGURE 10.18.2.1.1 Record of Completion.

3. DESCRIPTION OF SYSTEM OR SERVICE (continued)

NFPA 72 edition: _____ Additional description of system(s): _____

3.1 Control Unit

Manufacturer: _____ Model number: _____

3.2 Mass Notification System

☐ This system does not incorporate an MNS.

3.2.1 System Type:

☐ In-building MNS — combination

☐ In-building MNS — stand-alone ☐ Wide-area MNS ☐ Distributed recipient MNS

☐ Other (specify): _____

3.2.2 System Features:

☐ Combination fire alarm/MNS ☐ MNS autonomous control unit ☐ Wide-area MNS to regional national alerting interface

☐ Local operating console (LOC) ☐ Distributed recipient MNS (DRMNS) ☐ Wide-area MNS to DRMNS interface

☐ Wide-area MNS to high-power speaker array (HPSA) interface ☐ In-building MNS to wide-area MNS interface

☐ Other (specify): _____

3.3 System Documentation

☐ An owner's manual, a copy of the manufacturer's instructions, a written sequence of operation, and a copy of the numbered record drawings are stored on site. Location: _____

3.4 System Software

☐ This system does not have alterable site-specific software.

Operating system (executive) software revision level: _____

Site-specific software revision date: _____ Revision completed by: _____

☐ A copy of the site-specific software is stored on site. Location: _____

3.5 Off-Premises Signal Transmission

☐ This system does not have off-premises transmission.

Name of organization receiving alarm signals with phone numbers:

Alarm: _____ Phone: _____

Supervisory: _____ Phone: _____

Trouble: _____ Phone: _____

Entity to which alarms are retransmitted: _____ Phone: _____

Method of retransmission: _____

If Chapter 26, specify the means of transmission from the protected premises to the supervising station:

If Chapter 27, specify the type of auxiliary alarm system: ☐ Local energy ☐ Shunt ☐ Wired ☐ Wireless

FIGURE 10.18.2.1.1 *Continued*



4. CIRCUITS AND PATHWAYS

4.1 Signaling Line Pathways

4.1.1 Pathways Class Designations and Survivability

Pathways class: _____ Survivability level: _____ Quantity: _____

(See NFPA 72, Sections 12.3 and 12.4)

4.1.2 Pathways Utilizing Two or More Media

Quantity: _____ Description: _____

4.1.3 Device Power Pathways

- ☐ No separate power pathways from the signaling line pathway
- ☐ Power pathways are separate but of the same pathway classification as the signaling line pathway
- ☐ Power pathways are separate and different classification from the signaling line pathway

4.1.4 Isolation Modules

Quantity: _____

4.2 Alarm Initiating Device Pathways

4.2.1 Pathways Class Designations and Survivability

Pathways class: _____ Survivability level: _____ Quantity: _____

(See NFPA 72, Sections 12.3 and 12.4)

4.2.2 Pathways Utilizing Two or More Media

Quantity: _____ Description: _____

4.2.3 Device Power Pathways

- ☐ No separate power pathways from the initiating device pathway
- ☐ Power pathways are separate but of the same pathway classification as the initiating device pathway
- ☐ Power pathways are separate and different classification from the initiating device pathway

4.3 Non-Voice Audible System Pathways

4.3.1 Pathways Class Designations and Survivability

Pathways class: _____ Survivability level: _____ Quantity: _____

(See NFPA 72, Sections 12.3 and 12.4)

4.3.2 Pathways Utilizing Two or More Media

Quantity: _____ Description: _____

4.3.3 Appliance Power Pathways

- ☐ No separate power pathways from the notification appliance pathway
- ☐ Power pathways are separate but of the same pathway classification as the notification appliance pathway
- ☐ Power pathways are separate and different classification from the notification appliance pathway

FIGURE 10.18.2.1.1 Continued

5. ALARM INITIATING DEVICES

5.1 Manual Initiating Devices

5.1.1 Manual Fire Alarm Boxes

☐ This system does not have manual fire alarm boxes.

Type and number of devices: Addressable: _____ Conventional: _____ Coded: _____ Transmitter: _____

Other (specify): _____

5.1.2 Other Alarm Boxes

☐ This system does not have other alarm boxes.

Description: _____

Type and number of devices: Addressable: _____ Conventional: _____ Coded: _____ Transmitter: _____

Other (specify): _____

5.2 Automatic Initiating Devices

5.2.1 Smoke Detectors

☐ This system does not have smoke detectors.

Type and number of devices: Addressable: _____ Conventional: _____

Other (specify): _____

Type of coverage: ☐ Complete area ☐ Partial area ☐ Nonrequired partial area

Other (specify): _____

Type of smoke detector sensing technology: ☐ Ionization ☐ Photoelectric ☐ Multicriteria ☐ Aspirating ☐ Beam

Other (specify): _____

5.2.2 Duct Smoke Detectors

☐ This system does not have alarm-causing duct smoke detectors.

Type and number of devices: Addressable: _____ Conventional: _____

Other (specify): _____

Type of coverage: _____

Type of smoke detector sensing technology: ☐ Ionization ☐ Photoelectric ☐ Aspirating ☐ Beam

5.2.3 Radiant Energy (Flame) Detectors

☐ This system does not have radiant energy detectors.

Type and number of devices: Addressable: _____ Conventional: _____

Other (specify): _____

Type of coverage: _____

5.2.4 Gas Detectors

☐ This system does not have gas detectors.

Type of detector(s): _____

Number of devices: Addressable: _____ Conventional: _____

Type of coverage: _____

5.2.5 Heat Detectors

☐ This system does not have heat detectors.

Type and number of devices: Addressable: _____ Conventional: _____

Type of coverage: ☐ Complete area ☐ Partial area ☐ Nonrequired partial area ☐ Linear ☐ Spot

Type of heat detector sensing technology: ☐ Fixed temperature ☐ Rate-of-rise ☐ Rate compensated

FIGURE 10.18.2.1.1 *Continued*

5. ALARM INITIATING DEVICES (continued)**5.2.6 Addressable Monitoring Modules**☐ This system does not have monitoring modules.

Number of devices: _____

5.2.7 Waterflow Alarm Devices☐ This system does not have waterflow alarm devices.

Type and number of devices: Addressable: _____ Conventional: _____ Coded: _____ Transmitter: _____

5.2.8 Alarm Verification☐ This system does not incorporate alarm verification.

Number of devices subject to alarm verification: _____ Alarm verification set for _____ seconds

5.2.9 Presignal☐ This system does not incorporate pre-signal.

Number of devices subject to presignal: _____

Describe presignal functions: _____

5.2.10 Positive Alarm Sequence (PAS)☐ This system does not incorporate PAS.

Describe PAS: _____

5.2.11 Other Initiating Devices☐ This system does have other initiating devices.

Describe: _____

6. SUPERVISORY SIGNAL-INITIATING DEVICES**6.1 Sprinkler System Supervisory Devices**☐ This system does not have sprinkler supervisory devices.

Type and number of devices: Addressable: _____ Conventional: _____ Coded: _____ Transmitter: _____

Other (specify): _____

6.2 Fire Pump Description and Supervisory Devices☐ This system does not have a fire pump.Type fire pump: ☐ Electric ☐ Engine

Type and number of devices: Addressable: _____ Conventional: _____ Coded: _____ Transmitter: _____

Other (specify): _____

6.2.1 Fire Pump Functions Supervised☐ Power ☐ Running ☐ Phase reversal ☐ Selector switch not in auto ☐ Engine or control panel trouble ☐ Low fuel

Other (specify): _____

6.3 Duct Smoke Detectors (DSDs)☐ This system does not have DSDs causing supervisory signals.

Type and number of devices: Addressable: _____ Conventional: _____

Other (specify): _____

Type of coverage: _____

Type of smoke detector sensing technology: ☐ Ionization ☐ Photoelectric ☐ Aspirating ☐ Beam**6.4 Other Supervisory Devices**☐ This system does not have other supervisory devices.

Describe: _____

FIGURE 10.18.2.1.1 Continued

7. MONITORED SYSTEMS**7.1 Engine-Driven Generator**☐ This system does not have a generator.**7.1.1 Generator Functions Supervised**☐ Engine or control panel trouble ☐ Generator running ☐ Selector switch not in auto ☐ Low fuel☐ Other (specify): _____**7.2 Special Hazard Suppression Systems**☐ This system does not monitor special hazard systems.

Description of special hazard system(s): _____

7.3 Other Monitoring Systems☐ This system does not monitor other systems.

Description of other system(s): _____

8. ANNUNCIATORS☐ This system does not have annunciators.**8.1 Location and Description of Annunciators**

Location 1: _____

Location 2: _____

Location 3: _____

9. ALARM NOTIFICATION APPLIANCES**9.1 In-Building Fire Emergency Voice Alarm Communication System**☐ This system does not have an EVACS.

Number of single voice alarm channels: _____ Number of multiple voice alarm channels: _____

Number of speakers: _____ Number of speaker circuits: _____

Location of amplification and sound-processing equipment: _____

Location of paging microphone stations:

Location 1: _____

Location 2: _____

Location 3: _____

9.2 Nonvoice Notification Appliances☐ This system does not have nonvoice notification appliances.

Horns: _____ With visible: _____ Bells: _____ With visible: _____

Chimes: _____ With visible: _____

Visible only: _____ Other (describe): _____

9.3 Notification Appliance Power Extender Panels☐ This system does not have power extender panels.

Quantity: _____

Locations: _____

FIGURE 10.18.2.1.1 *Continued*

10. MASS NOTIFICATION CONTROLS, APPLIANCES, AND CIRCUITS☐ This system does not have an MNS.**10.1 MNS Local Operating Consoles**

Location 1: _____

Location 2: _____

Location 3: _____

10.2 High-Power Speaker Arrays

Number of HPSA speaker initiation zones: _____

Location 1: _____

Location 2: _____

Location 3: _____

10.3 Mass Notification Devices

Combination fire alarm/MNS visible appliances: _____ MNS-only visible appliances: _____

Textual signs: _____ Other (describe): _____

Supervision class: _____

10.3.1 Special Hazard Notification☐ This system does not have special suppression predischARGE notification.☐ MNS systems DO NOT override notification appliances required to provide special suppression predischARGE notification.**11. TWO-WAY EMERGENCY COMMUNICATION SYSTEMS****11.1 Telephone System**☐ This system does not have a two-way telephone system.

Number of telephone jacks installed: _____ Number of warden stations installed: _____

Number of telephone handsets stored on site: _____

Type of telephone system installed: ☐ Electrically powered ☐ Sound powered**11.2 Two-Way Radio Communications Enhancement System**☐ This system does not have a two-way radio communications enhancement system.

Percentage of area covered by two-way radio service: Critical areas: _____ % General building areas: _____ %

Amplification component locations: _____

Inbound signal strength: _____ dBm Outbound signal strength: _____ dBm

Donor antenna isolation is _____ dB above the signal booster gain

Radio frequencies covered: _____

Radio system monitor panel location: _____

FIGURE 10.18.2.1.1 *Continued*