

**SIEMENS**

# Siemens Building Technologies Life Safety Code - 2012 Edition

## Chapter 2 Mandatory References – NFPA 72 Fire Alarm

Presented by:  
Esteban Cota  
Portfolio Lead of Strategic Development  
12001 Network Blvd  
San Antonio, TX 78249  
(512) 217-6574  
esteban.cota@siemens.com

© Siemens Industry, Inc. 2016  
Answers for industry.

**SIEMENS**

### Session Objectives

- Understanding requirements; a closer look at NFPA 101, 2012 edition (Chapter 2 Mandatory References)
- The codes and standards for inspection, testing and maintenance
- New and Updated Code Changes
- Discuss best practices for managing your fire life safety program

© Siemens Industry, Inc. 2016  
Page 2 2016-09-23  
SII – Building Technologies

**SIEMENS**

## Understanding requirements

A closer look at NFPA codes and standards for inspection, testing and maintenance

© Siemens Industry, Inc. 2016  
Page 3 2016-09-23  
SII – Building Technologies

**SIEMENS**

### Healthcare Regulatory Reference Overview National Fire Protection Association (NFPA)

The following chapters were extracted:  
Chapter 2 Information Technology  
Chapter 8 Plumbing  
Chapter 18 Emergency Management  
Chapter 13 Security

Note: \*See Chapter 2 for Additional Standards Referenced

© Siemens Industry, Inc. 2016  
Page 4 2016-09-23  
SII – Building Technologies

**SIEMENS**

### Responsibility begins early in the process

- Authority having Jurisdiction (AHJ)
  - Temporary Certificate of Occupancy (TCO) of the building to the owner
- NFPA 72: National Fire Alarm and Signaling Code
  - Record of Completion Form
- Owner is responsible for ensuring
  - Visual Inspections
  - Periodic Testing
  - Maintenance

**2. INSTALLATION, SERVICE, AND TESTING CONTRACTOR INFORMATION**

Installation contractor for this equipment: *Trade Fire Alarm Systems*

Address: *2300 Bruce Street, Pleasantville, NY 10976*

License or certification number: *NY-10524*

Phone: *505-525-5252* Fax: *202-339-2299* Email: *trade@nydfas.com*

Service organization for this equipment: *Trade Fire Alarm Systems*

Address: *\_\_\_\_\_* State: *\_\_\_\_\_*

License or certification number: *\_\_\_\_\_* Title: *\_\_\_\_\_* Email: *\_\_\_\_\_*

A contract for test and inspection in accordance with NFPA standards is in effect as of: *Jan 15, 2015*

Contracting company: *Trade Fire Alarm Systems*

Address: *\_\_\_\_\_* State: *\_\_\_\_\_*

Phone: *\_\_\_\_\_* Fax: *\_\_\_\_\_* Email: *\_\_\_\_\_*

Contractor signature: *\_\_\_\_\_* Date: *June 15, 2015* Contract number: *46670* Presence of witness (Inspector): *\_\_\_\_\_* Quantity: *\_\_\_\_\_*

*Excerpt from NFPA 72 Record of Completion Form Figure 10.18.2.1.1*

© Siemens Industry, Inc. 2016  
Page 5 2016-09-23  
SII – Building Technologies

**SIEMENS**

### Responsibility begins early in the process

- Authority having Jurisdiction (AHJ)
  - Temporary Certificate of Occupancy (TCO) of the building to the owner
- NFPA 72: National Fire Alarm and Signaling Code
  - Record of Completion Form
- Owner is responsible for ensuring
  - Visual Inspections
  - Periodic Testing
  - Maintenance

**16. CERTIFICATIONS AND APPROVALS**

**16.1 System Installation Contractor:**

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

Signed: *Trade Fire Alarm Syst.* Printed name: *Trade Fire Alarm Syst.* Title: *President* Date: *6/15/2015*

Organization: *Trade Fire Alarm Syst.* Phone: *505-525-5252*

**16.2 System Service Contractor:**

The undersigned has a service contract for this system in effect as of the date shown below.

Signed: *Trade Fire Alarm Syst.* Printed name: *Trade Fire Alarm Syst.* Title: *President* Date: *6/15/2015*

Organization: *Trade Fire Alarm Syst.* Phone: *505-525-5252*


*Excerpt from NFPA 72 Record of Completion Form Figure 10.18.2.1.1*

© Siemens Industry, Inc. 2016  
Page 6 2016-09-23  
SII – Building Technologies

**SIEMENS**

### Adopted standards as regulations and codes

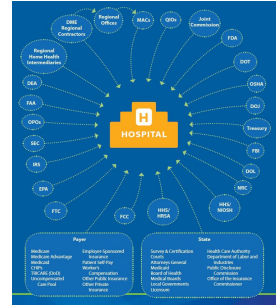
- Federal - Code of Federal Regulations (CFR)
  - OSHA
  - CMS
- State Administrative Codes
  - Office of the State Fire Marshal
  - Department of State Health Services
- Local City Administrative Codes
  - Fire Code
  - Building Code
- Other
  - ISO 9000 Quality Management System
  - The Joint Commission accreditation (TJC)
  - Insurance underwriter



© Siemens Industry, Inc. 2016  
Page 7 2016-09-23 SII – Building Technologies

**SIEMENS**

### Agencies Regulating Hospitals



- Federal and state government is playing a larger role in oversight with healthcare
- Understanding, managing and maintaining compliance is getting tougher for healthcare organizations
- Healthcare organizations must be attentive to regulatory compliance risk to avoid financial penalties and protect their brand

Image by The American Society for Healthcare Engineering  
© Siemens Industry, Inc. 2016  
Page 8 2016-09-23 SII – Building Technologies

**SIEMENS**

### Adopted standards as regulations and codes

#### Federal – Code of Federal Regulations (CFR)

- Title 21: Food & Drugs**
  - Part 11 – FDA
  - Subpart B – Electronic Records
  - §11.10 – Controls for Closed Systems
- Title 29: Labor**
  - Part 1900 – OSHA
  - Subpart L – Fire Protection
  - §1910.164 – Fire Detection
  - NFPA 72
- Title 42: Public Health**
  - Chapter IV – CMS
  - Subpart C – Basic Hospital Functions
  - §482.41 – Condition of participation: Physical environment
  - NFPA 101 – Life Safety Code 2012 edition
  - Chapter 2 – Mandatory
  - References
  - NFPA 99-2010 Edition

#### State

**Texas Administrative Code**

- **Title 28 – Insurance**
  - Chapter 34 – State Fire Marshal
  - Subchapter F – Fire Alarm Rules
  - Rule 34.607 – Adopted Standards
  - NFPA 72, 2013 Edition
- **Title 25 – Health Services**
  - Part 1 – Department of State Health Services
  - Chapter 133 – Hospital Licensing
  - Subchapter H – Fire Prevention and Safety Requirements
  - Rule §133.141 – Fire Prevention and Protection
  - NFPA 101; 2012 Edition
  - Chapter 2 – Mandatory References
  - NFPA 72; 2010 Edition

#### Local

**City of Austin Administrative Codes - Fire Code of City of Austin**


- International Fire Code (IFC) 2012
- Chapter 9 – Fire Protection Systems
- Section 901.6 – Inspection, Testing & Maintenance
- Chapter 47 – Referenced Standards
- NFPA 72; 2010 Edition
- NFPA 25; 2011 Edition
- Ordinance: 20100624-142 – Local Amendments
- Chapter 47 – Referenced Standards
- NFPA 72; 2013 Edition

© Siemens Industry, Inc. 2016  
Page 9 2016-09-23 SII – Building Technologies

**SIEMENS**

### How often or when do you need to perform the tasks

- Visual inspections, testing and maintenance
  - Frequencies of tasks vary
  - NFPA defines the minimum requirements
  - Some AHJs (Federal, State, Local or Others) may require tasks to be done more frequently than the NFPA
- If a task is not listed, then it shall be completed according to "Manufacturer's Published Instructions"
- Use most stringent frequencies
  - Create a crosswalk matrix to document the various AHJs and their requirements



© Siemens Industry, Inc. 2016  
Page 10 2016-09-23 SII – Building Technologies

**SIEMENS**

### How often or when do you need to perform the tasks

Required Functional Testing	Freq.	1999	2002	2007	2010
<b>Initiating Devices</b>					
Duct Detectors	A	✓	✓	✓	✓
Electromechanical Releasing Devices	A	✓	✓	✓	✓
<b>Required Visual Inspections</b>	Freq.	1999	2002	2007	2010
<b>Initiating Devices</b>					
Duct Detectors	SA	✓	✓	✓	✓
Electromechanical Releasing Devices	SA	✓	✓	✓	✓
Fire-Extinguishing System(s) or Suppression System(s) Switches	SA	✓	✓	✓	✓
<b>Required Maintenance</b>	Freq.	1999	2002	2007	2010
Fire alarm system equipment shall be maintained <i>in accordance with the manufacturer's instructions</i> . The frequency of maintenance shall depend on the type of equipment and the local ambient conditions.	Manuf. Instr.	✓	✓	✓	✓
The frequency of cleaning shall depend on the type of equipment and the local ambient conditions.	-	✓	✓	✓	✓

© Siemens Industry, Inc. 2016  
Page 11 2016-09-23 SII – Building Technologies

**SIEMENS**

## New and Updated Code Changes

A closer look at NFPA codes and standards for inspection, testing and maintenance

© Siemens Industry, Inc. 2016  
Page 12 2016-09-23 SII – Building Technologies

**SIEMENS**

# NFPA 72

## National Fire Alarm and Signaling Code

© Siemens Industry, Inc. 2016  
Page 13 2016-09-23 SII – Building Technologies

**SIEMENS**

### NFPA 72 National Fire Alarm and Signaling Code

Previous Edition	Freq.	1999	2010
Off-premises transmission equipment	Q	✓	

Adopted Edition	Freq.	1999	2010
Supervising station alarm systems - transmitters	A		✓

- The term "off-premises transmission equipment" was removed and replaced with the term "supervising station alarm systems – transmitters"
- The frequency was reduced from "Quarterly" testing to "Annual"
- For additional guidance see Table 14.4.2.2(18) Test Methods

© Siemens Industry, Inc. 2016  
Page 14 2016-09-23 SII – Building Technologies Excerpt from NFPA 72

**SIEMENS**

### NFPA 72 National Fire Alarm and Signaling Code

Previous Edition	Freq.	1999	2010
Interface equipment	A	✓	

Adopted Edition	Freq.	1999	2010
Interface equipment and emergency control functions	A	✓	✓

- The term "emergency control functions" was added to "interface equipment"
- Emergency control functions "outputs" from the fire alarm system would include functional verification that other building systems such as air handler shutdown, fire/smoke dampers, fire doors, elevators recall, steel fire rolling doors, etc... functionally performed when signal was sent from the fire alarm system
- For additional guidance see Table 14.4.2.2(22) and (23) Test Methods

© Siemens Industry, Inc. 2016  
Page 15 2016-09-23 SII – Building Technologies Excerpt from NFPA 72

**SIEMENS**

### NFPA 72 National Fire Alarm and Signaling Code

Previous Edition	Freq.	1999	2010
<b>Initiating Devices</b>			
Supervisory signals devices (except valve tamper switches)	Q	✓	
Valve tamper switches	SA	✓	

Adopted Edition	Freq.	1999	2010
<b>Initiating Devices</b>			
Supervisory signals devices			
(1) Valve Tamper Switches	SA	✓	✓
(2) Pressure supervisory indicating devices	Q	✓	✓
(3) Water level supervisory indicating devices	Q	✓	✓
(4) Water temperature supervisory indicating devices	Q	✓	✓
(5) Room temperature supervisory indicating devices	Q	✓	✓
(6) Other suppression system supervisory initiating devices	Q	✓	
(7) Other supervisory signal initiating devices	A		✓

© Siemens Industry, Inc. 2016  
Page 16 2016-09-23 SII – Building Technologies Excerpt from NFPA 72

**SIEMENS**

### NFPA 72 National Fire Alarm and Signaling Code

Adopted Edition	Freq.	1999	2010
<b>Combination systems</b>			
(a) Fire extinguisher electronic monitoring device /systems	A		✓
(b) Carbon monoxide detectors / systems	A		✓
<b>Exit marking notification appliances</b>	A		✓
<b>Mass notification system – protected premise, supervised</b>	A		✓
<b>Mass notification system – protected premise, nonsupervised systems installed prior to adoption of this code</b>	SA		✓
<b>Mass notification system – wide-area (UFC 4-021-01)</b>	A		✓

© Siemens Industry, Inc. 2016  
Page 17 2016-09-23 SII – Building Technologies Excerpt from NFPA 72

**SIEMENS**

### NFPA 72 National Fire Alarm and Signaling Code

**14.2.1 Performance**

**14.2.1.1 Performance Verification.** To ensure operational integrity, the system shall have an inspection, testing, and maintenance program.

- Program that includes "visual inspections and proactive maintenance", not just testing the system.

**14.2.1.1.1** Inspection, testing, and maintenance programs shall satisfy the requirements of this Code and conform to the equipment manufacturer's published instructions.

- Equipment manufacturer's published instructions should be readily available onsite for all installed pieces of equipment.

**14.2.1.1.2** Inspection, testing, and maintenance programs shall verify correct operation of the system.

- Correct operation must be witnessed such as testing and verification of air handler shutdown and other interfaced equipment. Both inputs and outputs connected to the fire alarm system.

© Siemens Industry, Inc. 2016  
Page 18 2016-09-23 SII – Building Technologies Excerpt from NFPA 72

**SIEMENS**

### NFPA 72 National Fire Alarm and Signaling Code

**NEW** **14.2.2.5 Service Personnel Qualifications and Experience.**  
Service personnel shall be qualified and experienced in accordance with the requirements of 10.4.3.

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

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

This does not preclude "in-house" personnel from performing work on a fire alarm system, they just need to be properly qualified and have experience to do so. For additional guidance see Chapter 3 Definitions.

© Siemens Industry, Inc. 2016 Excerpt from NFPA 72  
Page 19 2016-09-23 SII - Building Technologies

**SIEMENS**

### NFPA 72 National Fire Alarm and Signaling Code

**NEW** **14.4.2 Test Methods**  
**14.2.2.2** Systems and associated equipment shall be tested according to Table 14.4.2.2

**Table 14.4.2.2(14)(g)(6) Duct type smoke detectors**  
**Method**  
In addition to the testing required in Table 14.4.2.2(g)(1), duct smoke detectors utilizing sampling tubes shall be tested by verifying the correct pressure differential (within the manufacturer's published ranges) between the inlet and exhaust tubes using a method acceptable to the manufacturer to ensure that the device will properly sample the air stream. The tests shall be made in accordance with the manufacturer's published instructions for the installed device.

Differential pressure testing of sampling tube smoke detectors usually occurred during the initial installation. This is the first iteration in which it is documented in the test methods and required to be tested annually.

© Siemens Industry, Inc. 2016 Excerpt from NFPA 72  
Page 20 2016-09-23 SII - Building Technologies

**SIEMENS**

## Discuss best practices

For your fire life safety management program

© Siemens Industry, Inc. 2016  
Page 21 2016-09-23 SII - Building Technologies

**SIEMENS**

### How often or when do you need to perform the task

**SIEMENS** BUILDING TECHNOLOGIES *Management of the Environment of Care - Standard EC 02.03.05*  
Element of Performance - EP 1 - 20  
Regulatory Cross Walk

Crosswalk to NFPA, CFRs, CMS (K-Tags), DNV, AOA/HFAP

TIC	Fire Safety System	Task	Freq	NFPA	CDPs	OSHA	CMS K-Tag	DNV	AOA/HFAP
EC.02.03.05	Fire Alarm	At least quarterly the hospital tests supervisory signal device (manual valve-tamper switches).	Q	NFPA 72, 1999 edition (Table 7-3.2)	42 CFR §482.41 (b)(1)(i)	29 CFR §1910.164	452 662	PE.2 SR.8	11.04.02
EC.02.03.05	Fire Alarm & Automatic Fire Sprinkler System	Every 6 months, the hospital tests valve tamper switches and water-flow devices.	SA	NFPA 72, 1999 edition (Table 7-3.2)	42 CFR §482.41 (b)(1)(i)	29 CFR §1910.164 29 CFR §1910.165 29 CFR §1910.159	452 662	PE.2 SR.8	11.04.02
EC.02.03.05	Fire Alarm	Every 12 months, the hospital tests duct detectors, electromechanical releasing devices, heat detectors, manual fire alarm boxes, and smoke detectors.	A	NFPA 72, 1999 edition (Table 7-3.2)	42 CFR §482.41 (b)(1)(i)	29 CFR §1910.164	452 454	PE.2 SR.8	11.04.02

© Siemens Industry, Inc. 2016  
Page 22 2016-09-23 SII - Building Technologies

**SIEMENS**

### Developing your fire life safety management program

- Inventory all fire safety equipment systems
  - Systems interface
  - Inspections, testing and maintenance requirements
- Perform a gap analysis
  - Comprehensive approach
  - Identify staff's strengths, weaknesses, capabilities and availability
- In-house versus outsource
  - Does staff have proper technical knowledge and training?

**All Functional Testing Summary**

**All Visual Inspections Summary**

© Siemens Industry, Inc. 2016  
Page 23 2016-09-23 SII - Building Technologies

**SIEMENS**

### You can't manage it, if you don't know what you have

**Fire Protection Systems Resource Gap Analysis**

Please select from the following fire protection types that are currently in the building for this survey

Fire Protection Type:  Yes  No  Not Sure

Fire Alarm & Signaling Systems:  Yes  No  Not Sure

Sprinkler Systems:  Yes  No  Not Sure

Standpipe and Hose Systems:  Yes  No  Not Sure

Fire Pumps:  Yes  No  Not Sure

*Scroll down for more*

**Included in Discussion**

- Fire Alarm & Signaling Systems
- Sprinkler Systems
- Water Storage Tanks
- Portable Fire Extinguishers
- Commercial Cooking Equipment
- Fire Doors & Opening Protection
- Standpipe Systems
- Other LSC Systems

© Siemens Industry, Inc. 2016-2014  
Page 24 2016-09-23 SII - Building Technologies

**SIEMENS**

### Identify who is currently performing the required task

**Functional Testing Frequencies**

**Fire Alarm & Signaling Systems**

Who is currently performing the service? Glossary Code Ref.: NFPA 72 Edition: 2010

**MONTHLY**  In House  Siemens  Vendor  Not Done  Not Sure  Combo  N/A

**QUARTERLY**  In House  Siemens  Vendor  Not Done  Not Sure  Combo  N/A

**SEMIANNUALLY**  In House  Siemens  Vendor  Not Done  Not Sure  Combo  N/A

**ANNUALLY**  In House  Siemens  Vendor  Not Done  Not Sure  Combo  N/A

Performed by Fire Alarm Co. Inc.

**Included in Discussion**

- Fire Alarm & Signaling Systems
- Sprinkler Systems
- Standpipes and Riser Systems
- Fire Tapes
- Visual Inspection
- Manual Fire Detectors
- Commercial Cooking Equipment
- Fire Doors & Opening Protection
- Clean Agent Systems
- Inert Gas Systems
- Complete

© Siemens Industry, Inc., 2016  
Page 25 2016-09-23 SII – Building Technologies

**SIEMENS**

### Identify which task may have been overlooked

**Functional Testing Frequencies**

**Visual Inspection Frequencies**

Who is currently performing the service? Glossary Code Ref.: NFPA 72 Edition: 2010

**MONTHLY**  In House  Siemens  Vendor  Not Done  Not Sure  Combo  N/A

**QUARTERLY**  In House  Siemens  Vendor  Not Done  Not Sure  Combo  N/A

**SEMIANNUALLY**  In House  Siemens  Vendor  Not Done  Not Sure  Combo  N/A

**ANNUALLY**  In House  Siemens  Vendor  Not Done  Not Sure  Combo  N/A

Performed by Fire Alarm Co. Inc.

**14.5 Maintenance**

14.5.1 System equipment shall be maintained in accordance with the manufacturer's published instructions.

14.5.2 The frequency of maintenance of system equipment shall depend on the type of equipment and the local ambient conditions.

14.5.3 The frequency of cleaning of system equipment shall depend on the type of equipment and the local ambient conditions.

**MANUFACTURER'S INSTRUCTIONS**

In House  Siemens  Vendor  Not Done  Not Sure  Combo  N/A

No documented program in place at the time. Address performed as reactive services.

© Siemens Industry, Inc., 2016  
Page 26 2016-09-23 SII – Building Technologies

**SIEMENS**

### What should be included in a fire life safety management program

- Scope of work
  - Inventory systems, components and devices
  - Task frequencies
  - Service locations
- Contractual responsibility
  - Visual inspections
  - Testing
  - Preventative maintenance
  - Reactive maintenance and repairs



© Siemens Industry, Inc., 2016  
Page 27 2016-09-23 SII – Building Technologies

**SIEMENS**

### What should be included in a fire life safety management program

- Scheduling
  - Service day/time
  - Onsite response time (emergency and nonemergency)
  - Task frequencies
  - Meetings to review service delivery and quality assurance
- Service deliverables
  - Technical work order reports
  - System performance reports
  - Quarterly account management reports




© Siemens Industry, Inc., 2016  
Page 28 2016-09-23 SII – Building Technologies

**SIEMENS**

### What to ask for when looking for the right service delivery partner

- Technical solution
  - Project approach and work plan
  - Potential difficulties, challenges or risks
- Scheduling
  - Process for coordinating and scheduling work in the agreement



© Siemens Industry, Inc., 2016  
Page 29 2016-09-23 SII – Building Technologies

**SIEMENS**

## Summary

Taking a comprehensive approach for an effective fire and life safety management program

© Siemens Industry, Inc., 2016  
Page 30 2016-09-23 SII – Building Technologies

**SIEMENS**

### Summary for creating an effective fire and life safety management program

- ❑ Requirements of fire safety equipment
  - Responsibility begins early
  - More than just "local fire marshal"
  - Separate activities and frequencies
  - Increase in "specialized" certifications and licenses
- ❑ Developing your fire life safety management program
  - It starts with a "Gap Analysis" of your current systems
  - Keep asking "who, what, why and when"
  - Creating, modifying and understanding detailed scope of work for all parties
  - Evaluate, measure, monitor and reward
- ❑ If it's not documented, it wasn't done
  - Strive to standardize same look and feel
  - Find it before others do



© Siemens Industry, Inc., 2016  
Page 31 2016-09-23 SII - Building Technologies

**SIEMENS**

### Questions and Answers



© Siemens Industry, Inc., 2016  
Page 32 2016-09-23 SII - Building Technologies

**SIEMENS**



## Siemens Building Technologies Life Safety Code - 2012 Edition

Chapter 2 Mandatory References – NFPA 72 Fire Alarm

Presented by:  
 Esteban Cota  
 Portfolio Lead of Strategic Development  
 12001 Network Blvd  
 San Antonio, TX 78249  
 (512) 217-6574  
 esteban.cota@siemens.com

© Siemens Industry, Inc., 2016 Answers for Industry.