**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:

\* Written narrative providing intent and system description

Riser diagram

Floor plan layout showing locations of all devices, control equipment, and supervising station and shared communications equipment with each sheet showing the following:

Point of compass (north arrow)

A graphic representation of the scale used

Room use identification

Building features that will affect the placement of initiating devices and notification appliances

Sequence of operation in either an input/output matrix or narrative form

Equipment technical data sheets

Manufacturers' published instructions, including operation and maintenance instructions

Battery capacity and safety margin calculations (where batteries are provided)

Voltage drop calculations for notification appliance circuits

Mounting height elevation for wall-mounted devices and appliances

Where occupant notification is required, minimum sound pressure levels that must be produced by the audible notification appliances in applicable covered areas

Locations of alarm notification appliances, including candela ratings for visual alarm notification appliances

\* Pathway diagrams between the control unit and shared communications equipment within the protected premises

Completed record of completion in accordance with 7.5.6 and 7.8.2

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)

Record (as-built) drawings

Records, record retention, and record maintenance in accordance with Section 7.7

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)

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.

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:

Name of protected premises, owner, and occupant (where applicable)

Name of installer or contractor

Location of protected premises

Device legend and symbols in accordance with NFPA 170, or other symbols acceptable to the authority having jurisdiction

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:

Floor or level identification

Point of compass (indication of North)

Graphic scale

All walls and doors

All partitions extending to within 15 percent of the ceiling height (where applicable and when known)

Room and area descriptions

System devices/component locations

Locations of fire alarm primary power disconnecting means

Locations of monitor/control interfaces to other systems

System riser locations

Type and number of system components/devices on each circuit, on each floor or level

Type and quantity of conductors and conduit (if used) for each circuit

Identification of any ceiling over 10 ft (3.0 m) in height where automatic fire detection is being proposed

Details of ceiling geometries, including beams and solid joists, where automatic fire detection is being proposed

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:

General arrangement of the system in building cross-section

Number of risers

Type and number of circuits in each riser

Type and number of system components/devices on each circuit, on each floor or level

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:

Identification of the control equipment depicted

Location(s) of control equipment

All field wiring terminals and terminal identifications

All circuits connected to field wiring terminals and circuit identifications

All indicators and manual controls

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:

Battery calculations

Notification appliance circuit voltage drop calculations

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:

\* An owner's manual and manufacturer's published instructions covering all system equipment

Record (as-built) drawings in accordance with 7.5.5

A completed record of completion form in accordance with 7.5.6

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:

Detailed narrative description of the system inputs, evacuation signaling, ancillary functions, annunciation, intended sequence of operations, expansion capability, application considerations, and limitations

Written sequence of operation for the system including an operational input/output matrix

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

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:

Listing of the individual system components that require periodic testing and maintenance

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

Schedule that correlates the testing and maintenance procedures that are required by this section

Service directory, including a list of names and telephone numbers of those who provide service for the system

Product data sheets for all system equipment (SIG-ECS)

7.5.5 Record Drawings (As-Builts). (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:

All components and functions are installed and operate per the approved plans and sequence of operation.

All required system documentation is complete and is archived on site.

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.

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.

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(1), or an alternative record that includes all the applicable information shown in Figure 7.8.2(g) through Figure 7.8.2(1).

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:

\*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)

\*Unless otherwise permitted or required in 7.6.6 or 7.8.1.2, Figure 7.8.2(g) through Figure 7.8.2(1) shall be used to document the record of inspection and testing. (SIG-TMS)

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.

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

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

FIGURE 7.8.2(c) Power Systems Supplementary Record of Completion. (SIG-FUN)

FIGURE 7.8.2(d) Notification Appliance Power Panel Supplementary Record of Completion. (SIG-FUN)

FIGURE 7.8.2(e) Interconnected Systems Supplementary Record of Completion. (SIG-FUN)

FIGURE 7.8.2(f) Deviations from Adopted Codes and Standards Supplementary Record of Completion. (SIG-FUN)

FIGURE 7.8.2(g) System Record of Inspection and Testing. (SIG-TMS)

FIGURE 7.8.2(h) Notification Appliance Supplementary Record of Inspection and Testing. (SIG-TMS)

FIGURE 7.8.2(i) Initiating Device Supplementary Record of Inspection and Testing. (SIG-TMS)

FIGURE 7.8.2(j) Mass Notification System Supplementary Record of Inspection and Testing. (SIG-TMS)

FIGURE 7.8.2(k) Emergency Communications Systems Supplementary Record of Inspection and Testing. (SIG-TMS)

FIGURE 7.8.2(l) Interface Component Supplementary Record of Inspection and Testing. (SIG-TMS)

FIGURE 7.8.2(m) Installation and Inspection Form Single- and Multiple-Station Alarms and Household Fire Alarm Systems.