

NFPA-72[®] 2013 – Most Significant Changes to The National Fire Alarm and Signaling Code



The Automatic **Fire** Alarm Association
of New Jersey, Inc. February 21, 2013

The National Fire Alarm and Signaling Code



2010 Edition NFPA 72®: National Fire Alarm and Signaling Code,



1993 Edition NFPA 72®: National Fire Alarm Code,



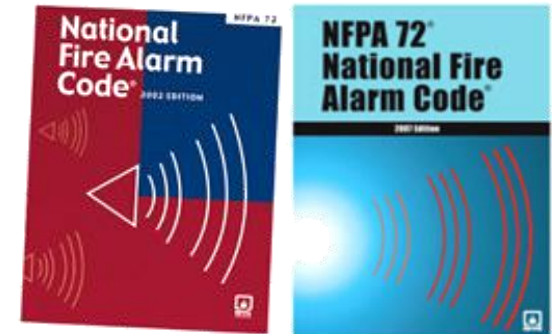
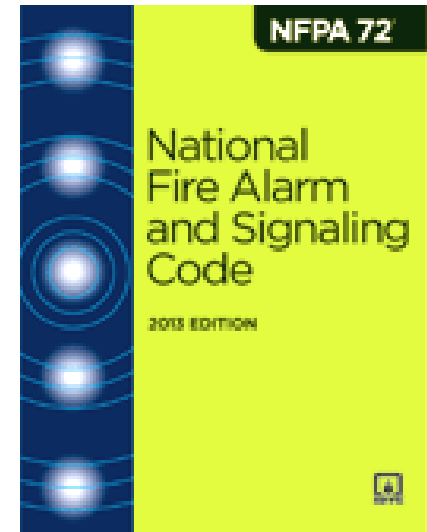
1990 Edition NFPA 72: Standard for the Installation Maintenance and Use of Protective Signaling Systems.



This brought together the older standards for Proprietary, Auxiliary and Local Protective Signaling Systems Including Local or Isolated Systems for Watchman Fire Alarm and Supervisory Service



or 72 A, B, C, D and F. E, G, H, 74 and 71 were incorporated into the 93 Edition making G and H part of the code where they were only guides prior to this.



NFPA-72® 2013 – Most Significant Changes







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AFAA Presented by Ed Armm, SET. Retired Senior Consultant from RJA, Past Fire Protection Specialist for NICET, Senior Training Specialist at Pyrotronics. Immediate Past President of **AFAANJ** and current President of the NJSFPE.

NFPA-72® 2013 – Most Significant Changes

-  The 2013 edition of NFPA 72®, National Fire Alarm and Signaling Code, builds on the scope and organizational changes that were begun in the 2010 edition.
-  These will be briefly recapped along with a summary of new organizational changes.
-  In addition a number of significant technical changes have been introduced and will be summarized by chapter.
-  It is recommended that the actual code be used rather than quotes from this presentation.

What shapes the codes?



Natural events

- Super-Storms, TORNADOS, Floods and Earthquakes



Terrorist Attacks

- 1993 WTC Bombing
- 09/11/2001



Catastrophic Accidents

- Gas Leaks, Oil Spills



Other events that shape our codes

- School Shooters



Large Loss Fires



The Station Club Fire



The Triangle Shirt Waste Fire



Great Fires of



Boston



Chicago












San Francisco



In other words lots of lost lives!

NFPA-72® 2013 – Most Significant Changes

-  Starting in the 2010 edition NFPA 72 was completely reorganized by grouping chapters into;
-  Front chapters (1-9)
-  Support chapters (10-19)
-  System chapters (20-29)
-  With reserved chapters placed within each grouping to allow for future expansion.
-  As a part of the reorganization, in addition to the new system chapter, “Emergency Communications Systems,” some existing material was moved into two additional new support chapters:
 -  Chapter 12 “Circuits and Pathways,”
 -  Chapter 21 “Emergency Control Functions and Interfaces.”
 -  From Ancillary to Life Safety to Emergency Control Functions over the years

NFPA-72[®] 2013 – Most Significant Changes

- ✦ In the 2013 edition a new administrative chapter 7, “Documentation” has been introduced to further improve the usability of the document. The chapter provides a central location for all the documentation requirements of the Code.
 - In some cases the documentation provisions are contained directly in the new chapter.
 - In other cases references are provided to the locations of documentation requirements contained in other chapters.
- ✦ A total of three new chapters
 - There are now a total of 29 chapters with 15 used and 14 held in reserve for later revisions.
- ✦ Mass Notification Systems moving from Annex E to Chapter 24 (ECS) in 2010 and expanded in 2013

Further Changes to Improve Usability

Chapter 3, Definitions New definitions have been added to include;

- ☞ **3.3.130 Impairment** – abnormal condition where a system, component, or function is out of order, and the condition can result in the system or unit not functioning when required
- ☞ **3.3.130.1 Emergency Impairment** – abnormal condition where a system, component, or function is out of order due to unexpected deficiency
- ☞ **3.3.130.2 Planned Impairment** – abnormal condition where a system, component, or function is out of service due to work that has been planned in advance

Chapter 10, “Fundamentals,” has been reorganized in the 2013 edition to provide a more user-friendly flow of requirements.

Further Changes to Improve Usability

✦ Extensive usability changes have also been made in the support chapters, Inspection, Testing and Maintenance (Chapter 14). These changes occur primarily within the inspection and testing tables.



The visual inspection table has been updated, adding new inspection methods for each component along with the inspection frequency.



The test methods and test frequency tables have been combined into a single table so that the test method appears along with the test frequency for each component.



The component listings in both tables have been reorganized and coordinated so that components and equipment are easier to find.

Further Changes to Improve Usability

- 📌 Clearer requirements for;
 - 🚒 Combination Systems
 - 📹 Video Imaging Detection
 - 🕸 Carbon Monoxide Detection
 - 🚒 Sprinkler supervisory Service
 - 🚒 Water Levels and Temperature **5.15.3 & .4**
 - 🚒 Room Temperature **5.15.5**
 - 🚒 The Electronic Monitoring of Fire Extinguishers for position and fill. **6.8.4.11**

Significant Technical Updates

- ✦ The 2013 edition of the Code also includes many technical updates. Among these are provisions in the support chapter 7, “Documentation,” specifying a more extensive minimum list of documentation that is to be provided for all systems when documentation is required by the enforcing authority.

Significant Technical Updates

- ✦ Changes to the support chapter 10, “Fundamentals,” have been made to require supervising stations operators and fire alarm system service providers, respectively, to report to the AHJ when monitoring service has been terminated or when a system has been out of service for more than 8 hours.
- ✦ Also within chapter 10 the requirements for inspection, testing, and service personnel qualifications have been updated to better reflect the level of qualification needed for each type of activity.
- ✦ This includes a new provision requiring system programmers to be certified by the system manufacturer.

Significant Technical Updates

10.5.1 System Designer.

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

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

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

Significant Technical Updates

10.5.3* Inspection, Testing, and Service Personnel. (SIG-TMS)

Personnel, either individually or through their affiliation with an organization that is registered, licensed, or certified by a state or local authority, shall be recognized as qualified and experienced in the inspection, testing, and maintenance of systems addressed within the scope of this Code.

10.5.3.1* Inspection Personnel. Inspections shall be performed by personnel who have developed competence through training and experience acceptable to the AHJ or meet the requirement of 10.5.3.3.


10.5.3.2* Testing Personnel. Testing personnel shall have knowledge and experience of the testing requirements for fire alarm and signaling equipment of this Code acceptable to the AHJ or meet the requirement of 10.5.3.3.

10.5.3.3 Service Personnel. Service personnel shall be qualified in the maintenance and servicing of systems addressed within the scope of this Code. Qualified personnel shall include, but not be limited to, one or more of the following:


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

Significant Technical Updates

10.5.3.4 Programming.

 Personnel programming a system shall be certified by the system manufacturer.


10.5.3.5 Evidence of Qualification.


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


10.21* Impairments.

10.21.1 The system owner or their designated representative shall be notified when a system or part thereof is impaired. Impairments to systems shall include out-of-service events.

Significant Technical Updates

 10.21.3 The supervising station shall report to the AHJ any fire alarm system for which monitoring has been terminated.

 10.21.4 The service provider shall report to the AHJ any fire alarm system that is out of service for more than 8 hours

 10.22 Unwanted Alarms. For the purpose of reporting, alarm signals that are not the result of hazardous conditions shall be classified as Unwanted and sub-classified as one of the following:

~~AFAA~~ Malicious Alarm

~~AFAA~~ Nuisance Alarm

~~AFAA~~ Unintentional Alarm

~~AFAA~~ Unknown Alarm







~~AFAA~~ All of the above are defined in Chapter 3-3.3.305 Unintentional Alarm.

Significant Technical Updates

- 🔧 The support chapter 12, “Circuits and Pathways,” has been updated to incorporate specific circuit performance and integrity information, revised and relocated from the chapter on protected premises fire alarm systems.
- 🔧 Also a new section has been added to address prioritization and segregation of life safety and non life safety data in shared pathways.

🔧 12.3* Pathway Class Designations.





Pathways shall be designated as;

-  Class A, (1)
-  Class B,
-  Class C,
-  Class D, (2)
-  Class E,
-  Class X, (1) (most restrictive)

 depending on their performance.

1. redundant path.
2. fail-safe operation,

🔧 12.4 Pathway Survivability. All pathways shall comply with *NFPA 70, National Electrical Code*.

-  12.4.1 Pathway Survivability Level 0.
-  12.4.2 Pathway Survivability Level 1.
-  12.4.3 Pathway Survivability Level 2.
-  12.4.4 Pathway Survivability Level 3.

🔧 12.5* Shared Pathway Designations.

-  Again, levels 0 through 3

IDC's and NAC's Devices Detect & Appliances Announce

Table A.12.3(a) Performance of Initiating Device Circuits (IDC's)						
NFPA 72-2007 Class	B			A		
NFPA 72-2010 Class	B			A		
	A	T	ARC	A	T	ARC
Abnormal Condition	1	2	3	4	5	6
Single open	-	X	-	-	X	R
Single ground	-	X	R	-	X	R
<p>A =Alarm. T=Trouble. ARC = Alarm receipt capability during abnormal condition. R: Required capability. X: Indication required at protected premises and as required by Chapter 26. A short on any modern technology IDC will cause an alarm. The old Kidde FSK IDC is no longer accounted for.</p>						

IDC's and NAC's Devices Detect & Appliances Announce

Table A.12.3(c) Performance of Notification Appliance Circuits (NAC's)				
NFPA 72-2007 Class	B		A	
NFPA 72-2010 Class	B		A	
	Trouble indication at protective premise	Alarm capability during abnormal conditions	Trouble indication at protective premise	Alarm capability during abnormal conditions
Abnormal Condition	1	2	3	4
Single open	X	-	X	R
Single gnd.	X	R	X	R
W 2 W Short	X	-	X	-
X: Indication required at protected premises and as required by Chapter 26. R: Required capability. W 2 W: Wire to Wire				

Performance of Signal Line Circuits (SLC)

Table A.12.3 (b) (SLC's)

NFPA 72-2007 Class	B			A			A		
	4			6			7		
NFPA 72-2010 Class	B			A			X		
	Alarm	Trouble	ARC	Alarm	Trouble	ARC	Alarm	Trouble	ARC
Abnormal Conditions	1	2	3	4	5	6	7	8	9
Single Open	-	X	-	-	X	R	-	X	R
Single Ground	-	X	R	-	X	R	-	X	R
W 2 W Short	-	X	-	-	X	-	-	X	R
W 2 W Short & Open	-	X	-	-	X	-	-	X	-
W 2 W Short & Gnd.	-	X	-	-	X	-	-	X	-
Open and Ground	-	X	-	-	X	R	-	X	R
Loss of carrier	-	X	-	-	X	-	-	X	-

ARC: Alarm receipt capability during abnormal condition. R: Required capability. X: Indication required at protected premises and as required by Chapter 26. Loss of carrier refers to old FSK Kidde IDC

Significant Technical Updates

- 🔧 Modifications have been made throughout the support chapter 14 “Inspection, Testing and Maintenance” to clarify that the inspection, testing, and maintenance requirements apply only to the systems, devices, and components covered by the Code – not to components of other systems.
- 🔧 In addition inspection methods have been added to the inspection table along with the inspection frequencies.
- 🔧 Also, new provisions have been added to require that a test plan be written to establish the scope of testing for fire alarm systems.

Significant Technical Updates

- ✦ The support chapter 17, “Initiating Devices,” has been updated to clarify requirements for accessibility and labeling of remote alarm and supervisory indicators.
- ✦ In addition, the provisions in this chapter addressing total coverage detection have been revised and coordinated to clarify the approach to be taken when return air plenums are involved.
- ✦ Also the provisions addressing spot-type smoke detectors spacing in high airflow conditions have been revised to clarify that adjustments for high airflow must be made prior to any adjustments for ceiling construction.

17.4.8* If a remote alarm indicator is provided for an automatic fire detector in a concealed location, the location of the detector and the area protected by the detector shall be prominently indicated at the remote alarm indicator by a permanently attached placard or by other approved means.

17.4.9 Where required by 17.4.7 and unless the specific detector alarm or supervisory signal is indicated at the control unit (and on the drawings with its specific location and functions), remote alarm or supervisory indicators shall be installed in an accessible location and shall be clearly labeled to indicate both their function and any device or equipment associated with each detector.

17.4.10* If the intent is to initiate action when smoke/fire threatens a specific object or space, the detector shall be permitted to be installed in close proximity to that object or space.

17.5.3.1.4* Where concealed accessible spaces above suspended ceilings are used as a return air plenum meeting the requirements of NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems, detection shall be provided in one of the following means:

- (1) Smoke detection shall be provided in accordance with 17.7.4.2, or
- (2) Smoke detection shall be provided at each connection from the return air plenum to the central air-handling system.

17.7.1.7 The selection and placement of smoke detectors shall take into account both the performance characteristics of the detector and the areas into which the detectors are to be installed to prevent nuisance and unintentional alarms or improper operation after installation.

17.7.1.8* Unless specifically designed and listed for the expected conditions, smoke detectors shall not be installed if any of the following ambient conditions exist:

- (1) Temperature below 32°F (0°C)
- (2) Temperature above 100°F (38°C)
- (3) Relative humidity above 93 percent
- (4) Air velocity greater than 300 ft/min (1.5 m/sec)

Significant Technical Updates

- 🔧 Updates to the support chapter 18, “Notification Appliances,” have been made clarifying that coverage for occupant notification (generally specified by other governing laws, codes or standards) only applies in occupiable spaces, as defined in NFPA 72.
- 🔧 In addition, the provisions in this chapter for audible signaling have been updated to require documentation of the locations that require (and do not require) audible notification as well as documentation of the audibility levels that must be produced. Similar area of coverage documentation requirements were also added for visible notification.
- 🔧 Also, provisions for the use of the standard alarm evacuation signal (the three-pulse temporal code) have been updated to extend to signals used for relocation and partial evacuation, not just complete evacuation.
- 🔧 Finally, provisions addressing textual and graphical visible appliances have relocated from the chapter on emergency communications systems to this chapter and have been expanded to include fire applications and refined to include location, mounting and performance requirements.


Significant Technical Updates





- ✚ Changes have been made in the support chapter 21, “Emergency Control Function Interfaces,” more specifically addressing requirements for elevator recall when sprinklers are installed in elevator pits.
- ✚ The requirements for occupant evacuation elevators have also been completely revised to coordinate with changes being made in ASME A.17.1/B44, *Safety Code for Elevators and Escalators*.
- ✚ In addition requirements for fire alarm systems interfacing with HVAC systems have been updated as have the requirements for door and shutter release and requirements for electrically locked doors.

Significant Technical Updates






- 🔧 The systems chapter 23, “Protected Premises Fire Alarm Systems,” has been updated to address the monitoring of carbon monoxide detection systems by fire alarm systems and requires carbon monoxide detector activations to be displayed on the fire alarm system as “carbon monoxide alarm” signals.
- 🔧 Also provisions have been added requiring that if a valve is installed in the connection between a sprinkler system or a suppression system and an initiating device, the valve be supervised.

Significant Technical Update

 A number of changes have been made in chapter 24, “Emergency Communications Systems,” including the following:

-  The addition of specific references to documentation requirements in the new documentation chapter
-  The addition of a requirements to post instructions for the use of microphones in making voice announcements and for test messages to specifically state “this is a test”
-  The addition of ANSI/UL 2572, *Standard for Mass Notification Systems* in the requirement for the listing of mass notification systems control units
-  The addition of a requirement to provide message templates for each message developed for scenarios of the emergency response plan

Significant Technical Updates

-  Clarification of requirements for the use of live voice instructions in emergency voice/alarm communications systems upon release of the microphone
-  Updated in-building mass notification system documentation requirements to provide the owner with a written sequence of operation and a copy of the site-specific software
-  Updated requirements for voice message priority in in-building mass notification systems
-  Added provisions on the use of textual and graphical visible notification appliances for primary or supplemental notification
-  Updated requirements for the location and accessibility of for emergency command centers

Significant Technical Updates




🔧 Changes have been made in the system chapter, “Supervising Station Alarm Systems,” addressing alarm signal verification, alarm signal content, and restoration of signals.






These changes have been made in part to help emergency responders better manage issues related to unwanted alarms. In addition, new definitions for unwanted alarms have been added to more precisely identify the sources of these alarms.

🔧 Changes have also been made to update the communications methods addressed in this chapter including the following:

Significant Technical Updates

-  Updated requirements for supervision intervals for both single and multiple communications paths
-  Changes to the types of transmission means that can be used for the second channel of a digital alarm communicator transmitter (DACT).
-  Added provisions for signal processing equipment at supervising stations

Significant Technical Updates

-  Updated requirements for secondary power for shared communications equipment used with performance-based technologies
-  Added annex material to provide examples of technologies that fall under the requirements for performance-based technologies
-  Removed requirements addressing digital alarm radio systems





Significant Technical Updates

- 🔧 The systems chapter, “Public Emergency Alarm Reporting Systems,” has been updated to prohibit the use of unlicensed radio frequencies in wireless networks.
- 🔧 In addition revisions have been made to clarify the wireless network capacity for the number of alarm boxes on a single radio frequency.
- 🔧 Also, a new requirement has been added to require circuit survivability for wiring between an auxiliary alarm system and the auxiliary or master box.





Significant Technical Updates




Several changes have been made in the systems chapter, “Single- and Multiple-Station Alarms and Household Fire Alarm Systems,” including the following:

-  Modified the performance requirements for the low frequency alarm signal 
-  Updated the provisions for visible and tactile notification so they apply to those with moderately severe as well as profound hearing loss
-  Changed the secondary power capacity requirements for smoke and heat alarms to 7 days instead of 24 hours

Significant Technical Updates

-  Introduced two new separate provisions addressing smoke alarm and smoke detector resistance to common nuisance sources in general, and to common cooking nuisance sources when installed within 20 ft of a fixed cooking appliance
-  Added provisions to add address the connection of sprinkler waterflow switches to multiple-station alarms
-  Added provisions to require two simultaneous or sequential operations to activate a keypad fire alarm signal
-  The provisions for testing of smoke alarms (in the testing chapter) have been revised to eliminate the requirement for sensitivity testing

NFPA-72[®] 2013 – Most Significant Changes

 Thank you for your kind attention, any questions?

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~~AFAA~~ To download a copy of this presentation please go to www.AFAANJ.org. For that matter any of the past ones from 2012 as well.