

NFPA 72[®]

National Fire Alarm and Signaling Code[®]

2019



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NFPA 72®

National Fire Alarm and Signaling Code®

2019 Edition

This edition of *NFPA 72, National Fire Alarm and Signaling Code*, was prepared by the Technical Committees on Fundamentals of Fire Alarm and Signaling Systems, Testing and Maintenance of Fire Alarm and Signaling Systems, Initiating Devices for Fire Alarm and Signaling Systems, Notification Appliances for Fire Alarm and Signaling Systems, Protected Premises Fire Alarm and Signaling Systems, Emergency Communication Systems, Supervising Station Fire Alarm and Signaling Systems, Public Emergency Reporting Systems, and Single- and Multiple-Station Alarms and Household Signaling Systems, released by the 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 11–14, 2018, in Las Vegas, NV. It was issued by the Standards Council on August 14, 2018, with an effective date of September 3, 2018, and supersedes all previous editions.

This document has been amended by one or more Tentative Interim Amendments (TIAs) and/or Errata. See "Codes & Standards" at www.nfpa.org for more information.

This edition of *NFPA 72* was approved as an American National Standard on September 3, 2018.

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 were 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 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, including the following:

- (1) A major revision of the power supply requirements
- (2) A new requirement addressing impairments to fire alarm systems
- (3) Additional requirements concerning the review and approval of performance-based detection system designs
- (4) Revision of the rules for system survivability from attack by fire
- (5) The introduction of rules for an alternate approach for audible signaling
- (6) The addition of requirements to address performance-based designs for visible signaling
- (7) The relocation of testing and maintenance requirements for single- and multiple-station alarms and household fire alarm systems to the testing and maintenance chapter
- (8) Revisions to re-establish the prescriptive rules for household fire-warning equipment from the 1996 edition of the Code

The 2007 edition contained several 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 qualifications, 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 systems, and in-building enhancement systems for fire fighter radio communications. The 2007 edition also included significant changes to the requirements for smoke alarms in residential applications, 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 presented a major change in the scope and organization of the document. This was reflected in the new title, *National Fire Alarm and Signaling Code*. The broader scope of the Code included emergency communications systems in addition to the traditional scope of fire alarm systems. A new chapter on emergency communications systems (ECS) was added to provide requirements for a variety of systems used for communication of information in various emergency situations. The ECS chapter included new systems such as in-building mass notification systems, wide area mass notification systems, distributed recipient mass notifications systems, two-way radio communications enhancement systems, and area of refuge emergency communications systems. The ECS chapter also included two systems formerly 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 were added in the 2010 edition. The new chapter on circuits and pathways included 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 provided circuit and pathway performance (class) designations and pathway survivability level designations as well as general wiring requirements presented in a format that allowed use by any type of system covered in the Code. The new chapter on emergency control functions and interfaces included requirements and information formerly contained in the chapter of protected premises fire alarm systems. In this chapter the term *fire safety function* generally was replaced with the term *emergency control function* to reflect the potentially broader application beyond just fire alarm systems. This new chapter also included new provisions for first-responder-use elevators and elevators for occupant-controlled evacuation.

The 2010 edition was reorganized substantially 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 included administrative chapters, support chapters, and system chapters as well as numerous annexes for usability.

Significant revisions were also made throughout the 2010 edition to reflect the broader application of the Code to emergency communication systems. These included revisions in 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 station 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 included significant technical changes. These included 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 included 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 was 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 included 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 included two new guidance annexes, Annex C on system performance and design and Annex D on speech intelligibility.

The 2013 edition of the Code was built on the organizational changes made in the 2010 edition. A new Chapter 7, Documentation, was added to improve the usability of the document and provided a central location for all the documentation requirements of the Code. In some cases, the documentation provisions were contained directly in the new chapter. In other cases, references were provided to the locations of documentation requirements contained in other chapters. As an example, the new chapter contained the minimum documentation requirements that applied to any system covered by the Code, while additional document requirements that might apply from other parts of the Code or from other governing laws, codes, or standards were listed with an appropriate reference. The Record of Completion and Record of Inspection, Testing, and Maintenance forms were included at the end of the chapter and were completely revised to be easier to use with a basic form for straightforward systems and supplemental forms for more complex systems.

Chapter 10, Fundamentals, was reorganized for the 2013 edition to provide a more user-friendly flow of requirements. In addition, requirements for circuit monitoring found in the previous edition of Chapter 10 were relocated to Chapter 12, Circuits and Pathways, a more logical location.

Extensive usability changes also were made in the inspection and testing tables of Chapter 14, Inspection, Testing, and Maintenance. The visual inspection table was updated, adding new inspection methods for each component along with the inspection frequency. The test methods and test frequency tables were combined into a single table so that the test method appeared along with the test frequency for each component. The component listings in both tables were reorganized and coordinated so that components and equipment were easier to find.

The 2013 edition of the Code also included many technical updates. Among those updates were changes in Chapter 10 requiring supervising station operators and fire alarm system service providers to report to the authority having jurisdiction certain conditions of system impairment. Requirements for inspection, testing, and service personnel qualifications were updated to better reflect the level of qualification needed for each type of activity.

Changes were also made in Chapter 18, Notification Appliances, requiring documentation of the locations that require audible notification appliances as well as documentation of the audibility levels that must be produced. Area of coverage requirements were added for visible notification appliances. Changes were made in Chapter 21, Emergency Control Function Interfaces, to address requirements for elevator recall when sprinklers are installed in elevator pits. The requirements for occupant evacuation elevators were completely revised to coordinate with changes made in ASME A17.1/B44, *Safety Code for Elevators and Escalators*. Changes were made in Chapter 24, Emergency Communications Systems, to address the use of microphones and of textual and graphical visible notification appliances for primary or supplemental notification, and to update the requirements for emergency command centers. Changes were made in Chapter 26, Supervising Station Alarm Systems, to address alarm signal verification, alarm signal content, and restoration of signals. Those changes were made in part to help emergency responders better manage issues related to unwanted alarms. In addition, new definitions for unwanted alarms were added to more precisely identify the sources of those alarms. Changes were also made to update the communications methods addressed in Chapter 26. Among them were changes to the supervision interval requirements for communications paths and changes to the types of transmission means that can be used for the second channel of a digital alarm communicator transmitter (DACT). Changes were made in Chapter 29, Single- and Multiple-Station Alarms and Household Fire Alarm Systems, to address the connection of sprinkler waterflow switches to multiple-station alarms and to add new requirements addressing the smoke alarm resistance to common nuisance sources.

The 2016 edition made many changes relative to documentation. Chapter 7 revised and added items to the minimum documentation, documentation for new emergency communications systems, and software documentation requirements; and addressed review of electronic documentation media formats. Requirements for documentation of qualifications for the system designer and personnel who program systems were more clearly addressed while providing for the allowance for system design trainees. New criteria were added for plans examiners and inspectors.

Perhaps the most significant changes to the Code pertained to wiring. The 2016 edition added Class N, which addressed Ethernet infrastructures for alarm and signaling systems, and pathway performance and installation criteria were provided. Class A and Class X pathway separation requirements were revised to address emergency control function interface devices controlled by the fire alarm system on those circuits. Level 2 and Level 3 pathway survivability requirements were revised, which provided flexibility of use and addressed other fire-resistive methods.

The 2016 edition of the Code added language relative to recalled equipment observed during inspection and testing and clarified the intent of periodic visual inspections relative to building or other changes that could affect the performance of the system. With the exception of reference and requirements pertaining to survivability, requirements for the design, installation, testing, and maintenance of in-building emergency radio communications enhancement systems were relocated to NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*.

Chapter 17 revised the requirements for total coverage and expanded its annex language to address general consideration for elevator shafts and enclosed stairways. The requirements for placement of smoke detectors used for door release were also revised to provide additional flexibility in locating detectors.

Chapter 24 was restructured, providing greater user friendliness while expanding the section on risk analysis. Emphasis was placed on the importance of effective message development. Annex G, Guidelines for Emergency Communication Strategies for Buildings and Campuses, based on the National Institute of Standards and Technology and Fire Protection Research Foundation research, was added to the 2016 edition.

Language was changed in Chapter 26 to require that when multiple communication paths are used for performance-based technologies or the two transmission means for a digital alarm communicator transmitter they be arranged to avoid a single point of failure.

Chapter 29 added requirements pertaining to remote resetting and silencing of a fire alarm control unit from other than the protected premises for a minimum of 4 minutes from the initial activation of the fire alarm signal. Smart phones and Internet access to almost any device made remote access to residential equipment possible. The ability to establish remote access to a fire alarm system was addressed. Also, a new requirement established that, where a communication or transmission means other than DACT is used, all equipment necessary to transmit an alarm signal must be provided with a minimum of 24 hours of secondary power capacity.

The 2019 edition reflects a number of changes. The requirements for fire service access elevators and occupant evacuation elevators (OEE) were completely revised to coordinate with changes made in ASME A17.1/CSA B44. The requirements for occupant evacuation operation (OEO) are revised extensively. Annex text is added for clarification, as is Figure A.21.6, Simplified Occupant Evacuation Operation (OEO) (elevator system interface with the building fire alarm system based on ASME A17.1, Section 2.27.11; and NFPA 72, Section 21.6). In addition to the requirements for area of refuge (area of rescue assistance), Chapter 24 is revised to include requirements for stairway communications systems, elevator landing communications systems, and occupant evacuation elevator lobby communications systems. A review was accomplished and revisions made to ensure alignment of NFPA 72 with the *Manual of Style for NFPA Technical Committee Documents*. These editorial revisions include the breakout of paragraphs with multiple requirements into individually numbered paragraphs for each requirement and the minimization of use of exceptions. For many years, when codes required visual (or visible) notification in addition to audible notification, strobe lights meeting the requirements of Chapter 18 were used. With newer LED products that can be used for fire alarm, the terms *strobe*, *light*, and *visible* are essentially changed to *visual notification appliance*. The terms *speaker* and *high power speaker array (HPSA)* are changed to *loudspeaker* and *high power loudspeaker array (HPLA)* for consistency.

Perhaps the most significant change to the Code pertains to carbon monoxide. In August 2015, the Standards Council voted to relocate material that is in NFPA 720, *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment*, to various chapters of NFPA 72. These requirements are essentially incorporated into Chapter 17 for carbon monoxide detectors; Chapter 14 for installation, testing, and maintenance; Chapter 29 for carbon monoxide alarms; and new Annex H. Chapter 29 is greatly expanded, and a significant amount of annex text has been added for explanation. NFPA 720 is to be withdrawn as the requirements are moved to NFPA 72.

Chapter 14, Inspection, Testing, and Maintenance, is greatly modified to incorporate valve-regulated lead-acid (VRLA) batteries. The inspection and testing requirements are revised in Tables 14.3.1 and 14.4.3.2. This also expands the annex language to address use and testing of these batteries. Several new terms are introduced, and these are defined in Chapter 3.

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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, performance, maintenance, testing, and use of signaling components and signaling systems for the protection of life, property and mission continuity.

Technical Committee on Emergency Communication Systems (SIG-ECS)

(Chapter 24 and Annex G)

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(Alt. to Wayne D. Moore)
Joseph Ripp, Interface Engineering, OR [M]
(Alt. to James Mongeau)
Peter D. Ryan, Tyco Fire Protection Products, MA [M]
(Alt. to Rodger Reiswig)
Daniel Joseph Somrack, Blackberry, CA [M]
(Alt. to Aviv Siegel)
Morris L. Stoops, UTC Fire & Security/Edwards, KS [M]
(Alt. to Peter Binkley)
Mark J. Sylvester, Telgian Corporation, MA [IM]
(Alt. to Thomas J. Parrish)
Richard B. Wagoner, DFW International Airport, TX [U]
(Alt. to Joe L. Collins)
Larry D. Watson, American Professional Services, Inc., OK [IM]
(Alt. to Thomas M. Chambers)

Richard J. Roux, 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 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 Fundamentals of Fire Alarm and Signaling Systems (SIG-FUN) (Chapters 1, 7, and 10 and Annex E)

Manuelita E. David, Chair
JENSEN HUGHES/Aon, CA [SE]
Rep. JENSEN HUGHES

Jeffrey S. Hancock, Secretary
Valero, TX [U]

Mark J. Aaby, Koffel Associates, Inc., MD [SE]
Andrew G. Berezowski, Honeywell Inc., CT [M]
Rep. National Electrical Manufacturers Association
Robert A. Bonifas, Alarm Detection Systems, Inc., IL [IM]
Rep. The Monitoring Association
Shane M. Clary, Bay Alarm Company, CA [IM]
Daniel G. Decker, Safety Systems, Inc., MI [IM]
James DiTaranto, Commercial Electrical Systems, FL [IM]
Tommy L. Farr, JATC of Southern Nevada, NV [L]
Rep. International Brotherhood of Electrical Workers
David W. Frable, U.S. General Services Administration, IL [U]
Daniel J. Gauvin, Johnson Controls/TYCO Fire Suppression & Building Products, MA [M]
Kevin M. Green, Pyro-Comm Systems, Inc., CA [IM]
Kimberly A. Gruner, Fike Corporation, MO [M]
Rep. Fire Suppression Systems Association
Scott Jacobs, ISC Electronic Systems, Inc., CA [IM]

Walter J. Kessler, Jr., FM Approvals, MA [I]
Fred Leber, AML Encore Corporation, Canada [SE]
Richard A. Malady, Fire Fighter Sales & Service Company, PA [IM]
Rep. National Association of Fire Equipment Distributors
Charlie G. McDaniel, Global Asset Protection Services, LLC, WV [I]
Rep. Global Asset Protection Services, LLC
Jack McNamara, Bosch Security Systems, NY [M]
James M. Mundy, Jr., Asset Protection Associates, Ltd., NY [M]
Rep. Automatic Fire Alarm Association, Inc.
Louis Nash, U.S. Coast Guard, DC [E]
Thomas F. Norton, Norel Service Company, Inc., MA [IM]
Rep. U.S. Naval Historical Center
Allan Sanedrin, UL LLC, IL [RT]
Emily Troyanski, Intertek Testing Services, NJ [RT]
Allyn J. Vaughn, NV5/JBA Consulting Engineers, NV [SE]
Todd W. Warner, Brooks Equipment Company, Inc., NC [M]
Rep. Fire Equipment Manufacturers' Association

Alternates

Bob Elliott, FM Approvals, MA [I]
(Alt. to Walter J. Kessler, Jr.)
Erinc Eslik, Intertek Testing Services, CT [RT]
(Alt. to Emily Troyanski)
Timothy C. Fritz, UL LLC, IL [RT]
(Alt. to Allan Sanedrin)
John Houlihan, Fire Command Systems, Inc., MA [M]
(Alt. to James M. Mundy, Jr.)
William E. Koffel, Koffel Associates, Inc., MD [SE]
(Alt. to Mark J. Aaby)
Alan J. Kouchinsky, JENSEN HUGHES, MD [SE]
(Alt. to Manuelita E. David)
Maria B. Marks, Siemens Industry, Inc., MD [M]
(Alt. to Andrew G. Berezowski)
John McCamish, NECA IBEW Electrical Training Center, OR [L]
(Alt. to Tommy L. Farr)

Richard J. Roux, NFPA Staff Liaison

Nicholas Moriarty, NV5/JBA Consulting Engineers, NV [SE]
(Alt. to Allyn J. Vaughn)
Rich Neves, Pyro-Comm Systems, Inc., CA [IM]
(Alt. to Kevin M. Green)
Timothy R. Oates, Johnson Controls/Tyco/SimplexGrinnell, DE [M]
(Alt. to Daniel J. Gauvin)
Charles Taylor, U.S. Coast Guard, DC [E]
(Alt. to Louis Nash)
Ed Vaillancourt, E & M International, Inc., NM [M]
(Alt. to Kimberly A. Gruner)
Albert R. Wickham, Alarm Detection Systems Inc., IL [IM]
(Alt. to Robert A. Bonifas)

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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 common system fundamentals for fire alarm and signaling systems, requirements for approvals, power supplies, equipment performance, system documentation, and compatibility.

Technical Committee on Single- and Multiple-Station Alarms and Household Signaling Systems (SIG-HOU)

(Chapter 29 and Annex H)

Laurence J. Dallaire, *Chair*
Architect of the Capitol, DC [E]

Edward M. Fraczkowski, *Secretary*
EBL Engineers, LLC, MD [SE]

H. Wayne Boyd, U.S. Safety & Engineering Corporation, CA [IM]
Rep. California Automatic Fire Alarm Association Inc.

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]

Timothy K. Dedear, City of Farmers Branch Fire Department, TX [E]

Wendy B. Gifford, Consultant, IL [SE]

Daniel T. Gottuk, JENSEN HUGHES, MD [SE]
Rep. JENSEN HUGHES

Greg L. Hansen, Vivint Inc., UT [M]

Richard Hoffman, Intertek, IL [RT]

Anna Kryagin, Port Authority of New York & New Jersey, NJ [U]

Andrew Marks, BRK Brands Inc., IL [M]

Rep. National Electrical Manufacturers Association

David E. Mills, UL LLC, IL [RT]

Kim R. Mniszewski, FX Engineering, Inc., IL [SE]

Cory Ogle, Code Consultants, Inc., MO [SE]

Jeffrey L. Okun, Nuko Security, Inc., LA [IM]

Stephen M. Olenick, Combustion Science & Engineering, Inc., MD [SE]

Timothy A. Rader, ADT Security Services, Inc., FL [M]

Larry Ratzlaff, UTC/Kidde Safety, IL [M]

Richard M. Simpson, Vector Security Inc., PA [IM]
Rep. The Monitoring Association

Alternates

Oded Aron, Port Authority of New York & New Jersey, NY [U]
(Alt. to Anna Kryagin)

Rick Heffernan, SDi, NJ [M]
(Alt. to Andrew Marks)

Nasir Hussain, Combustion Science & Engineering, Inc., MD [SE]
(Alt. to Stephen M. Olenick)

Matthew Jakusz, ADT Security Services, TX [M]
(Alt. to Timothy A. Rader)

Paul T. Kahle, Code Consultants, Inc., MO [SE]
(Alt. to Cory Ogle)

Jeffery P. McBride, EBL Engineers, LLC, MD [SE]
(Alt. to Edward M. Fraczkowski)

Ken Mott, Kidde Safety, CO [M]
(Alt. to Larry Ratzlaff)

John L. Parssinen, UL LLC, IL [RT]
(Alt. to David E. Mills)

Richard Jay Roberts, Honeywell Fire Safety, IL [M]
(Alt. to David E. Christian)

Samuel T. (Ted) Stoler, Vector Security Inc., PA [IM]
(Alt. to Richard M. Simpson)

Jason A. Sutula, JENSEN HUGHES, MD [SE]
(Alt. to Daniel T. Gottuk)

Emily Troyanski, Intertek Testing Services, NJ [RT]
(Alt. to Richard Hoffman)

Nonvoting

Arthur S. Lee, U.S. Consumer Product Safety Commission, MD [C]

Maurice M. Pilette, Mechanical Designs Ltd., MA [SE]
Rep. TC on Residential Sprinkler Systems

Richard J. Roux, 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 performance, installation, operation, inspection, testing, maintenance, and use of single- and multiple-station alarms and household signaling systems.

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

Daniel J. O'Connor, Chair

JENSEN HUGHES/AON Fire Protection Engineering, IL [SE]
Rep. JENSEN HUGHES

Wayne J. Aho, Jr., Johnson Controls/Tyco Fire Protection Products, MA [M]

Rep. Automatic Fire Alarm Association, Inc.

Mark S. Boone, Dominion Resources Services Inc., VA [U]
Rep. Edison Electric Institute

John M. Cholin, J. M. Cholin Consultants Inc., NJ [SE]

Kenneth W. Dungan, Performance Design Technologies, TN [SE]

Donald Duplechian, Wilson Fire Equipment, TX [IM]

Marty Heller, Shambaugh and Son, IN [M]
Rep. National Fire Sprinkler Association

Scott R. Lang, Honeywell International, IL [M]

Michael Lessar, Reading Fire Department, PA [E]

Norbert W. Makowka, National Association of Fire Equipment Distributors, IL [IM]
Rep. National Association of Fire Equipment Distributors

Larry W. Mann, Central Station, Inc., AL [IM]
Rep. Electronic Security Association

Chris Marrion, Marrion Fire & Risk Consulting PE, LLC, NY [SE]

Justin D. Merrick, S&S Sprinkler Company, LLC, AL [IM]

Samuel M. Miller, BP Exploration (Alaska) Inc., AK [U]

Ovid E. Morphew, Jr., Design/Systems Group, TX [IM]
Rep. National Independent Fire Alarm Distributors Assn.

James W. Mottorn, II, Bosch Security Systems, NY [M]

Abhay Nadgir, UTC/Kidde-Fenwal, Inc., MA [M]
Rep. Fire Suppression Systems Association

Lynn Nielson, City of Henderson, NV [E]

Ronald D. Ouimette, Siemens Building Technologies, Inc., NJ [M]

John L. Parssinen, UL LLC, IL [RT]

David L. Royse, Potter Electric Signal Company, MO [M]

John R. Schertel, Jr., Apollo America Inc., MI [M]
Rep. National Electrical Manufacturers Association

Kenneth R. Schneider, UA - ITF, MO [L]
Rep. United Assn. of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry

Michael D. Sides, Global Asset Protection Services, LLC, FL [I]

Mark Swerdin, Zurich Services Corporation, NY [I]

David Waite, FM Approvals, MA [I]

Alternates

Mark E. Agar, Fire Equipment Company Inc., MI [IM]
(Alt. to Norbert W. Makowka)

Scott Bailey, Koorsen Fire & Security, IN [M]
(Alt. to Abhay Nadgir)

Charles Berra, Sprinkler Fitters LU 268 JAC, MO [L]
(Alt. to Kenneth R. Schneider)

Charles E. Brockett, Global Asset Protection Services, LLC, TX [I]
(Alt. to Michael D. Sides)

Scott A. Frazer, Performance Design Technologies, TN [SE]
(Alt. to Kenneth W. Dungan)

Scott M. Golly, JENSEN HUGHES, MD [SE]
(Alt. to Daniel J. O'Connor)

Louis Guerrazzi, National Fire Sprinkler Association, MD [M]
(Alt. to Marty Heller)

Todd Gustafson, Mircom Group Of Companies, MO [M]
(Alt. to Wayne J. Aho, Jr.)

Robert A. Hall, R.A. Hall & Associates, NJ [SE]
(Voting Alternate)

Richard J. Roux, NFPA Staff Liaison

Michael A. Henke, Potter Electric Signal Company, MO [M]
(Alt. to David L. Royse)

Steven W. Joseph, Honeywell/Xtralis, Inc., OR [M]
(Alt. to Scott R. Lang)

Robert Kasiski, FM Global, MA [I]
(Alt. to David Waite)

Henry J. Kozlowski, Zurich Services Corporation, RI [I]
(Alt. to Mark Swerdin)

Jack McNamara, Bosch Security Systems, NY [M]
(Alt. to James W. Mottorn, II)

David E. Mills, UL LLC, IL [RT]
(Alt. to John L. Parssinen)

David M. Nelson, Volunteer Technology Systems, TN [IM]
(Alt. to Ovid E. Morphew, Jr.)

Brian E. Swanick, Siemens Industry, Inc., NJ [M]
(Alt. to Ronald D. Ouimette)

Jerry Trotter, City of Henderson, NV [E]
(Alt. to Lynn Nielson)

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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 fire alarm and signaling systems.

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

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

David E. Becker, *Secretary*
Fire Equipment Service Company, KY [IM]
Rep. National Association of Fire Equipment Distributors

Todd Alford, System Sensor, IL [M]
Rep. Automatic Fire Alarm Association, Inc.
David Dressler, Minnesota Statewide Limited Energy JATC, MN [L]
Rep. International Brotherhood of Electrical Workers
Michael L. Edwards, U.S. Architect of the Capitol, DC [U]
Raymond A. Grill, Arup, DC [SE]
Daniel M. Grosch, UL LLC, IL [RT]
Paul Jennison, Forsyth County Georgia, GA [U]
Doug Kline, Nowak Supply Fire Systems, IN [M]
Rep. Fire Suppression Systems Association
Neal W. Krantz, Sr., Krantz Systems & Associates, LLC, MI [IM]
Rep. NFPA Industrial Fire Protection Section
Steven P. Lewis, RFI Enterprises, CA [IM]
David Madole, University of Texas at Austin, TX [U]

Bob D. Morgan, Fort Worth Fire Department, TX [E]
David Newhouse, Gentex Corporation, MI [M]
Rep. National Electrical Manufacturers Association
Isaac I. Papier, Papier Consulting Group LLC, IL [SE]
Maurice M. Pilette, Mechanical Designs Ltd., MA [SE]
Andrew W. Poole, Poole Fire Protection, Inc., KS [SE]
Robert P. Schifiliti, R. P. Schifiliti Associates, Inc., MA [SE]
Michael T. Schmitt, Long Grove Fire Protection District, IL [E]
Rep. Illinois Fire Inspectors Association
Daniel L. Seibel, Wolverine Fire Protection Company, MI [IM]
Morris L. Stoops, UTC Fire & Security/Edwards, KS [M]
Paul R. Strelecki, Siemens Building Technologies, Inc., NJ [M]
John R. Swanson, Minnesota State Fire Marshal Division, MN [E]

Alternates

Robert F. Accosta, Jr., Arup, NY [SE]
(Alt. to Raymond A. Grill)
Jan Braam, UTC Climate, Controls & Security/Edwards, FL [M]
(Alt. to Morris L. Stoops)
Mark C. Hamilton, Siemens, Inc., NJ [M]
(Alt. to Paul R. Strelecki)
Neal W. Krantz, Jr., Krantz Systems & Associates, LLC, MI [IM]
(Alt. to Neal W. Krantz, Sr.)
James Mongeau, Space Age Electronics, Inc., MA [M]
(Alt. to Todd Alford)

Leon Newsome, Cooper Notification, FL [M]
(Alt. to David Newhouse)
Warren E. Olsen, Fire Safety Consultants, Inc., IL [E]
(Alt. to Michael T. Schmitt)
Scott E. Panowitz, BFPE International, MD [M]
(Alt. to Doug Kline)
Jack Poole, Poole Fire Protection, Inc., KS [SE]
(Alt. to Andrew W. Poole)
Rich Rhome, Froula Alarm Systems, Inc., WA [IM]
(Voting Alternate)

Richard J. Roux, 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 notification appliances for fire alarm and signaling systems.

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

Jack Poole, Chair
Poole Fire Protection, Inc., KS [SE]

Leonard Belliveau, Jr., Secretary
JENSEN HUGHES, RI [SE]
Rep. JENSEN HUGHES

Merton W. Bunker, Jr., EYP Architecture & Engineering, VA [SE]
David J. Burkhart, Code Consultants, Inc., MO [SE]
Robert Cole, Intertek Testing Services, NJ [RT]
Rep. Intertek Testing Services
David Correia, Honeywell International, CT [M]
Rep. National Electrical Manufacturers Association
Paul F. Crowley, FM Approvals, MA [I]
Diane P. Doliber, Consultant, NC [SE]
Laura E. Doyle, U.S. General Services Administration, DC [U]
Thomas P. Hammerberg, Jasper, GA [M]
Rep. Automatic Fire Alarm Association, Inc.
Scott D. Harris, AFA Protective Systems, Inc., NY [IM]
William K. Hopple, Hopple & Company, CA [IM]
Rep. California Automatic Fire Alarm Association Inc.
Daniel J. Horon, CADgraphics, Incorporated, FL [M]
Vic Humm, Vic Humm & Associates, TN [SE]

Brian Jarvis, NSA, MD [U]
Thomas E. Kuhta, Willis Towers Watson, NY [I]
Peter Leszczak, U.S. Department of Veterans Affairs, CT [U]
Gregg Lupaczuk, Tyco, MA [M]
Scott T. Martorano, The Viking Corporation, MI [M]
Rep. National Fire Sprinkler Association
Jebediah J. Novak, Cedar Rapids Electrical JATC, IA [L]
Rep. International Brotherhood of Electrical Workers
Frank Savino, United Fire Protection Corporation, NJ [M]
Rep. Fire Suppression Systems Association
Lawrence J. Shudak, UL LLC, IL [RT]
Donald Struck, Siemens Fire Safety, NJ [M]
Sagiv Weiss-Ishai, San Francisco Fire Department, CA [E]
David E. Whittington, Blue Ridge Security Systems Inc., TN [IM]
Rep. Electronic Security Association
Carl F. Willms, Fire Safety Consultants, Inc., NJ [SE]

Alternates

Vincent Baroncini, Siemens, Inc., NJ [M]
(Alt. to Donald Struck)
Donald C. Birchler, FP&C Consultants, MO [SE]
(Alt. to Vic Humm)
Martin Chiarizio, Johnson Controls/TYCO/Commercial Wireless Systems International (CWSI), FL [M]
(Alt. to Gregg Lupaczuk)
Joshua W. Elvove, Aurora, CO [SE]
(Alt. to Carl F. Willms)
Mark D. Hayes, JENSEN HUGHES/AON Fire Protection Engineering, TX [SE]
(Alt. to Leonard Belliveau, Jr.)
Jacob P. Hemke, Code Consultants, Inc., MO [SE]
(Alt. to David J. Burkhart)
Theodore Ivers, UL LLC, NY [RT]
(Alt. to Lawrence J. Shudak)
Walter J. Kessler, Jr., FM Approvals, MA [I]
(Alt. to Paul F. Crowley)

Mark LaBua, AFA Protective Systems Inc., NY [IM]
(Alt. to Scott D. Harris)
Peter A. Larrimer, U.S. Department of Veterans Affairs, PA [U]
(Alt. to Peter Leszczak)
Andre Lickefett, Minimax GmbH & Co. KG, Germany [M]
(Alt. to Scott T. Martorano)
Michael D. Mann, American Professional Services, Inc., OK [IM]
(Voting Alternate)
Sean P. Titus, Fike Corporation, MO [M]
(Alt. to Frank Savino)
Jeffery G. Van Keuren, UTC Climate, Controls & Security/Edwards, FL [M]
(Alt. to Thomas P. Hammerberg)
Brandon Wilkerson, Poole Fire Protection, OK [SE]
(Alt. to Jack Poole)
Brian Woodward, Fire Safety Engineers Inc., NV [SE]
(Alt. to Diane P. Doliber)

Richard J. Roux, 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 fire alarm and signaling systems, including their interconnection with initiating devices, notification appliances, and other related building control equipment, within the protected premises.

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

Leo F. Martin, Jr., Chair

Martin Electrical Code Consultants, MA [SE]

Douglas M. Aiken, Lakes Region Mutual Fire Aid, NH [E]

George W. Allen, R.B. Allen Company, Inc., NH [IM]

Anthony W. Cole, Wal-Mart Stores, Inc., CA [U]

Michael Scott Custer, Fort Detrick Fire Department, MD [E]

Daniel R. Dinwiddie, L W Bills Company, MA [M]

Romeo G. Dupuis, Manchester VA Hospital, NH [U]

Samuel Iannucci, Chubb Group of Insurance Companies, PA [I]

Jeffrey G. Knight, City of Newton Fire Department, MA [U]

Rep. International Municipal Signal Association

Robert E. Lapham, Signal Communications Corporation, MA [M]

Gregory D. Lapin, King-Fisher Company, Inc., MA [M]

Robert Malanga, Fire and Risk Engineering, NJ [SE]

Rep. Fairmount Fire Company No. 1

Max McLeod, Siemens Industry, Inc., AL [M]

Robert E. Myers, MC Dean, VA [IM]

Isa Y. Saah, GHD/The Protection Engineering Group, VA [SE]

Deborah L. Shaner, Shaner Life Safety, CO [SE]

Stephen Smith, Advanced Signal Corporation, MA [IM]

Cindy G. Tate, Fort A.P. Hill Fire & Emergency Services, VA [U]

Christopher Willms, Sea Girt Fire Company #1, NJ [E]

Alternates

Robert J. Allen, R.B. Allen Company, Inc., NH [IM]

(Alt. to George W. Allen)

Dwayne Griffith, Walmart Security Services, AR [U]

(Alt. to Anthony W. Cole)

Charles E. Hahl, GHD Inc., VA [SE]

(Alt. to Isa Y. Saah)

Hans Kristensen, Woodstock Fire/Rescue Department, IL [U]

(Alt. to Jeffrey G. Knight)

Leo J. Watts, Signal Communications Corporation, MA [M]

(Alt. to Robert E. Lapham)

Michael S. White, Siemens Building Technologies, OH [M]

(Alt. to Max McLeod)

Richard J. Roux, 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 Supervising Station Fire Alarm and Signaling Systems (SIG-SSS) (Chapter 26)

Warren E. Olsen, *Chair*
Fire Safety Consultants, Inc., IL [E]
Rep. Illinois Fire Inspectors Association

Raymond E. Bigelow, Natick, MA [U]
Rep. International Municipal Signal Association
Art Black, Carmel Fire Protection Associates, CA [E]
David A. Blanken, Keltron Corporation, MA [M]
Robert F. Buckley, Signal Communications Corporation, MA [M]
Lawrence E. Coveny, Chicago Metropolitan Fire Prevention Company, IL [IM]
James S. Crews, Allianz Global Corporation & Specialty, GA [I]
Jason Dupuis, Cintas Fire Protection F19, CA [M]
Rep. Automatic Fire Alarm Association, Inc.
William J. (Jody) Dwyer, Germantown Fire Department, TN [E]
Bob Elliott, FM Approvals, MA [I]
Donald Fess, Harvard University, MA [U]
Joseph (Jay) Hauhn, The Monitoring Association, VA [IM]
Rep. The Monitoring Association
Richard G. Kluge, Ericsson, NJ [U]
Rep. Alliance for Telecommunications Industry Solutions

Alan J. Kouchinsky, JENSEN HUGHES, MD [SE]
Rep. JENSEN HUGHES
Scott M. May, Bosch Security Systems, NY [M]
Rep. National Electrical Manufacturers Association
John Franklin Milliron, AES Corporation, MA [M]
Scott Newman, Walgreens, IL [U]
Donald C. Pannell, City of Memphis, TN [E]
Roy Pollack, Comcast Xfinity Home, FL [U]
Rep. Electronic Security Association
Richard Jay Roberts, Honeywell Fire Safety, IL [M]
Steven A. Schmit, UL LLC, IL [RT]
Rep. UL LLC
Sean P. Titus, Fike Corporation, MO [M]
Rep. Fire Suppression Systems Association

Alternates

Douglas M. Aiken, Lakes Region Mutual Fire Aid, NH [U]
(Alt. to Raymond E. Bigelow)
Shane M. Clary, Bay Alarm Company, CA [M]
(Alt. to Jason Dupuis)
Martin J. Farraher, Siemens Industry, Inc., IL [M]
(Alt. to Sean P. Titus)
Scott D. Henderson, Allianz Global Corporation & Specialty, MA [I]
(Alt. to James S. Crews)
Paul J. Olson, UL LLC, MN [RT]
(Alt. to Steven A. Schmit)
Thomas J. Parrish, Telgian Corporation, MI [U]
(Voting Alternate)

Steven P. Sargent, Keltron Corporation, MA [M]
(Alt. to David A. Blanken)
Randy H. Schubert, Ericsson, NJ [U]
(Alt. to Richard G. Kluge)
Michael Sherman, AES Corporation, MA [M]
(Alt. to John Franklin Milliron)
Michael G. Slossar, AT&T Digital Life, NJ [U]
(Alt. to Roy Pollack)
Deane E. Walker, Grayslake Fire Protection District, IL [E]
(Alt. to Warren E. Olsen)
Leo J. Watts, Signal Communications Corporation, MA [M]
(Alt. to Robert F. Buckley)

Richard J. Roux, 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 equipment for the transmission and receipt of signals from a protected premises to a supervising station, including the supervising station facilities.

Technical Committee on Testing and Maintenance of Fire Alarm and Signaling Systems (SIG-TMS)

(Chapter 14 and Annex F)

J. Jeffrey Moore, *Chair*
JENSEN HUGHES, OH [SE]

Timothy E. Adams, American Society for Healthcare Engineering, IN [U]

Rep. American Society for Healthcare Engineering

Charles E. Brockett, Global Asset Protection Services, LLC, TX [I]

Richard L. Carter, Siemens Industry, Inc., NJ [M]

Louis Chavez, UL LLC, IL [RT]

Franklin Chenoweth, Fireline Corporation, MD [M]

Rep. Fire Suppression Systems Association

Rick Heffernan, SDi, NJ [M]

Rep. National Electrical Manufacturers Association

Herbert B. Hurst, Jr., Savannah River Nuclear Solutions, LLC, SC [U]

John Kelly, Washington DC Fire & EMS Department, MD [E]

Robert H. Kelly, Fire Defense Equipment Company, Inc., MI [IM]

J. David Kerr, Plano Fire Department, TX [E]

Rep. NFPA Fire Service Section

E. J. Kleintop, Johnson Controls/Tyco/SimplexGrinnell, PA [M]

Peter A. Larrimer, U.S. Department of Veterans Affairs, PA [U]

James Murphy, Vector Security Inc., PA [IM]

Rep. The Monitoring Association

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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 inspection, testing, and maintenance of fire alarm and signaling systems and associated components, for both new and existing systems. This Committee shall not have responsibility for inspection, testing, and maintenance of single-and multiple-station alarms and household signaling systems.

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NFPA 72

National Fire Alarm and Signaling Code

2019 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.

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 I. 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 I.

Chapter 1 Administration

1.1 Scope.

Δ 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 and carbon monoxide detection and 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.

N 1.1.3 For the purposes of carbon monoxide detection, this standard is primarily concerned with life safety, not property protection.

1.2* Purpose.

1.2.1 The purpose of this Code shall be 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 and carbon monoxide detection and 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) Carbon monoxide detection equipment and systems
 - (a) Single and multiple station carbon monoxide alarms
 - (b) Carbon monoxide detectors and their related systems and components
- (3) Supervising station alarm systems
 - (a) Central station (service) alarm systems
 - (b) Remote supervising station alarm systems
 - (c) Proprietary supervising station alarm systems
- (4) 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.

N 1.3.5 The requirements of Chapters 7, 10, 12, 14, 17, 18, 21, 23, 24, 26, and 27 shall apply unless otherwise noted in the

specific chapter. Chapter 29 is designed to stand alone unless it specifically references an earlier chapter.

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 E 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*, 2018 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2019 edition.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 2017 edition.

NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*, 2018 edition.

NFPA 70®, *National Electrical Code®*, 2017 edition.

NFPA 75, *Standard for the Fire Protection of Information Technology Equipment*, 2017 edition.

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 2018 edition.

NFPA 101®, *Life Safety Code®*, 2018 edition.

NFPA 110, *Standard for Emergency and Standby Power Systems*, 2019 edition.

NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, 2019 edition.

NFPA 170, *Standard for Fire Safety and Emergency Symbols*, 2018 edition.

NFPA 601, *Standard for Security Services in Fire Loss Prevention*, 2015 edition.

NFPA 1031, *Standard for Professional Qualifications for Fire Inspector and Plan Examiner*, 2014 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2019 edition.

NFPA 1600®, *Standard on Disaster/Emergency Management and Business Continuity Programs*, 2019 edition.

NFPA 1620, *Standard for Pre-Incident Planning*, 2015 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*, 2014.

ANSI/ASA S3.41, *American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)*, 1990, reaffirmed 2015.

■ 2.3.2 ASME Publications. American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ASME A17.1-2016/CSA B44-16, *Safety Code for Elevators and Escalators*, 2016.

■ 2.3.3 IEEE Publications. Institute of Electrical and Electronics Engineers, 3 Park Avenue, 17th Floor, New York, NY 10016-5997.

IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, 2010.

IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, 2005.

ANSI/IEEE C2, *National Electrical Safety Code*, 2017.

2.3.4 IMSA Publications. International Municipal Signal Association, 165 East Union Street, Newark, NY 14513-0539.

"IMSA Official Wire and Cable Specifications," 2012.

2.3.5 ISO Publications. International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland.

ISO 7731, *Danger signals for public and work places — Auditory danger signals*, 2003 (reconfirmed 2015).

2.3.6 Telcordia Publications. Telcordia Technologies, One Telcordia Drive, Piscataway, NJ 08854.

GR-506-CORE, *LATA Switching Systems Generic Requirements: Signaling for Analog Interface*, 2011.

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

2.3.7 TIA Publications. Telecommunications Industry Association, 1320 North Courthouse Road, Suite 200, Arlington, VA 22201.

TIA-526, *Standard Test Procedures for Fiber Optic Systems*.

ANSI/TIA-568-C.3, *Optical Fiber Cabling Components Standard*, 2015.

ANSI/TIA-569-D, *Telecommunications Pathways and Spaces*.

2.3.8 UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 38, *Standard for Manual Signaling Boxes for Fire Alarm Systems*, 2008.

ANSI/UL 217, *Standard for Single and Multiple Station Smoke Alarms*, 8th edition, revised 2016.

ANSI/UL 268, *Standard for Smoke Detectors for Fire Alarm Systems*, 7th edition, 2016.

ANSI/UL 521, *Standard for Heat Detectors for Fire Protective Signaling Systems*, 7th edition, 1999, revised 2016.

ANSI/UL 827, *Standard for Central-Station Alarm Services*, 8th edition, 2014, revised 2016.

ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems*, 10th edition, 2014.

ANSI/UL 985, *Standard for Household Fire Warning System Units*, 6th edition, 2015.

ANSI/UL 1484, *Standard for Residential Gas Detectors*, 5th edition, 2016.

ANSI/UL 1638, *Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories*, 5th edition, 2016.

ANSI/UL 1730, *Standard for Smoke Detector Monitors and Accessories for Individual Living Units of Multifamily Residences and Hotel/Motel Rooms*, 4th edition, 2006, revised 2012.

ANSI/UL 1971, *Standard for Signaling Devices for the Hearing Impaired*, 3rd edition, 2002, revised 2013.

ANSI/UL 1981, *Central Station Automation Systems*, 3rd edition, 2014, revised 2015.

ANSI/UL 2017, *Standard for General-Purpose Signaling Devices and Systems*, 2nd edition, 2008, revised 2016.

ANSI/UL 2034, *Standard for Single and Multiple Station Carbon Monoxide Alarms*, February 2008, revised February 2009.

ANSI/UL 2075, *Standard for Gas and Vapor Detectors and Sensors*, 2nd edition, March 2013.

ANSI/UL 2572, *Mass Notification Systems*, 2nd edition, 2016.

ANSI/UL 60950, *Information Technology Equipment — Safety — Part 1: General Requirements*, 3rd edition, issued December 2005, including Amendment 1 issued December 2009 and Amendment 2 issued May 2013.

2.3.9 Other Publications.

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

2.4 References for Extracts in Mandatory Sections.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2016 edition.

NFPA 70®, *National Electrical Code®*, 2017 edition.

NFPA 101®, *Life Safety Code®*, 2018 edition.

NFPA 654, *Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids*, 2017 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2019 edition.

NFPA 5000®, *Building Construction and Safety Code®*, 2018 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 equip-

ment, 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 Accessible (as applied to equipment). Admitting close approach; not guarded by locked doors, elevation, or other effective means. [70:100] (SIG-FUN)

3.3.2 Accessible (as applied to wiring methods). Capable of being removed or exposed without damaging the building structure or finish or not permanently closed in by the structure or finish of the building. [70:100] (SIG-FUN)

3.3.3 Accessible, Readily (Readily Accessible). Capable of being reached quickly for operation, renewal, or inspections without requiring those to whom ready access is requisite to take actions such as to use tools (other than keys), to climb over or under, to remove obstacles, or to resort to portable ladders, and so forth. [70:100] (SIG-FUN)

3.3.4 Accessible Spaces (as applied to detection coverage in Chapter 17). Spaces or concealed areas of construction that can be entered via openable panels, doors, hatches, or other readily movable elements (e.g., ceiling tiles). (SIG-IDS)

3.3.5 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)

3.3.6* 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)

3.3.7 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)

3.3.8 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)

3.3.9 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 3.3.263.10, *Trouble Signal*.) (SIG-SSS)

3.3.10 Air Sampling-Type Detector. See 3.3.70, Detector.

3.3.11 Alarm. An indication of the existence of a condition that requires immediate response. (SIG-FUN)

N 3.3.11.1 Carbon Monoxide Alarm. A single- or multiple-station alarm responsive to carbon monoxide (CO). (SIG-HOU)

3.3.12 Alarm Box.

3.3.12.1 Auxiliary Alarm 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)

3.3.12.2 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)

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

3.3.12.4 Master Alarm 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)

3.3.12.5 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)

3.3.13 Alarm Repeater System. A device or system for the purpose of automatically retransmitting alarm information received by the alarm processing equipment. (SIG-PRS)

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

3.3.15 Alarm Signal. See 3.3.263, Signal.

3.3.16 Alarm System. See 3.3.111, Fire Alarm System; 3.3.291, Supervising Station Alarm Systems; 3.3.221, Public Emergency Alarm Reporting System; 3.3.90.1.2, In-Building Fire Emergency Voice/Alarm Communication System; and 3.3.90.1.3, In-Building Mass Notification System.

3.3.17 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)

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

3.3.19 Analog Initiating Device (Sensor). See 3.3.141, Initiating Device.

3.3.20* Ancillary Functions. Non-emergency activations of the fire alarm or mass notification audible, visual, and textual output circuits. (SIG-ECS)

3.3.21 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)

3.3.22 Apartment Building. A building or portion thereof containing three or more dwelling units with independent cooking and bathroom facilities. (SIG-HOU) [5000, 2018]

3.3.23 Audible Notification Appliance. See 3.3.182, Notification Appliance.

- 3.3.24 Automatic Extinguishing System Supervisory Device.** See 3.3.141, Initiating Device.
- 3.3.25 Automatic Fire Detector.** See 3.3.70, Detector.
- 3.3.26 Automatic Fire Extinguishing or Suppression System Operation Detector.** See 3.3.70, Detector.
- 3.3.27 Autonomous Control Unit (ACU).** See 3.3.63, Control Unit.
- 3.3.28 Auxiliary Alarm System.** See 3.3.221, Public Emergency Alarm Reporting System.
- 3.3.29 Auxiliary Box.** See 3.3.12, Alarm Box.
- 3.3.30* 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)
- N 3.3.31* Battery.** Two or more cells connected together electrically. (SIG-TMS)
- N 3.3.31.1 Battery Capacity.** The electrical energy available from a fully charged battery expressed in ampere-hours. (SIG-TMS)
- N 3.3.31.2 Battery Charger.** A device used to restore and maintain the charge of a secondary battery in which electrical energy is converted to chemical energy. (SIG-TMS)
- N 3.3.31.2.1 Float Charge.** A constant-voltage charge applied to a battery to maintain it in a fully charged condition. (SIG-TMS)
- N 3.3.31.2.2 Fully Charged.** A condition synonymous with 100 percent state of charge. (See also 3.3.31.2.3, *State of Charge*.) (SIG-TMS)
- N 3.3.31.2.3 State of Charge (SOC).** The stored or remaining capacity of a battery at a given time expressed as a percentage of its rated capacity. (SIG-TMS)
- N 3.3.31.2.4 Trickle Charge.** A continuous, low-rate, constant-current charge given to a cell or battery to keep the unit fully charged. (See also 3.3.31.2.1, *Float Charge*.) (SIG-TMS)
- N 3.3.31.3 Battery Load Test.** A controlled discharge of a battery at a specified rate for a given period of time until a final voltage is achieved to determine battery capacity. (SIG-TMS)
- N 3.3.31.4 Battery Unit.** See 3.3.41.3, Unit (Multi-Cell). (SIG-TMS)
- N 3.3.31.5 Rechargeable Battery.** An electrochemical cell capable of being discharged and then recharged. (SIG-TMS)
- 3.3.32 Beam Construction.** See 3.3.40, Ceiling Surfaces.
- 3.3.33 Building Fire Alarm System.** See 3.3.111, Fire Alarm System.
- N 3.3.34 Building System Information Unit (BSIU).** A computer-based electronic device that is intended to display building information and execute system control functions, including fire system information display and control.
- N 3.3.35 Carbon Monoxide Detection System.** A system or portion of a combination system that consists of a control unit, components, and circuits arranged to monitor and annunciate the status of carbon monoxide alarm initiating devices and to initiate the appropriate response to those signals. (SIG-PRO)
- N 3.3.35.1 Combination Carbon Monoxide Detection System.** A carbon monoxide detection system in which components are used, in whole or in part, in common with a non-carbon monoxide signaling system, and in which components are not used as part of a fire alarm system. (SIG-PRO)
- N 3.3.35.2 Household Carbon Monoxide Detection System.** A system of devices that uses a control unit to produce an alarm signal in the household for the purpose of notifying the occupants of the presence of concentrations of carbon monoxide that could pose a life safety risk. (SIG-HOU)
- 3.3.36 Carrier.** High-frequency energy that can be modulated by voice or signaling impulses. (SIG-SSS)
- 3.3.37 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)
- 3.3.38 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)
- 3.3.38.1 Level Ceilings.** Ceilings that have a slope of less than or equal to 1 in 8. (SIG-IDS)
- 3.3.38.2 Sloping Ceiling.** A ceiling that has a slope of more than 1 in 8. (SIG-IDS)
- 3.3.38.3* 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)
- 3.3.38.4* 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)
- 3.3.39 Ceiling Height.** The height from the continuous floor of a room to the continuous ceiling of a room or space. (SIG-IDS)
- 3.3.40 Ceiling Surfaces.**
- 3.3.40.1 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)
- 3.3.40.2 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)

3.3.40.3* 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)

3.3.40.4 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)

N 3.3.41 Cell. The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy. [70:480] (SIG-TMS)

N 3.3.41.1 Primary (Dry) Cell. A nonrechargeable electrochemical cell requiring periodic replacement, such as a 9-volt alkaline cell. (SIG-FUN)

N 3.3.41.2 Starved Electrolyte Cell. A cell in which liquid electrolyte is immobilized, also known as an absorbed glass mat (AGM) cell or a gelled electrolyte cell (gel cell). (SIG-TMS)

N 3.3.41.2.1 Absorbed Glass Mat (AGM) Cell. A cell in which the liquid electrolyte is immobilized in fiberglass or polymeric fiber separators. (SIG-TMS)

N 3.3.41.2.2 Gelled Electrolyte Cell (Gel Cell). A cell in which the electrolyte is immobilized by addition of a gelling agent. (SIG-TMS)

N 3.3.41.3 Unit (Multi-Cell). Multiple cells in a single container, such as a 12-volt unit composed of six 2-volt cells. (SIG-TMS)

N 3.3.41.4* Valve-Regulated Lead-Acid (VRLA) Cell. A sealed lead-acid cell with a valve that opens to the atmosphere when the internal pressure in the cell exceeds atmospheric pressure by a preselected amount. (SIG-TMS)

3.3.42 Central Station. See 3.3.290.1, Central Supervising Station.

3.3.43 Central Station Alarm System. See 3.3.291.1, Central Station Service Alarm System.

3.3.44 Central Station Service. See 3.3.292, Supervising Station Service.

3.3.45 Central Station Service Alarm System. See 3.3.291, Supervising Station Alarm Systems.

3.3.46 Central Supervising Station. See 3.3.290, Supervising Station.

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

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

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

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

3.3.48 Circuit. Either a means of providing power or a connection path between locations (see 3.3.197). (SIG-PRO)

3.3.49 Circuit Interface. See 3.3.146, Interface.

3.3.50 Cloud Chamber Smoke Detection. See 3.3.276, Smoke Detection.

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

3.3.52 Combination Detector. See 3.3.70, Detector.

3.3.53 Combination Emergency Communications Systems. See 3.3.91, Emergency Communications Systems — Combination.

3.3.54 Combination Fire Alarm and Guard's Tour Box. See 3.3.12, Alarm Box.

3.3.55 Combination System. See 3.3.111, Fire Alarm System.

3.3.56 Common Talk Mode. See 3.3.301, Talk Mode.

3.3.57* 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, 2016] (SIG-PRS)

3.3.58 Communications Channel. See 3.3.47, Channel.

3.3.59 Communications Circuit. Any signaling path of an emergency communications system that carries voice, audio, data, or other signals. (SIG-ECS)

3.3.60 Communications Cloud. The area in the communications path that is supported by providers of communications services not governed under the scope of NFPA 72 in which signals travel between a protected property and a monitoring station. Depending on the type of transmission that is used, signals can travel on a single defined route or through various routes depending on what is available when the signal is initiated. (SIG-SSS)

3.3.61* Condition. A situation, environmental state, or equipment state of a fire alarm or signaling system. (SIG-FUN)

3.3.61.1 Abnormal (Off-Normal) Condition. A situation, environmental state, or equipment state that warrants some type of signal, notification, communication, response, action, or service. (SIG-FUN)

3.3.61.1.1* Alarm Condition. An abnormal condition that poses an immediate threat to life, property, or mission. (SIG-FUN)

3.3.61.1.2* Pre-Alarm Condition. An abnormal condition that poses a potential threat to life, property, or mission, and time is available for investigation. (SIG-FUN)

3.3.61.1.3* Supervisory Condition. An abnormal condition in connection with the supervision of other systems, processes, or equipment. (SIG-FUN)

3.3.61.1.4* Trouble Condition. An abnormal condition in a system due to a fault. (SIG-FUN)

3.3.61.2 Normal Condition. Circuits, systems, and components are functioning as designed and no abnormal condition exists. (SIG-FUN)

3.3.62 Contiguous Property. See 3.3.213, Property.

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

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

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

3.3.63.3 Fire Alarm Control Unit (FACU). See 3.3.108, Fire Alarm Control Unit (FACU).

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

3.3.64 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, 2018] (SIG-HOU)

3.3.65 Dedicated Function Fire Alarm Control Unit. See 3.3.108, Fire Alarm Control Unit (FACU).

3.3.66 Dedicated Function Fire Alarm System. See 3.3.111, Fire Alarm System.

3.3.67 Deficiency. A condition that interferes with the service or reliability for which the part, system, or equipment was intended. (SIG-TMS)

3.3.68 Delinquency Signal. See 3.3.263, Signal.

N 3.3.69* Design Professional. An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the jurisdiction in which the project is to be constructed, or other professional with qualifications or credentials acceptable to the jurisdiction in which the project is to be constructed. (SIG-ECS)

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

3.3.70.1 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 airsampling ports, piping, or tubing. At the detector, the air is analyzed for fire products. (SIG-IDS)

3.3.70.2 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, and Smoke Detector. (SIG-IDS)

3.3.70.3 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)

3.3.70.4* 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)

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

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

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

3.3.70.8* 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)

3.3.70.9 Gas Detector. A device that detects the presence of a specified gas concentration. Gas detectors can be either spot-type or line-type detectors. (SIG-IDS)

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

3.3.70.11 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)

3.3.70.12* 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)

3.3.70.13* 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)

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

3.3.70.15 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)

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

3.3.70.17 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)

3.3.70.18* 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)

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

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

3.3.70.21 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)

3.3.70.22 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)

3.3.71* Device (Class N). A supervised component of a life safety system that communicates with other components of life safety systems and that collects environmental data or performs specific input or output functions necessary to the operation of the life safety system. (SIG-PRO)

3.3.72 Digital Alarm Communicator Receiver (DACR). A system component that accepts and displays signals from digital alarm communicator transmitters (DACTs) sent over a managed facilities-based voice network. (SIG-SSS)

3.3.73 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 a managed facilities-based voice network to a digital alarm communicator receiver (DACR). (SIG-SSS)

3.3.74 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)

3.3.75 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)

3.3.76 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)

3.3.77 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)

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

3.3.79 Distributed Recipient Mass Notification System (DRMNS). See 3.3.90, Emergency Communications System.

3.3.80 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, 2018] (SIG-HOU)

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

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

3.3.83 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, 2018] (SIG-HOU)

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

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

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

3.3.85 Electrical Conductivity Heat Detector. See 3.3.70, Detector.

N 3.3.86 Electromechanical Releasing Device. Mechanical devices, including fusible links, electrically monitored for contact closure to initiate a signal to the FACU.

3.3.87* 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 3.3.282, *Spark*.) (SIG-IDS)

3.3.88 Emergency Command Center. See 3.3.92, Emergency Communications System — Emergency Command Center.

3.3.89 Emergency Communications Control Unit (ECCU). See 3.3.63, Control Unit.

3.3.90 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)

3.3.90.1 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, visual, or textual means, or any combination thereof. (SIG-ECS)

3.3.90.1.1 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)

3.3.90.1.2 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)

3.3.90.1.3 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 visual signals, text, graphics, tactile, or other communication methods. (SIG-ECS)

3.3.90.1.4 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)

3.3.90.2 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)

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

3.3.92* Emergency Communications System — Emergency Command Center. The room(s) or area(s) staffed during any emergency event by assigned emergency management staff. The room or area contains system 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 individuals, a building, multiple buildings, outside campus areas, or a combination of these in accordance with the emergency response plan established for the premises. The room or area contains the controls and indicators from which the ECS systems located in the room or area can be manually controlled as required by the emergency response plan and the emergency management coordinator. (SIG-ECS)

3.3.93* Emergency Control Function Interface Device. A listed fire alarm or signaling system component that directly interfaces with the system that operates the emergency control function. (SIG-PRO)

3.3.94* Emergency Control Functions. Building, fire, and emergency control elements or systems that are initiated by the fire alarm or signaling system and either increase the level of life safety for occupants or control the spread of the harmful effects of fire or other dangerous products. (SIG-PRO)

N 3.3.95* Emergency Response Agency (ERA). Organizations providing law enforcement, emergency medical, fire, rescue, communications, and related support services. [1221, 2019] (SIG-SSS)

3.3.96* Emergency Response Facility (ERF). A structure or a portion of a structure that houses emergency response agency equipment or personnel for response to alarms. [1221, 2019] (SIG-PRS)

3.3.97 Emergency Response Plan. A documented set of actions to address the planning for, management of, and response to natural, technological, and man-made disasters and other emergencies. (SIG-ECS)

3.3.98* Endpoint (Class N). The end of a pathway where a single addressable device or a control unit is connected. (SIG-PRO)

N 3.3.99* Energy Storage Systems (ESS). Equipment that receives electrical energy and then provides a means to store that energy in some form for later use in order to supply electrical energy when needed. The energy storage system utilizes the technologies defined in 3.3.99.2 through 3.3.99.4.

N 3.3.99.1 Chemical Energy Storage System. Consists of hydrogen storage, the hydrogen generator to supply the hydrogen for storage, and a fuel cell power system to provide electric energy upon demand.

- N 3.3.99.2 Electrochemical Energy Storage System.** Consists of a secondary battery, electrochemical capacitor, flow battery, or hybrid battery-capacitor system that stores energy and any associated controls or devices that can provide electric energy upon demand.
- N 3.3.99.3 Mechanical Energy Storage System.** Consists of a mechanical means to store energy such as through compressed air, pumped water or fly wheel technologies, and associated controls and systems, which can be used to run an electric generator to provide electric energy upon demand.
- N 3.3.99.4 Thermal Energy Storage System.** Consists of a system that uses heated fluids such as air as a means to store energy along with associated controls and systems, which can be used to run an electric generator to provide electrical energy upon demand.
- 3.3.100* Evacuation.** The withdrawal of occupants from a building. (SIG-PRO)
- 3.3.101 Evacuation Signal.** See 3.3.263, Signal.
- 3.3.102 Executive Software.** See 3.3.279, Software.
- 3.3.103 Exit Marking Audible Notification Appliance.** See 3.3.182, Notification Appliance.
- N 3.3.104 FACP.** Fire Alarm Control Panel. See 3.3.108, Fire Alarm Control Unit (FACU).
- 3.3.105 False Alarm.** See 3.3.314, Unwanted Alarm.
- 3.3.106 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)
- 3.3.107 Fire Alarm Control Interface (FACI).** See 3.3.146, Interface.
- 3.3.108* 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)
- 3.3.108.1 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)
- 3.3.108.2 Protected Premises (Local) Control Unit.** A fire alarm control unit that serves the protected premises or a portion of the protected premises. (SIG-PRO)
- 3.3.108.2.1* Dedicated Function Fire Alarm Control Unit.** A protected premises fire alarm control unit that is intended to operate specifically identified emergency control function(s). (SIG-PRO)
- 3.3.108.2.2 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)
- 3.3.109 Fire Alarm/Evacuation Signal Tone Generator.** A device that produces a fire alarm/evacuation tone upon command. (SIG-PRO)
- 3.3.110 Fire Alarm Signal.** See 3.3.263, Signal.
- 3.3.111 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)
- 3.3.111.1* 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)
- 3.3.111.2 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)
- 3.3.111.3 Municipal Fire Alarm System.** A public emergency alarm reporting system. (SIG-PRS)
- 3.3.111.4* Protected Premises (Local) Fire Alarm System.** A fire alarm system located at the protected premises. (SIG-PRO)
- 3.3.111.4.1 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 provides notification. (SIG-PRO)
- 3.3.111.4.2 Dedicated Function Fire Alarm System.** A protected premises fire alarm system installed specifically to perform emergency control function(s) where a building fire alarm system is not required. (SIG-PRO)
- 3.3.111.4.3 Releasing Fire Alarm System.** A protected premises fire alarm system that is part of a fire suppression system and/or that 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)
- 3.3.112* Fire Command Center.** The principal attended or unattended room or area where the status of the detection, alarm communications, control systems, and other emergency systems is displayed and from which the system(s) can be manually controlled. (SIG-ECS)
- 3.3.113 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. (SIG-IDS)
- 3.3.114 Fire Warden.** A building staff member or a tenant trained to perform assigned duties in the event of a fire emergency. (SIG-PRO)
- 3.3.115 Fire Warning Equipment.** Any detector, alarm, device, or material related to single- and multiple-station alarms or household fire alarm systems. (SIG-HOU)
- 3.3.116 Fire-Gas Detector.** See 3.3.70, Detector.

3.3.117 Fixed-Temperature Detector. See 3.3.70, Detector.

3.3.118 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)

3.3.119 Flame Detector. See 3.3.70, Detector.

3.3.120 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)

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

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

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

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

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

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

3.3.122 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)

3.3.123 Girder. See 3.3.40, Ceiling Surfaces.

3.3.124 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)

3.3.125 Guard's Tour Supervisory Signal. See 3.3.263, Signal.

3.3.126 Guest Room. An accommodation combining living, sleeping, sanitary, and storage facilities within a compartment. [101, 2018] (SIG-HOU)

3.3.127 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, 2018] (SIG-HOU)

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

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

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

3.3.129.1 Mechanically Powered, Single-Station Heat Alarm. A single-station heat alarm employing a mechanical power source. (SIG-HOU)

3.3.130 Heat Detector. See 3.3.70, Detector.

3.3.131 High Power Loudspeaker Array (HPLA). High power loudspeaker arrays provide capability for voice and tone communications to large outdoor areas. (SIG-ECS)

N 3.3.132 High Volume Low Speed (HVLS) Fan. A ceiling fan that is approximately 6 ft (1.8 m) to 24 ft (7.3 m) in diameter with a rotational speed of approximately 30 to 70 revolutions per minute. [13, 2016] (SIG-PRO)

3.3.133 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, 2018] (SIG-HOU)

3.3.134 Household Fire Alarm System. See 3.3.111, Fire Alarm System.

3.3.135 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)

3.3.136* 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. [70:100] (SIG-PRS)

N 3.3.137* Immediately (as used in Chapter 26). Performed without unreasonable delay. (SIG-SSS)

3.3.138* Impairment. An abnormal condition, during either a planned or emergency event, where a system, component, or function is inoperable. (SIG-FUN)

3.3.139* In Writing. A form of correspondence formatted as a letter or document that can be verified upon request. (SIG-FUN)

3.3.140 In-Building Mass Notification System. See 3.3.90, Emergency Communications System.

3.3.141 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)

3.3.141.1 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)

3.3.141.2 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)

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

3.3.141.4 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)

3.3.141.5 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)

3.3.142 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)

3.3.143 Inspection Personnel. See 3.3.200, Personnel.

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

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

3.3.146 Interface.

3.3.146.1 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)

3.3.146.1.1* Emergency Control Function Interface. The interface between the fire alarm system emergency control function interface device and the component controlling the emergency control function. (SIG-PRO)

3.3.146.1.2 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)

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

3.3.147 Ionization Smoke Detection. See 3.3.276, Smoke Detection.

3.3.148 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)

3.3.149 Level Ceilings. See 3.3.38, Ceiling.

3.3.150 Life Safety Network. A type of combination system that transmits fire and emergency communications system data to at least one other life safety system. (SIG-PRO)

3.3.151 Line-Type Detector. See 3.3.70, Detector.

3.3.152 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, 2018] (SIG-HOU)

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

3.3.154 Local Energy-Type Auxiliary Alarm System. See 3.3.221, Public Emergency Alarm Reporting System.

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

3.3.156 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, 2018] (SIG-HOU)

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

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

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

3.3.160 Malicious Alarm. See 3.3.314.1, Malicious Alarm.

3.3.161* 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 the interconnection point with other MFVN peer networks or the supervising station. (SIG-SSS)

3.3.162 Manual Fire Alarm Box. See 3.3.12, Alarm Box.

3.3.163* Manufacturer's Published Instructions. Published installation and operating documentation provided for each product or component. The documentation includes directions and necessary information for the intended installation, maintenance, and operation of the product or component. (SIG-TMS)

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

3.3.165* Mass Notification System. See 3.3.90.1.3, In-Building Mass Notification System. (SIG-PRO)

3.3.166 Master Box. See 3.3.12, Alarm Box.

3.3.167 Master Fire Alarm Control Unit. See 3.3.108, Fire Alarm Control Unit (FACU).

3.3.168 Multi-Criteria Detector. See 3.3.70, Detector.

3.3.169 Multiple Dwelling Unit. See 3.3.83, Dwelling Unit.

3.3.170 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)

3.3.171 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)

3.3.172 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)

3.3.173 Multi-Sensor Detector. See 3.3.70, Detector.

3.3.174 Municipal Fire Alarm Box (Street Box). A publicly accessible alarm box. (See 3.3.12, Alarm Box.)

3.3.175 Municipal Fire Alarm System. See 3.3.111, Fire Alarm System.

3.3.176 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)

3.3.177 Network.

3.3.177.1 Wired Network (Public Emergency Alarm Reporting Systems). The method of communications used in a public emergency alarm reporting system that consists of two or more points that are connected by physical conductors. (SIG-PRS)

3.3.177.2 Wireless Network (Public Emergency Alarm Reporting Systems). The method of communications used in a public emergency alarm reporting system that consists of two or more points that are not connected by physical conductors. (SIG-PRS)

3.3.178 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)

3.3.179 Noncontiguous Property. See 3.3.213, Property.

3.3.180* Nonrequired. A 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)

3.3.181 Nonrestorable Initiating Device. See 3.3.141, Initiating Device.

3.3.182 Notification Appliance. A fire alarm system component such as a bell, horn, loudspeaker, visual notification appliance, or text display that provides audible, tactile, or visual outputs, or any combination thereof. (SIG-NAS)

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

3.3.182.1.1 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)

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

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

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

3.3.182.3.1* Textual Visual Notification Appliance. A notification appliance that conveys a stream of visual information that displays an alphanumeric or pictorial message. (SIG-NAS)

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

3.3.184 Notification Zone. See 3.3.328, Zone.

3.3.185 Nuisance Alarm. See 3.3.314.2, Nuisance Alarm.

3.3.186* Occupiable. A room or enclosed space designed for human occupancy. (SIG-FUN)

3.3.187 Occupiable Area. An area of a facility occupied by people on a regular basis. (SIG-FUN)

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

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

3.3.189 Off-Hook. To access a communications network in preparation for connecting a telephone. (SIG-SSS)

3.3.190 One-Third Octave Band. See 3.3.188, Octave Band.

3.3.191 One-Way Emergency Communications System. See 3.3.90, Emergency Communications System.

3.3.192 On-Hook. To disconnect from a managed facilities-based voice network. (SIG-SSS)

3.3.193 Operating Mode.

3.3.193.1 Private Operating Mode. Audible or visual 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)

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

3.3.194 Other Fire Detectors. See 3.3.70, Detector.

3.3.195* 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)

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

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

3.3.198 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)

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

3.3.200 Personnel.

3.3.200.1 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)

3.3.200.2 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)

3.3.200.3 System Designer. Individual responsible for the development of fire alarm and signaling system plans and specifications in accordance with this Code. (SIG-FUN)

3.3.200.4 System Installer. Individual responsible for the proper installation of fire alarm and signaling systems in accordance with plans, specifications, and manufacturer's requirements. (SIG-FUN)

3.3.200.5 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)

3.3.201 Photoelectric Light Obscuration Smoke Detection. See 3.3.276, Smoke Detection.

3.3.202 Photoelectric Light-Scattering Smoke Detection. See 3.3.276, Smoke Detection.

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

3.3.204 Pneumatic Rate-of-Rise Tubing Heat Detector. See 3.3.70, Detector.

3.3.205 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)

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

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

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

▲ 3.3.209 Prime Contractor. The listed central station or listed alarm service local company that is contractually responsible for providing central station services to a subscriber as required by this Code. (SIG-SSS)

3.3.210 Private Operating Mode. See 3.3.193, Operating Mode.

3.3.211 Profound Hearing Loss. See 3.3.128, Hearing Loss.

3.3.212 Projected Beam-Type Detector. See 3.3.70, Detector.

3.3.213 Property.

3.3.213.1 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)

3.3.213.2 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)

3.3.214 Proprietary Supervising Station. See 3.3.290, Supervising Station.

3.3.215 Proprietary Supervising Station Alarm System. See 3.3.291, Supervising Station Alarm Systems.

3.3.216 Proprietary Supervising Station Service. See 3.3.292, Supervising Station Service.

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

3.3.218 Protected Premises (Local) Control Unit. See 3.3.108, Fire Alarm Control Unit (FACU).

3.3.219 Protected Premises (Local) Fire Alarm System. See 3.3.111, Fire Alarm System.

3.3.220 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)

3.3.221 Public Emergency Alarm Reporting System. A system of alarm-initiating devices, transmitting and receiving equipment, and communications 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)

3.3.221.1* 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)

3.3.221.1.1 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)

3.3.221.1.2 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)

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

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

3.3.222 Public Operating Mode. See 3.3.193, Operating Mode.

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

3.3.224 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)

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

3.3.226 Public Switched Telephone Network. See 3.3.297, Switched Telephone Network.

Δ 3.3.227 Publicly Accessible Alarm Box. See 3.3.12, Alarm Box.

3.3.228* 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. (SIG-TMS)

3.3.229 Radiant Energy-Sensing Fire Detector. See 3.3.70, Detector.

3.3.230 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)

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

3.3.232 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 supervising station. (SIG-SSS)

3.3.233 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)

3.3.234 Radio Channel. See 3.3.47, Channel.

3.3.235* Radio Frequency. The number of electromagnetic wave frequency cycles transmitted by a radio in 1 second. [1221, 2016] (SIG-PRS)

3.3.236 Rate Compensation Detector. See 3.3.70, Detector.

3.3.237 Rate-of-Rise Detector. See 3.3.70, Detector.

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

3.3.239 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)

3.3.240 Releasing Fire Alarm System. See 3.3.111, Fire Alarm System.

3.3.241 Releasing Service Fire Alarm Control Unit. See 3.3.108, Fire Alarm Control Unit (FACU).

3.3.242 Relocation. The directed movement of occupants from one area to another area within the same building. (SIG-PRO)

3.3.243 Remote Supervising Station. See 3.3.290, Supervising Station.

3.3.244 Remote Supervising Station Alarm System. See 3.3.291, Supervising Station Alarm Systems.

3.3.245 Remote Supervising Station Service. See 3.3.292, Supervising Station Service.

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

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

3.3.248 Residential Board and Care Occupancy. An occupancy 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, 2018] (SIG-HOU)

3.3.249 Residential Occupancy. An occupancy that provides sleeping accommodations for purposes other than health care or detention and correctional. [101, 2018] (SIG-HOU)

3.3.250* Response. Actions performed upon the receipt of a signal. (SIG-FUN)

3.3.250.1* Alarm Response. The response to the receipt of an alarm signal. (SIG-FUN)

3.3.250.2* Pre-Alarm Response. The response to the receipt of a pre-alarm signal. (SIG-FUN)

3.3.250.3* Supervisory Response. The response to the receipt of a supervisory signal. (SIG-FUN)

3.3.250.4* Trouble Response. The response to the receipt of a trouble signal. (SIG-FUN)

3.3.251 Response Time Index (RTI). A numerical value that represents the thermal response sensitivity of the sensing element in a heat detector, sprinkler, or other heat-sensing fire detection device to the fire environment in terms of gas temperature and velocity versus time. (See B.3.3.3.7.) (SIG-IDS)

3.3.252 Restorable Initiating Device. See 3.3.141, Initiating Device.

3.3.253 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)

3.3.254 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)

3.3.255 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)

3.3.256 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)

3.3.257 Selective Talk Mode. See 3.3.301, Talk Mode.

▲ **3.3.258* Separate Sleeping Area.** The area of a dwelling unit where the bedrooms or sleeping rooms are located. (SIG-HOU)

3.3.259 Service Personnel. See 3.3.200, Personnel.

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

3.3.261* Shop Drawings. Documents that provide information pertaining to the system necessary for installation of a fire alarm and/or signaling system. (SIG-FUN)

3.3.262 Shunt-Type Auxiliary Alarm System. See 3.3.221, Public Emergency Alarm Reporting System.

3.3.263* Signal. An indication of a condition communicated by electrical, visible, visual, audible, wireless, or other means. (SIG-FUN)

3.3.263.1* Alarm Signal. A signal that results from the manual or automatic detection of an alarm condition. (SIG-FUN)

▲ **3.3.263.2 Carbon Monoxide Alarm Signal.** A signal indicating a concentration of carbon monoxide at or above the alarm threshold that could pose a risk to the life safety of the occupants and that requires immediate action. (SIG-FUN)

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

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

3.3.263.5* Fire Alarm Signal. A signal that results from the manual or automatic detection of a fire alarm condition. (SIG-FUN)

3.3.263.6* Guard's Tour Supervisory Signal. A signal generated when a guard on patrol has actuated a guard's tour reporting station. (SIG-PRO)

3.3.263.7* Pre-Alarm Signal. A signal that results from the detection of a pre-alarm condition. (SIG-FUN)

3.3.263.8 Restoration Signal. A signal that results from the return to normal condition of an initiating device, system element, or system. (SIG-FUN)

3.3.263.9* Supervisory Signal. A signal that results from the detection of a supervisory condition. (SIG-FUN)

3.3.263.10* Trouble Signal. A signal that results from the detection of a trouble condition. (SIG-FUN)

3.3.264 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)

3.3.265 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)

3.3.266 Signaling Line Circuit Interface. See 3.3.146, Interface.

3.3.267 Signaling Zone. See 3.3.328, Zone.

3.3.268 Single Dwelling Unit. See 3.3.83, Dwelling Unit.

3.3.269 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)

3.3.270 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)

3.3.271 Site-Specific Software. See 3.3.279, Software.

3.3.272 Sloping Ceiling. See 3.3.38, Ceiling.

3.3.273 Sloping Peaked-Type Ceiling. See 3.3.38, Ceiling.

3.3.274 Sloping Shed-Type Ceiling. See 3.3.38, Ceiling.

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

3.3.276 Smoke Detection.

3.3.276.1 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)

3.3.276.2* 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)

3.3.276.3* 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)

3.3.276.4* 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)

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

3.3.277 Smoke Detector. See 3.3.70, Detector.

3.3.278 Smooth Ceiling. See 3.3.40, Ceiling Surfaces.

3.3.279 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)

3.3.279.1 Executive Software. Control and supervisory program that 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)

3.3.279.2 Site-Specific Software. Program that is separate from, but controlled by, the executive software that 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)

3.3.280 Solid Joist Construction. See 3.3.40, Ceiling Surfaces.

3.3.281 Spacing. A horizontally measured dimension used as a criterion in determining the allowable coverage of devices. (SIG-FUN)

3.3.282* Spark. A moving particle of solid material that emits radiant energy due to either its temperature or the process of combustion on its surface. [654,2017] (SIG-IDS)

3.3.283 Spark/Ember Detector. See 3.3.70, Detector.

3.3.284 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)

3.3.285 Spot-Type Detector. See 3.3.70, Detector.

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

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

3.3.288 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)

3.3.289 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)

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

3.3.290.1 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)

3.3.290.2 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)

3.3.290.3 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)

3.3.291 Supervising Station Alarm Systems.

3.3.291.1 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)

3.3.291.2 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 noncontiguous 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)

3.3.291.3 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)

▲ 3.3.292 Supervising Station Service.

3.3.292.1 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)

3.3.292.2 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)

3.3.292.3 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)

3.3.293 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)

3.3.294 Supervisory Signal. See 3.3.263, Signal.

3.3.295 Supervisory Signal Initiating Device. See 3.3.141, Initiating Device.

3.3.296 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)

3.3.297 Switched Telephone Network.

3.3.297.1 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)

3.3.297.2 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)

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

3.3.299 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)

3.3.300 Tactile Notification Appliance. See 3.3.182, Notification Appliance.

3.3.301 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)

3.3.301.1 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)

3.3.301.2 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 can include the ability to initiate calls to emergency phone locations. (SIG-ECS)

3.3.302 Testing Personnel. See 3.3.200, Personnel.

3.3.303 Textual Audible Notification Appliance. See 3.3.182, Notification Appliance.

3.3.304 Textual Visual Notification Appliance. See 3.3.182, Notification Appliance.

3.3.305 Transmission Channel. See 3.3.47, Channel.

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

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

3.3.308 Trouble Signal. See 3.3.263, Signal.

3.3.309 Two-Way Emergency Communications System. See 3.3.90, Emergency Communications System.

3.3.310 Type A Public Emergency Alarm Reporting System. See 3.3.221, Public Emergency Alarm Reporting System.

3.3.311 Type B Public Emergency Alarm Reporting System. See 3.3.221, Public Emergency Alarm Reporting System.

3.3.312 Unintentional Alarm. See 3.3.314.3, Unintentional Alarm.

3.3.313 Unknown Alarm. See 3.3.314.4, Unknown Alarm.

3.3.314* Unwanted Alarm. Any alarm that occurs that is not the result of a potentially hazardous condition. (SIG-FUN)

3.3.314.1 Malicious Alarm. An unwanted activation of an alarm initiating device caused by a person acting with malice. (SIG-FUN)

3.3.314.2* Nuisance Alarm. An unwanted activation of a signaling system or an alarm initiating device in response to a stimulus or condition that is not the result of a potentially hazardous condition. (SIG-FUN)

3.3.314.3 Unintentional Alarm. An unwanted activation of an alarm initiating device caused by a person acting without malice. (SIG-FUN)

3.3.314.4 Unknown Alarm. An unwanted activation of an alarm initiating device or system output function where the cause has not been identified. (SIG-FUN)

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

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

3.3.317 Video Image Smoke Detection (VISD). See 3.3.276, Smoke Detection.

3.3.318 Visual Notification Appliance. See 3.3.182, Notification Appliance.

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

3.3.320 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)

3.3.321* 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)

3.3.322 Wide-Area Mass Notification System. See 3.3.90, Emergency Communications System.

3.3.323 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)

3.3.324 Wireless Control Unit. See 3.3.63, Control Unit.

N 3.3.325* Wireless Mesh Network (WMN) (as used in Chapter 26). A decentralized communications network made up of radio nodes organized in a mesh topology that does not rely on a pre-existing infrastructure. (SIG-SSS)

3.3.326 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)

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

3.3.328 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)

3.3.328.1 Notification Zone. A discrete area of a building, or defined area outside a building, in which people are intended to receive common notification. (SIG-PRO)

3.3.328.2* Signaling Zone. An area consisting of one or more notification zones where identical signals are activated simultaneously. (SIG-ECS)

Chapter 4 Reserved

Chapter 5 Reserved

Chapter 6 Reserved

Chapter 7 Documentation

7.1 Application. (SIG-FUN)

7.1.1 The documentation of the design, acceptance, and completion of new systems required under this Code shall comply with the minimum requirements of this chapter.

7.1.2 The documentation of the alteration, maintenance, and testing of existing systems shall comply with the minimum requirements of this chapter.

7.1.3* Where required by governing laws, codes, or standards, or other parts of this Code, the requirements of this chapter, or portions thereof, shall apply.

7.1.4 Unless noted in Chapter 29 or required by other governing laws, codes, or standards, the documentation requirements of this chapter shall not apply to Chapter 29.

7.1.5 This chapter outlines documentation requirements but does not prohibit additional documentation from being provided.

7.1.6 The requirements of Chapters 10, 12, 14, 17, 18, 21, 23, 24, 26, and 27 shall apply unless otherwise noted in this chapter.

7.2* Minimum Required Documentation. (SIG-FUN)

7.2.1* Where documentation is required by the authority having jurisdiction, the following list shall represent the minimum documentation required for new systems and additions or alterations to existing systems:

- (1)* Written narrative providing intent and system description
- (2) Riser diagram
- (3) Floor plan layout showing locations of all devices, control equipment, and supervising station and shared communications equipment with each sheet showing the following:
 - (a) Point of compass (north arrow)
 - (b) A graphic representation of the scale used
 - (c) Room use identification
 - (d) Building features that will affect the placement of initiating devices and notification appliances
- (4) Sequence of operation in either an input/output matrix or narrative form
- (5) Equipment technical data sheets
- (6) Manufacturers' published instructions, including operation and maintenance instructions
- (7) Battery capacity and safety margin calculations (where batteries are provided)
- (8) Voltage drop calculations for notification appliance circuits
- (9) Mounting height elevation for wall-mounted devices and appliances
- (10) Where occupant notification is required, minimum sound pressure levels that must be produced by the audible notification appliances in applicable covered areas
- (11) Locations of alarm notification appliances, including candela ratings for visual alarm notification appliances
- (12)* Pathway diagrams between the control unit and shared communications equipment within the protected premises
- (13) Completed record of completion in accordance with 7.5.6 and 7.8.2

- (14) For software-based systems, a copy of site-specific software, including specific instructions on how to obtain the means of system and software access (password)
- (15) Record (as-built) drawings
- (16) Records, record retention, and record maintenance in accordance with Section 7.7
- (17) Completed record of inspection and testing in accordance with 7.6.6 and 7.8.2

7.2.2 System design documents shall identify the name and contact information of the system designer.

7.2.3 All fire alarm drawings shall use symbols described in NFPA 170 or other symbols acceptable to the authority having jurisdiction.

7.3 Design (Layout) Documentation.

7.3.1* The requirements of Section 7.3 shall apply only where required by other governing laws, codes, or standards; by other parts of this Code; or by project specifications or drawings. (SIG-FUN)

7.3.2* Where required by governing laws, codes, or standards, or other parts of this Code, design (layout) documents shall be prepared prior to installing new systems and additions or alterations to existing systems. (SIG-ECS)

7.3.3* Where required by governing laws, codes, or standards, or other parts of this Code, preliminary plans shall be created. (SIG-ECS)

7.3.3.1 When a design professional is preparing design documents that will incorporate new or modifications to a fire alarm or emergency communication system covered by this Code, preliminary bid documents shall be prepared in accordance with Section 7.3.

7.3.3.2 The design professional shall be qualified to prepare fire alarm design documents in accordance with 10.5.1.

7.3.3.3 Design documents shall incorporate performance criteria to ensure that the system will provide a beneficial component to the fire and life safety needs of the owner, occupants, and authority having jurisdiction.

7.3.3.4 Design documents shall clearly communicate the intended performance and functionality expected by all installing contractors.

7.3.3.5 For spaces designated as acoustically distinguishable spaces (ADS) in accordance with 18.4.11, the design professional shall coordinate with other design disciplines so that intelligibility of messages can be achieved utilizing the emergency communications equipment as specified in the design documents and available to contractors/installers.

7.3.4 Notification. (SIG-NAS)

7.3.4.1* The requirements of 7.3.4 shall apply only where required by other governing laws, codes, or standards, or by other parts of this Code.

7.3.4.2 Design documents shall include ambient sound pressure levels and audible design sound pressure levels in accordance with 18.4.1.5.4.

7.3.4.3 Analysis and design documentation for narrow band tone signaling shall be in accordance with 18.4.7.4.

7.3.4.4 The documentation of acoustically distinguishable spaces (ADS) shall be in accordance with 18.4.11.

7.3.4.5 Design documents shall specify the rooms and spaces that will have visual notification and those where visual notification will not be provided in accordance with 18.5.2.1.

7.3.4.6 Performance-based design alternatives for visual notification appliance design shall be in accordance with 18.5.5.7.2.

7.3.5 Detection. (SIG-IDS)

7.3.5.1 Heat-Sensing Fire Detectors. Heat detection design documentation shall be provided in accordance with Section 17.6.

7.3.5.2 Smoke-Sensing Fire Detectors. Smoke detection design documentation shall be provided in accordance with Section 17.7.

7.3.5.3 Radiant Energy-Sensing Fire Detectors. Radiant energy detection design documentation shall be provided in accordance with Section 17.8.

7.3.5.4 Gas Detectors. Gas detection design documentation shall be provided in accordance with Section 17.10.

7.3.6* Risk Analysis Documentation. (SIG-ECS)

7.3.6.1 When a risk analysis is required to be prepared, findings and considerations of the risk analysis shall be documented.

7.3.6.2 When determined by the stakeholders, security and protection of the risk analysis documentation shall be in accordance with 7.3.7 and Section 7.7.

7.3.6.3 The risk analysis documentation shall list the various scenarios evaluated and the anticipated outcomes.

7.3.6.4 Risk analyses for mass notification systems shall be documented in accordance with 7.3.6 and 24.3.12.

7.3.7* Performance-Based Design Documentation.

7.3.7.1 Performance-based design documentation for fire detection shall be in accordance with Section 17.3. (SIG-IDS)

7.3.7.2 Performance-based design documentation for visual notification appliances shall be in accordance with 18.5.5.7.2. (SIG-NAS)

7.3.7.3 A copy of approval documentation resulting from performance-based designs shall be included with the completion documentation in accordance with Section 7.5. (SIG-FUN)

N 7.3.7.4 Performance-based design documentation for mass notification systems shall be in accordance with Section 24.12.

7.3.7.5 Performance-based design documentation for signaling line circuit zoning shall be in accordance with 23.6.1.4 and 23.6.1.5. (SIG-PRO)

7.3.8 Emergency Response Plan Documentation. (SIG-ECS)

7.3.8.1 When an emergency response plan is required to be prepared, such as for a mass notification system, findings of the plan shall be documented.

7.3.8.2 When identified by the stakeholders, security and protection of the emergency response plan documentation shall be in accordance with 7.7.3.

7.3.8.3 The emergency response plan shall document the various scenarios evaluated and the anticipated outcomes.

7.3.9 Evaluation Documentation. (SIG-FUN)

7.3.9.1* Evaluation documentation shall include a signed statement(s) by the person responsible for the design attesting to the evaluation and the resultant technical decision and deeming it reliable and acceptable for the particular application.

Δ 7.3.9.2 A copy of the evaluation documentation shall be retained for the life of the system and be maintained with the documents required by 7.7.1.6.

7.4 Shop Drawings (Installation Documentation). (SIG-FUN)

7.4.1* The requirements of Section 7.4 shall apply only where required by other governing laws, codes, or standards; by other parts of this Code; or by project specifications or drawings.

7.4.2* Shop drawings shall be drawn to an indicated scale, on sheets of uniform size, with a plan of each floor.

7.4.3 Shop drawings for fire alarm and emergency communications systems shall provide basic information and shall provide the basis for the record (as-built) drawings required in accordance with 7.5.2.

7.4.4 Shop drawings shall include the following information:

- (1) Name of protected premises, owner, and occupant (where applicable)
- (2) Name of installer or contractor
- (3) Location of protected premises
- (4) Device legend and symbols in accordance with NFPA 170, or other symbols acceptable to the authority having jurisdiction
- (5) Date of issue and any revision dates

7.4.5 Floor plan drawings shall be drawn to an indicated scale and shall include the following information, where applicable for the particular system:

- (1) Floor or level identification
- (2) Point of compass (indication of North)
- (3) Graphic scale
- (4) All walls and doors
- (5) All partitions extending to within 15 percent of the ceiling height (where applicable and when known)
- (6) Room and area descriptions
- (7) System devices/component locations
- (8) Locations of fire alarm primary power disconnecting means
- (9) Locations of monitor/control interfaces to other systems
- (10) System riser locations
- (11) Type and number of system components/devices on each circuit, on each floor or level
- (12) Type and quantity of conductors and conduit (if used) for each circuit
- (13) Identification of any ceiling over 10 ft (3.0 m) in height where automatic fire detection is being proposed
- (14) Details of ceiling geometries, including beams and solid joists, where automatic fire detection is being proposed
- (15) Where known, acoustic properties of spaces

7.4.6 System riser diagrams shall be coordinated with the floor plans and shall include the following information:

- (1) General arrangement of the system in building cross-section
- (2) Number of risers
- (3) Type and number of circuits in each riser
- (4) Type and number of system components/devices on each circuit, on each floor or level
- (5) Number of conductors for each circuit

7.4.7 Control unit diagrams shall be provided for all control equipment (i.e., equipment listed as either a control unit or control unit accessory), power supplies, battery chargers, and annunciators and shall include the following information:

- (1) Identification of the control equipment depicted
- (2) Location(s) of control equipment
- (3) All field wiring terminals and terminal identifications
- (4) All circuits connected to field wiring terminals and circuit identifications
- (5) All indicators and manual controls
- (6) Field connections to supervising station signaling equipment, releasing equipment, or emergency safety control interfaces, where provided

7.4.8 Typical wiring diagrams shall be provided for all initiating devices, notification appliances, remote indicators, annunciators, remote test stations, and end-of-line and power supervisory devices.

7.4.9* A narrative description or input/output matrix of operation shall be provided to describe the sequence of operation.

7.4.10 System calculations shall be included as follows:

- (1) Battery calculations
- (2) Notification appliance circuit voltage drop calculations
- (3) Other required calculations, such as line resistance calculations, where required

7.5 Completion Documentation.

7.5.1* The requirements of Section 7.5 shall apply only where required by other governing laws, codes, or standards; by other parts of this Code; or by project specifications or drawings. (SIG-FUN)

7.5.2 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. (SIG-FUN)

7.5.3 All systems including new systems and additions or alterations to existing systems 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 (as-built) drawings in accordance with 7.5.5
 - (3) A completed record of completion form in accordance with 7.5.6
 - (4) For software-based systems, record copy of the site-specific software in accordance with 7.5.7
- (SIG-FUN)

7.5.4 For new emergency communications systems, an owner's manual shall be provided and shall contain the following documentation:

- (1) Detailed narrative description of the system inputs, evacuation signaling, ancillary functions, annunciation, intended sequence of operations, expansion capability, application considerations, and limitations
- (2) Written sequence of operation for the system including an operational input/output matrix
- (3) Operator instructions for basic system operations, including alarm acknowledgment, system reset, interpretation of system output (LEDs, CRT display, and printout), operation of manual evacuation signaling and ancillary function controls, and change of printer paper
- (4) Detailed description of routine maintenance and testing as required and recommended and as would be provided under a maintenance contract, including testing and maintenance instructions for each type of device installed, which includes the following:
 - (a) Listing of the individual system components that require periodic testing and maintenance
 - (b) Step-by-step instructions detailing the requisite testing and maintenance procedures, and the intervals at which those procedures shall be performed, for each type of device installed
 - (c) Schedule that correlates the testing and maintenance procedures that are required by this section
- (5) Service directory, including a list of names and telephone numbers of those who provide service for the system
- (6) Product data sheets for all system equipment (SIG-ECS)

7.5.5 Record Drawings (As-Built). (SIG-FUN)

7.5.5.1 Record drawings shall consist of current updated shop drawings reflecting the actual installation of all system equipment, components, and wiring.

7.5.5.2* A sequence of operations in input/output matrix or narrative form shall be provided with the record drawings to reflect actual programming at the time of completion.

7.5.5.3 Where necessary, revised calculations in accordance with 7.4.10 shall be provided depicting any changes due to installation conditions.

7.5.5.4 Record drawings shall be turned over to the owner with a copy placed inside the documentation cabinet in accordance with Section 7.7.

7.5.5.5* Record drawings shall include approval documentation resulting from variances, performance-based designs, risk analyses, and other system evaluations or variations.

7.5.6 Record of Completion. (SIG-FUN)

7.5.6.1* The record of completion shall be documented in accordance with 7.5.6 using either the record of completion forms, Figure 7.8.2(a) through Figure 7.8.2(f), or an alternative document that contains only the elements of Figure 7.8.2(a) through Figure 7.8.2(f) applicable to the installed system.

7.5.6.2* The record of completion documentation shall be completed by the installing contractor and submitted to the authority having jurisdiction and the owner at the conclusion of the job. The record of completion documentation shall be permitted to be part of the written statement required in 7.5.2 and part of the documents that support the requirements of

7.5.8. When more than one contractor has been responsible for the installation, each contractor shall complete the portions of the documentation for which that contractor has responsibility.

7.5.6.3* The preparation of the record of completion documentation shall be the responsibility of the qualified and experienced person in accordance with 10.5.2.

7.5.6.4 The record of completion documentation shall be updated in accordance with 7.5.6.6 to reflect all system additions or modifications.

7.5.6.5 The updated copy of the record of completion documents shall be maintained in a documentation cabinet in accordance with 7.7.2.

7.5.6.6 Revisions.

7.5.6.6.1 All modifications made after the initial installation shall be recorded on a revised version of the original completion documents, which shall serve as a supplement to the original, unaltered completion documents.

7.5.6.6.2 The revised record of completion document shall include a revision date.

7.5.6.6.3* Where the original or the latest overall system record of completion cannot be obtained, a new system record of completion shall be provided that documents the system configuration as discovered during the current project's scope of work.

7.5.6.7 Electronic Record of Completion.

7.5.6.7.1 Where approved by the authority having jurisdiction, the record of completion shall be permitted to be filed electronically instead of on paper.

7.5.6.7.2 If filed electronically, the record of completion document shall be accessible with standard software and shall be backed up.

7.5.7 Site-Specific Software. (SIG-TMS)

7.5.7.1 For software-based systems, a copy of the site-specific software shall be provided to the system owner or owner's designated representative.

7.5.7.1.1 The site-specific software documentation shall include both the user passcode and either the system programming password or specific instructions on how to obtain the programming password from the system manufacturer.

7.5.7.1.2 The passwords provided shall enable currently certified qualified programming personnel to access, edit, modify, and add to the existing system site-specific software.

7.5.7.2 A copy of the site-specific software shall be stored on-site in nonvolatile, nonerasable, nonrewritable memory.

7.5.8* Verification of Compliant Installation. (SIG-FUN)

7.5.8.1 Where required by the authority having jurisdiction, compliance of the completed installation with the requirements of this Code shall be certified by a qualified and impartial third-party organization acceptable to the authority having jurisdiction.

7.5.8.2 Verification of compliant installation shall be performed according to testing requirements and procedures specified in 14.4.1 and 14.4.2.

7.5.8.3 Verification shall ensure that:

- (1) All components and functions are installed and operate per the approved plans and sequence of operation.
- (2) All required system documentation is complete and is archived on site.
- (3) For new supervising station systems, the verification shall also ascertain proper arrangement, transmission, and receipt of all signals required to be transmitted off-premises and shall meet the requirements of 14.4.1 and 14.4.2.
- (4) For existing supervising station systems that are extended, modified, or reconfigured, the verification shall be required for the new work only, and reacceptance testing in accordance with Chapter 14 shall be acceptable.
- (5) Written confirmation has been provided that any required corrective actions have been completed.

7.5.9 Documentation of central station service shall be in accordance with 26.3.4. (SIG-SSS)

7.5.10 Documentation of remote station service shall be in accordance with 26.5.2. (SIG-SSS)

7.6 Inspection, Testing, and Maintenance Documentation. (SIG-TMS)

7.6.1 Test plan documentation shall be provided in accordance with 14.2.10.

7.6.2 Acceptance testing documentation shall be provided in accordance with 14.6.1.

7.6.3 Reacceptance test documentation shall be provided in accordance with 14.6.1.

7.6.4 Periodic inspection and testing documentation shall be provided in accordance with 14.6.2 through 14.6.4.

7.6.5 Impairment documentation shall be provided in accordance with Section 10.21.

7.6.6 Record of Inspection and Testing. The record of all inspections, testing, and maintenance as required by 14.6.2.4 shall be documented using either the record of inspection and testing forms, Figure 7.8.2(g) through Figure 7.8.2(l), or an alternative record that includes all the applicable information shown in Figure 7.8.2(g) through Figure 7.8.2(l).

7.7 Records, Record Retention, and Record Maintenance.

7.7.1 Records. (SIG-FUN)

7.7.1.1 A complete record of the tests and operations of each system shall be kept until the next test and for 1 year thereafter unless more stringent requirements are required elsewhere in this Code.

7.7.1.2* The records shall be available for examination and, if required, reported to the authority having jurisdiction. Archiving of records by any means shall be permitted if hard copies of the records can be provided promptly when requested.

7.7.1.3 If off-premises monitoring is provided, records of all signals, tests, and operations recorded at the supervising station, including the public emergency alarm reporting system, shall be maintained by the off-premise monitoring service provider for not less than 1 year unless more stringent requirements are required elsewhere in this Code.

7.7.1.4 Required documents regarding system design and function shall be maintained for the life of the system.

7.7.1.5 The emergency communications system and fire alarm system as-built plans and other related documentation shall be permitted to be maintained together, including the appearance of both systems on the same drawings. (SIG-ECS)

7.7.1.6 Revisions and alterations to systems shall be recorded and records maintained with the original system design documents.

7.7.2 Document Accessibility. (SIG-FUN)

7.7.2.1 With every new system, a documentation cabinet shall be installed at the system control unit or at another approved location at the protected premises.

7.7.2.2 The documentation cabinet shall be sized so that it can contain all necessary documentation.

7.7.2.3* All record documentation shall be stored in the documentation cabinet. No record documentation shall be stored in the control unit.

7.7.2.4 Where the documentation cabinet is not in the same location as the system control unit, its location shall be identified at the system control unit.

7.7.2.5 The documentation cabinet shall be prominently labeled SYSTEM RECORD DOCUMENTS.

7.7.2.6* The building owner or the building owner's representative shall, on an annual basis, review any electronic documentation media formats and associated interfacing hardware for compatibility and update, if necessary.

7.7.2.7 The contents of the cabinet shall be accessible by authorized personnel only.

7.7.2.8 Emergency communications system and fire alarm system record documentation shall be permitted to be maintained together in the same documentation cabinet.

7.7.3 Document Security. (SIG-ECS)

7.7.3.1 Security for system's documentation shall be determined by the stakeholders.

7.7.3.2* Where such documents cannot be protected from public access, it shall be permitted to remove sensitive information from record documents provided the owner retains complete documentation that will be made accessible to the authority having jurisdiction at an owner designated location.

7.8 Forms.

7.8.1 General.

7.8.1.1* The requirements of Section 7.8 shall apply only where required by other governing laws, codes, or standards; by other parts of this Code; or by project specifications or drawings. (SIG-FUN)

7.8.1.2 Where specific forms are required by other governing laws, codes, or standards; by other parts of this Code; or by project specifications or drawings, form layouts and content that differ from those in Section 7.8 shall be permitted provided that the minimum required content is included. (SIG-FUN)

7.8.2 Forms for Documentation. Forms for documentation shall be as follows:

- (1)* Unless otherwise permitted or required in 7.5.6 or 7.8.1.2, Figure 7.8.2(a) through Figure 7.8.2(f) shall be used to document the record of completion and inspection. (SIG-FUN)
- (2)* Unless otherwise permitted or required in 7.6.6 or 7.8.1.2, Figure 7.8.2(g) through Figure 7.8.2(l) shall be used to document the record of inspection and testing. (SIG-TMS)
- (3) Where a form is required by the AHJ to document the installation and inspection of a household fire alarm system or single- or multiple-station alarms, Figure 7.8.2(m) can be used to document the record of completion and inspection.

SYSTEM RECORD OF COMPLETION

*This form is 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.

Form Completion Date: _____ Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

Description of property: _____

Name of property representative: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

2. INSTALLATION, SERVICE, TESTING, AND MONITORING INFORMATION

Installation contractor: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Service organization: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Testing organization: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Effective date for test and inspection contract: _____

Monitoring organization: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Account number: _____ Phone line 1: _____ Phone line 2: _____

Means of transmission: _____

Entity to which alarms are retransmitted: _____ Phone: _____

3. DOCUMENTATION

On-site location of the required record documents and site-specific software: _____

4. DESCRIPTION OF SYSTEM OR SERVICE

This is a: ☐ New system ☐ Modification to existing system Permit number: _____

NFPA 72 edition: _____

4.1 Control Unit

Manufacturer: _____ Model number: _____

4.2 Software and Firmware

Firmware revision number: _____

4.3 Alarm Verification

☐ This system does not incorporate alarm verification.

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

▲ FIGURE 7.8.2(a) System Record of Completion. (SIG-FUN)

SYSTEM RECORD OF COMPLETION (continued)**5. SYSTEM POWER****5.1 Control Unit****5.1.1 Primary Power**

Input voltage of control panel: _____ Control panel amps: _____

Overcurrent protection: Type: _____ Amps: _____

Branch circuit disconnecting means location: _____ Number: _____

5.1.2 Secondary Power

Type of secondary power: _____

Location, if remote from the plant: _____

Calculated capacity of secondary power to drive the system: _____

In standby mode (hours): _____ In alarm mode (minutes): _____

5.2 Control Unit☐ This system does not have power extender panels☐ Power extender panels are listed on supplementary sheet A**6. CIRCUITS AND PATHWAYS**

Pathway Type	Dual Media Pathway	Separate Pathway	Class	Survivability Level
Signaling Line				
Device Power				
Initiating Device				
Notification Appliance				
Other (specify):				

7. REMOTE ANNUNCIATORS

Type	Location

8. INITIATING DEVICES

Type	Quantity	Addressable or Conventional	Alarm or Supervisory	Sensing Technology
Manual Pull Stations				
Smoke Detectors				
Duct Smoke Detectors				
Heat Detectors				
Gas Detectors				
Carbon Monoxide Detectors				
Waterflow Switches				
Tamper Switches				

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Δ FIGURE 7.8.2(a) *Continued*

SYSTEM RECORD OF COMPLETION (continued)**9. NOTIFICATION APPLIANCES**

Type	Quantity	Description
Audible		
Visual		
Combination Audible and Visual		

10. SYSTEM CONTROL FUNCTIONS

Type	Quantity
Hold-Open Door Releasing Devices	
HVAC Shutdown	
Fire/Smoke Dampers	
Door Unlocking	
Elevator Recall	
Elevator Shunt Trip	

11. INTERCONNECTED SYSTEMS

- ☐ This system does not have interconnected systems.
- ☐ Interconnected systems are listed on supplementary sheet _____.

12. CERTIFICATION AND APPROVALS**12.1 System Installation Contractor**

This system as specified herein has been installed according to all NFPA standards cited herein.

Signed: _____ Printed name: _____ Date: _____
 Organization: _____ Title: _____ Phone: _____

12.2 System Operational Test

This system as specified herein has tested according to all NFPA standards cited herein.

Signed: _____ Printed name: _____ Date: _____
 Organization: _____ Title: _____ Phone: _____

12.3 Acceptance Test

Date and time of acceptance test: _____
 Installing contractor representative: _____
 Testing contractor representative: _____
 Property representative: _____
 AHJ representative: _____

▲ FIGURE 7.8.2(a) Continued

EMERGENCY COMMUNICATIONS SYSTEMS SUPPLEMENTARY RECORD OF COMPLETION

This form is a supplement to the System Record of Completion. It includes systems and components specific to emergency communications systems.

This form is 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.

Form Completion Date: _____ Number of Supplemental Pages Attached: _____

1. PROPERTY INFORMATION

Name of property: _____

Address: _____

2. DESCRIPTION OF SYSTEM OR SERVICE

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

☐ Mass notification system

☐ Combination system, with the following components:

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

☐ Other (specify): _____

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

2.1 In-Building Fire Emergency Voice Alarm Communications System

Manufacturer: _____ Model number: _____

Number of single voice alarm channels: _____ Number of multiple voice alarm channels: _____

Number of loudspeakers: _____ Number of loudspeaker circuits: _____

Location of amplification and sound processing equipment: _____

Location of paging microphone stations:

Location 1: _____

Location 2: _____

Location 3: _____

2.2 Mass Notification System

2.2.1 System Type:

☐ In-building MNS-combination

☐ In-building MNS ☐ Wide-area MNS ☐ Distributed recipient MNS

☐ Other (specify): _____

▲ FIGURE 7.8.2(b) Emergency Communications System Supplementary Record of Completion. (SIG-FUN)

EMERGENCY COMMUNICATIONS SYSTEMS SUPPLEMENTARY RECORD OF COMPLETION *(continued)*

2. DESCRIPTION OF SYSTEM OR SERVICE *(continued)*

2.2.2 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 loudspeaker array (HPLA) interface ☐ In-building MNS to wide-area MNS interface
☐ Other (specify): _____

2.2.3 MNS Local Operating Consoles

Location 1: _____

Location 2: _____

Location 3: _____

2.2.4 High Power Loudspeaker Arrays

Number of HPLA loudspeaker initiation zones: _____

Location 1: _____

Location 2: _____

Location 3: _____

2.2.5 Mass Notification Devices

Combination fire alarm/MNS visual devices: _____ MNS-only visual devices: _____

Textual signs: _____ Other (describe): _____

Supervision class: _____

2.2.6 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.

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS

3.1 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

3.2 Area of Refuge (Area of Rescue Assistance) Emergency Communications Systems

Number of stations: _____ Location of central control point: _____

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

▲ FIGURE 7.8.2(b) *Continued*

**EMERGENCY COMMUNICATIONS SYSTEMS
SUPPLEMENTARY RECORD OF COMPLETION *(continued)***

3. TWO-WAY EMERGENCY COMMUNICATIONS SYSTEMS *(continued)*

3.3 Elevator Emergency Communications Systems

Number of elevators with stations: _____ Location of central control point: _____

Days and hours when central control point is attended: _____

Location of alternate control point: _____

Days and hours when alternate control point is attended: _____

3.4 Other Two-Way Communications System

Describe: _____

4. CONTROL FUNCTIONS

This system activates the following control functions specific to emergency communications systems:

Type	Quantity
Mass Notification Override of Alarm Signaling Systems or Appliances	

See Main System Record of Completion for additional information, certifications, and approvals.

▲ FIGURE 7.8.2(b) *Continued*