



NATIONAL FIRE PROTECTION ASSOCIATION

The leading information and knowledge resource on fire, electrical and related hazards

AGENDA

NFPA Technical Committee on Cultural Resources (CUL-AAA) NFPA 909 First Draft Meeting (F2024)

April 25-26, 2023

Hilton New Orleans/St. Charles Avenue
New Orleans, Louisiana

- 1. Call to order: April 25, 2023, 8:00 a.m. (CDT).** S. Coppinger.
- 2. Introductions.** See committee roster attached.
- 3. Chair report.** S. Coppinger.
- 4. Staff liaison report.** G. Harrington.
- 5. Previous meeting minutes.** March 9, 2022 remote meeting. See attached.
- 6. Future meeting planning – S. Coppinger.**
 - a. Fall 2023: Optional combined task group meeting, New York, NY (S. Coppinger)
 - b. Spring 2024: NFPA 909 second draft meeting, Alaska (G. Crosby)
 - c. Fall 2024: Optional combined task group meeting, TBD
 - d. Spring 2025: NFPA 914 first draft meeting, TBD
- 7. NFPA 909 First Draft.**
 - a. **Task group report(s).**
 - i. **Wet collections.** M. Kilby, M. Hopkins.
 - ii. **Fire suppression/fire sprinkler terminology.** M. Hopkins.
 - iii. **NFPA 909 documentation, scope, and coordination.** D. Freeland.
 - b. **Public Inputs.** See attached.
- 8. NFPA 914 documentation, scope, and coordination task group report.** G. Crosby.
- 9. Other Business.**
- 10. Adjournment.**

Address List No Phone

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CUL-AAA

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NATIONAL FIRE PROTECTION ASSOCIATION

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MINUTES

NFPA TECHNICAL COMMITTEE ON CULTURAL RESOURCES NFPA 914 SECOND DRAFT MEETING

MARCH 9, 2022

Microsoft Teams Remote Meeting

1. CALL TO ORDER/WELCOME

Sheila Coppinger called the meeting to order at 11:03 a.m. EST.

2. SELF-INTRODUCTION OF MEMBERS AND GUESTS

A roll-call of committee members and guests was completed. See attachment.

3. CHAIR'S REPORT

Sheila Coppinger advised of changes to the committee:

- Larry Reitz: Voting Alternate to Principal
- Donald Hopkins: Alternate to Larry Reitz
- John Denhardt: Alternate to Kevin Hall
- James Begley: Alternate to Mark Hopkins
- Dan Finnegan: Retiring on March 31, 2022
- Joe Plati: Resigned (formerly Alternate to Kevin Morin)
- Todd Neitzel: Retired (formerly Alternate to Grant Crosby)

The chair advised that some new applications have been received and have been forwarded to the Standards Council.

4. STAFF LIAISON REPORT

Staff liaison Gregory Harrington advised that the NFPA have started to arrange some 'in-person' meetings, with some hybrid arrangements in place for committee members who are unable to attend.

Staff gave a presentation on the procedures to be adopted during the second draft meeting. He advised of the key dates, voting rules and general procedures.

Fall 2022 Revision Cycle – Key Dates

Comment Stage (Second Draft)

- Public Comments Closing Date January 5, 2022
- Second Draft Meeting March 9, 2022
- Posting of Second Draft for Balloting, no later than August 24, 2022

- Posting of Second Draft for NITMAM October 5, 2022

Tech Session Preparation

- NITMAM Closing Date November 2, 2022
- CAM/Consent Standard Posting Date December 14, 2022
- Appeal Closing Date for Consent Standards December 29, 2022

Standards Council Issuance

- Issuance of Consent Standards January 9, 2023
- Issuance of Standards with CAM's August 2023

5. APPROVAL OF THE JUNE 7-8, 2021 (NFPA 914 FIRST DRAFT) MEETING MINUTES

The minutes of the above meeting were approved as presented.

6. SCHEDULE FOR FUTURE COMMITTEE MEETINGS

- 1 Fall 2022: Combined task group meeting/ conference, Rome, Italy, September 26-28, 2022 (L. Nassi, S. Coppinger, N. Dawe)
- 2 Spring 2023 NFPA 909 First Draft Meeting (F2024). Week of April 24, 2023, New Orleans, LA,
- 3 Fall 2023: Optional combined task group meeting. New York City, Dates and location to be determined. (S. Coppinger)
- 4 Spring 2024: NFPA 909 Second Draft Meeting. Alaska, Dates and location to be determined. (G. Crosby)

Note: Due to uncertainty surrounding the current situation in Ukraine, the locations of the Fall meetings for 2022 and 2023 may be swapped over. A decision will be taken in four-six weeks and circulated.

7. NFPA 914 SECOND DRAFT

- a) Grant Crosby reported the 914 Task group is considering two proposals for the committee 1) alignment of 909 and 914 to make the two codes easier to navigate for the reader and 2) a building documentation annex to support planning and recovery efforts.

Ray Allshouse provided an overview of the alignment work to date and indicated the majority of the two codes parallel one another in content. Ray noted a key deviation between the two codes is the inclusion of prescriptive and performance-based measures in 914 and suggested the committee consider revising the format to utilize prescriptive measures to the fullest extent possible and performance-based measures only when achievement of prescriptive measures is either deemed impractical or will damage the integrity of character defining features. The task group will consider this further and enable alignment to be considered for the next edition.

The task group is considering a section on building documentation and circulated draft and annex material for consideration. Utilizing current and developing methods of documentation would provide many benefits to preservation planning, emergency preparedness and response. It is recognized that the use of drones, 3D surveys, etc.,

demonstrate work that is being completed at specific sites, and the inclusion of those who have expertise in this field would add to the knowledge base of the task group in developing this section.

The chair advised that she wishes to create a Task Group to review the 914 and 909 documents for the usage of the terms the fire suppression and fire sprinklers to ensure that we are using the terms correctly throughout the documents

Task Group chair: Mark Hopkins

Members: Wade Byrum
Debbie Freeland
Dan Hubert
Jon Ingram
Jim Begley
Kevin Hall
Milosh Puchovsky

- b) The committee discussed the NFPA 914 Chapter 14/NFPA 241 task group report. The task group recommended revisions to Chapter 14 via a second revision. See the second draft report for the committee action. The chair thanked the task group for their work and the task group was discharged.
- c) Four Public Comments were received. All comments were reviewed and addressed and second revisions developed as needed. See the second draft report for the committee actions.
- d) Committee inputs were reviewed and second revisions developed as needed. See the second draft report for the committee actions.

8. NFPA 909 UPDATE

The Chair proposed the creation of a NFPA 909 task group. The task group purpose will be 909 Documentation, scope and coordination. The task group will develop recommended revisions and report at the NFPA 909 first draft meeting in April 2023.

Task group chair: Debbie Freeland

Members: Patty Silence
Michael Kilby
Eileen Brady
Dan Hubert
Jim Begley
Gregg Vlahakis

9. WET COLLECTIONS TASK GROUP REPORT

Michael Kilby provided an overview of the work of the task group. The task group have drafted a stakeholder survey, and this will seek information on such items as user organization, types and quantities of preservation fluid, storage arrangements, fire/gas detection, fire suppression, spill control equipment and emergency response training, and maximum acceptable loss.

Dan Hubert has been working with the FSSA on a wet collections fire protection white paper that considers fuel type and arrangements, passive fire protection, building code trade-offs, active fire protection, fire extinguishers, ventilation and system interlocks.

The task group will meet to review the findings of the survey, and this will be circulated around the technical committee. That information should assist in developing a proposal to the research foundation.

10. OTHER BUSINESS

During introductions, Debbie Freeland had reported that Stephen Bush, Member Emeritus, has passed away in January 2021. Nick Artim paid tribute to Steve and the pioneering work that he done in the early stages of this committee.

Patricia Silence advised that the American Institute for Conservation had received a presentation on the use of fire retardants on exterior structures and offered to arrange for the presentation to be provided to this committee. There was a high degree of interest, and a date will be sought for a presentation either at a future meeting or through a webinar.

11. ADJOURNMENT

The meeting was adjourned at 4.55 p.m. EST on March 9, 2022.

Minutes prepared by Mike Coull, Secretary.

Attendees**Committee Members:**

X	Coppinger, Sheila	Chair	Chubb
X	Coull, Michael	Secretary	Historic Scotland
X	Allshouse, Clare	Principal	City of Shoreline, Washington
X	Artim , Nick	Principal	Heritage Protection Group
X	Brady, Eileen	Principal	Washington State University
X	Cronin, Bradford	Principal	Rhode Island Association of Fire Marshals
X	Crosby, Grant	Principal	US Department of the Interior
	Dawe, Nicholas	Principal	International Fire Marshals Association
X	Doyle, Laura	Principal	US General Services Administration
X	Fifield, Rebecca	Principal	The New York Public Library
	Finnegan, Daniel	Principal	National Electrical Manufacturers
X	Freeland, Deborah	Principal	Arthur J. Gallagher & Company
X	Hall, Kevin	Principal	American Fire Sprinkler Association
X	Hopkins, Mark	Principal	TERPconsulting
X	Hubert, Daniel	Principal	Fire Suppression Systems Association
X	Ingram, Jonathan	Principal	Carrier/UTC
X	Kilby, Michael	Principal	Smithsonian Institution
	Leber, Fred	Principal	AML Encore Corporation
X	Moeller, Donald	Principal	California State Historical Building Safety
X	Moore, Wayne	Principal	Self Employed
X	Morin, Kevin	Principal	Code Consultants, Inc.
X	Nassi, Luca	Principal	Italian National Fire Department
X	Nichols, Daniel	Principal	Metropolitan Transportation Authority
	Norton, Thomas	Principal	Automatic Fire Alarm Association, Inc.
X	Portway, Chris	Principal	Pepperdine University
X	Puchovsky, Milosh	Principal	Worcester Polytechnic Institute
X	Rietz, Larry	Principal	JENSEN HUGHES
	Robertson, Colin	Principal	Ecclesiastical Insurance
X	Rogers, Adam	Principal	Georgetown University
X	Silence, Patricia	Principal	Colonial Williamsburg Foundation

X	Thornton, Alfred	Principal	Halon Alternatives Research Corporation
X	Vlahakis, Gregg	Principal	National Fire Sprinkler Association
X	Wilson, Robert	Principal	National Gallery of Art
	Kaplan, Marilyn	Voting Alternate	Preservation Architecture
X	Begley, James	Alternate	TERPconsulting
X	Byrum, Wade	Alternate	Chubb
X	Clary, Shane	Alternate	Automatic Fire Alarm Association, Inc.
	Dafin, Joseph	Alternate	US General Services Administration
	Denhardt, John	Alternate	American Fire Sprinkler Association
	Dufault, Robert	Alternate	Rhode Island Association of Fire Marshals
X	Hopkins, Donald	Alternate	JENSEN HUGHES
X	Joanis, Michael	Alternate	National Fire Sprinkler Association
X	Kelly, Kevin	Alternate	Fire Suppression Systems Association
	Leber, Cindy	Alternate	Building Reports Canada Inc.
X	Reiswig, Rodger	Alternate	National Electrical Manufacturers
	Simeoni, Albert	Alternate	Worcester Polytechnic Institute
X	Stewart, Joshua	Alternate	Smithsonian Institution
X	Leavitt, Russell	Nonvoting Member	TC on Sprinkler System Discharge Criteria
	Marsella, Stefano	Nonvoting Member	National Fire Brigade Corps
	Jackson, William	Member Emeritus	
	McDaniel, Danny	Member Emeritus	Colonial Williamsburg Foundation
	Watts, John	Member Emeritus	Self Employed/Retired
X	Harrington, Gregory	Staff Liaison	National Fire Protection Association

GUESTS:

Joe Scibetta, BuildingReports



Public Input No. 19-NFPA 909-2022 [Section No. 2.3.1]

2.3.1 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, 2020 2022 .

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, 2019 2022 .

ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*, 2019a 2022 .

ASTM E1591, *Standard Guide for Obtaining Data for Fire Growth Models*, 2013 2020 .

ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C*, 2018 2022 .

ASTM E2965, *Standard Test for Determination of Low Levels of Heat Release Rate for Materials and Products Using an Oxygen Consumption Calorimeter*, 2017 2022 .

ASTM E3082, *Standard Test Methods for Determining the Effectiveness of Fire Retardant Treatments for Natural Christmas Trees*, 2017e1 2020 .

Statement of Problem and Substantiation for Public Input

date updates

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler

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Submittal Date: Thu Dec 22 13:25:42 EST 2022

Committee: CUL-AAA



Public Input No. 23-NFPA 909-2022 [Section No. 2.3.3]

2.3.3 UL Publications.

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

UL 263, *Fire Tests of Building Construction and Materials*, 2011, revised ~~2019~~ 2021 .

UL 294, *Access Control System Units*, 2018.

UL 723, *Test for Surface Burning Characteristics of Building Materials*, 2018, revised 2018 .

Statement of Problem and Substantiation for Public Input

This PI updates current UL references.

Submitter Information Verification

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Committee: CUL-AAA



Public Input No. 9-NFPA 909-2022 [New Section after 3.3.69]

3.3.69 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, to climb over or under or remove obstacles, or to resort to portable ladders, and so forth.

Statement of Problem and Substantiation for Public Input

There are several instances where "accessible" appears in the document, when the term "readily accessible" is more appropriate. There is an important and essential differentiation between these two terms, especially when in reference to fire alarm/protection equipment, and a definition for "readily accessible" would further highlight and accentuate this fact. This definition has already been approved for and incorporated into NFPA 914 for the same reason and NFPA 909 does well to follow. Instances where "readily accessible" is currently being used when the term "accessible" would be more appropriate have been addressed in other PIs.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 10-NFPA 909-2022 [Section No. 9.14.14.5.3]	
Public Input No. 11-NFPA 909-2022 [Section No. 11.8.5]	
Public Input No. 12-NFPA 909-2022 [Section No. 15.3.3]	
Public Input No. 13-NFPA 909-2022 [Chapter J]	

Submitter Information Verification

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City:
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Submittal Date: Thu Aug 04 09:39:05 EDT 2022
Committee: CUL-AAA



Public Input No. 1-NFPA 909-2022 [Section No. 6.5]

6.5 Occupant Management.

Planning shall include alerting, locating, and managing all staff and other occupants including those with disabilities in an emergency, as well as consideration of all of the following:

- (1) Emergency response
- (2) Emergency evacuation
- (3) Emergency shelter
- (4) Temporary housing
- (5) Transportation of staff and other occupants
- (6) Critical incident stress management

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to this section of the document. The unique needs of occupants with disabilities are often overlooked. This is a reminder that occupant management planning includes all occupants, including those with disabilities.

Submitter Information Verification

Submitter Full Name: Marsha Mazz

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Affiliation: Representing the DARAC Advisory Group

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Zip:

Submittal Date: Mon Apr 18 14:14:45 EDT 2022

Committee: CUL-AAA



Public Input No. 7-NFPA 909-2022 [Section No. 6.6.1]

6.6.1*

The emergency action plan shall include provisions for all of the following:

- (1) Notifying the fire department or other emergency responders of the type and location of the emergency
- (2) Directing the fire department or other emergency responders to the incident location once they arrive
- (3) Posting emergency notification and response procedures for staff and other occupants, including those with disabilities
- (4) Conducting annual exercises to ensure effectiveness
- (5) Incorporating lessons learned from the exercises into the emergency action plan
- (6) Developing evacuation, relocation, and shelter-in-place procedures appropriate to the building, its occupants, emergencies, and hazards
- (7) Determining the appropriateness of the use of elevators
- (8) Where provided, determining where emergency stair travel devices are to be stored, where an occupant with a disability will transfer to the device, and which exits accommodate the device
- (9) Documenting the type and coverage of building fire protection systems
- (10) Other items required by the authority having jurisdiction

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to an existing section of the document, as well as the inclusion of a new section. For (3), the unique needs of occupants with disabilities are often overlooked. This is a reminder that the occupant plan includes all occupants, including those with disabilities. For a new (8), the provided language on emergency stair travel devices specifies how these units are to be stored, utilized and located.

Submitter Information Verification

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Affiliation: Representing the DARAC Advisory Group

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Committee: CUL-AAA



Public Input No. 8-NFPA 909-2022 [Section No. 7.1.3]

7.1.3

The survey shall include the following:

- (1) Identification of fire hazards inherent to the cultural resource property
- (2) Identification of conditions that increase the threat of arson (*see 8.1.2*)
- (3) Identification of fire risks and means-of-egress problems created by special events
- (4) Identification of fire risks and means-of-egress problems that must be addressed to accommodate occupants with disabilities
- (5) An assessment of expected increases in visitation during special events, celebrations, and special exhibitions and procedures in place to identify and take action to prevent the number of occupants from exceeding building and means-of-egress capabilities
- (6) Identification of temporary or special exhibitions that can create special fire protection risks and means-of-egress problems or that can compromise existing fire protection systems
- (7) Identification of existing fire protection systems

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an inclusion of a new section. For (4), the identification of problem areas for people with disabilities should be included to ensure they are protected within the plan.

Submitter Information Verification

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Submittal Date: Mon Apr 18 15:27:05 EDT 2022

Committee: CUL-AAA



Public Input No. 14-NFPA 909-2022 [Section No. 7.5.1]

7.5.1*

The fire safety manager shall ensure that all staff, including volunteers and interns, receive initial and annual training pertinent to their assigned emergency responsibilities.

A.7.5.1

Training should include the fire emergency response plan, use of fire protection equipment, and other elements of the approved management plan. In order for fire department personnel to receive correct notification of the type and location of an emergency, training in the use of fire protection equipment should also include the orienting of staff on how to interpret and respond promptly to signals received at the fire alarm control unit. Improper or incorrect interpretation of fire alarm signals could result in a delayed response to an emergency situation or misdirection of security or fire department personnel to the wrong area, which, in turn, could significantly increase the probability for loss of cultural/historical resources or even life.

Statement of Problem and Substantiation for Public Input

This is in keeping with similar language in NFPA 914 that provides important parameters on what training of staff should include regarding Fire Safety Management. The costly fire at Notre Dame Cathedral revealed major gaps in panel training and the correct interpretation of signals received.

Submitter Information Verification

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Submittal Date: Mon Aug 08 16:21:17 EDT 2022

Committee: CUL-AAA



Public Input No. 25-NFPA 909-2022 [Section No. 9.12.6]

9.12.6* Compensatory Features.

Where equivalencies are proposed, the following fire safety features shall be considered as compensatory:

- (1) Noncombustible materials or limited-combustible construction materials
- (2) ~~Noncombustible or fire-retardant treated interior finish materials~~
- (3) ~~Noncombustible or fire-retardant treated materials for furnishings and contents~~
Rated
- (4) * Noncombustible materials or interior finish materials that comply with the fire safety requirements of Section 10.2 of NFPA 101.
- (5) * Noncombustible materials or materials for furnishings and contents that comply with the fire safety requirements of Chapter 10 of NFPA 101 for the type of product involved.
- (6) Fire resistance rated walls and doors that prevent the horizontal spread of fire and smoke, to subdivide building areas or to segregate specific hazards, such as boilers, furnaces, or storage areas, from the remainder of the building
- (7) Enclosure of stairways, ventilation shafts, and other vertical openings with rated construction to prevent the vertical spread of fire and smoke
- (8) * Firestops and fireblocks to prevent the spread of fire within walls, between rafters and joists, and through horizontal and vertical fire barriers
- (9) * Fire-resistive construction using fire-resistive materials
- (10) * Fire detection and alarm systems that sound an alarm within the structure and that transmit an alarm signal to an alarm-monitoring location or to a local fire department
- (11) Automatic fire suppression systems
- (12) Automatic and manual standpipe systems
- (13) Management and operational controls that meet the requirements of Chapter 10
- (14) Installation of arc-fault circuit-interrupters (AFCIs)
- (15) Height of ceilings, with recognition that a large volume of space above head height provides occupants at floor level additional time to evacuate the room or building

A.9.12.6 (2) Section 10.2 of NFPA 101 describes the requirements for a variety of interior finish material to be suitable for a fire safe environment. Such interior finish materials, of various types, are tested in accordance with NFPA 286 or with ASTM E84, for use on walls or ceilings and in accordance with NFPA 253 or ASTM E648 for use on floors. They may or may not be fire-retardant treated but the resulting fire performance is the key requirement.

A.9.12.5 (3) Chapter 10 of NFPA 101 provides recommended fire safety requirements for a variety of furnishings and contents, including upholstered furniture, mattresses, draperies, lockers, and various types of various decorations. They may or may not be fire-retardant treated but the resulting fire performance is the key requirement.

Statement of Problem and Substantiation for Public Input

The changes proposed to items 2 and 3 are intended to be more specific and more appropriate than talking about fire-retardant treated materials. Materials may be treated with small amounts of fire retardants and not provide adequate safety and they may not need to be treated with fire retardants if they provide the appropriate fire safety without such additives. The proposed annex notes are some

clarifications.

The change from "rated" to "fire resistance rated" is editorial.

References may need to be added into the chapter on informational references.

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**Public Input No. 15-NFPA 909-2022 [Section No. 9.12.14]****9.12.14 Alternative Fire Suppression Systems.**

Where other types of fire suppression systems are provided, they shall comply with the applicable standard referenced in Table 9.12.14.

Table 9.12.14 Fire Suppression System Installation Standards

<u>Fire Suppression System Type</u>	<u>NFPA Standard</u>
Low-, medium-, and high-expansion foam systems	NFPA 11
Carbon dioxide systems	NFPA 12
Halon 1301 systems	NFPA 12A
Water spray fixed systems	NFPA 15
Deluge foam-water sprinkler systems	NFPA 16
Dry chemical systems	NFPA 17
Wet chemical systems	NFPA 17A
Water mist systems	<u>NFPA 750</u>
Clean agent extinguishing systems	NFPA 2001
Aerosol extinguishing systems	NFPA 2010
<u>Hybrid fire-extinguishing systems</u>	<u>NFPA 770</u>

Statement of Problem and Substantiation for Public Input

As hybrid fire-extinguishing systems do not fall under any of the existing systems in this table, and are a safe, viable suppression alternative for historic structures, it is proposed that the document be added to this table. TerraView mistakenly underlined NFPA 750 in the table. However, this PI is just in reference to NFPA 770.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 16-NFPA 909-2022 [Section No. C.3]</u>	

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Committee: CUL-AAA

**Public Input No. 26-NFPA 909-2023 [Section No. 9.12.14]****9.12.14 Alternative Fire Suppression Systems.**

Where other types of fire suppression systems are provided, they shall comply with the applicable standard referenced in Table 9.12.14.

Table 9.12.14 Fire Suppression System Installation Standards

<u>Fire Suppression System Type</u>	<u>NFPA Standard</u>
Low-, medium-, and high-expansion foam systems	NFPA 11
Carbon dioxide systems	NFPA 12
Halon 1301 systems	NFPA 12A
Water spray fixed systems	NFPA 15
Deluge foam-water sprinkler systems	NFPA 16
Dry chemical systems	NFPA 17
Wet chemical systems	NFPA 17A
<u>Water mist systems</u>	<u>NFPA 750</u>
<u>Hybrid (Water and Inert Gas) Fire Extinguishing systems</u>	<u>NFPA 770</u>
Clean agent extinguishing systems	NFPA 2001
Aerosol extinguishing systems	NFPA 2010

Statement of Problem and Substantiation for Public Input

NFPA 770 is a new standard on Hybrid Systems. This document should be added to Table 9.12.14 as a option for designers for an extinguishing system. Also add NFPA 770 to chapter 2 for referenced standards.

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Public Input No. 18-NFPA 909-2022 [Section No. 9.14.6]

9.14.6* Initial Meeting/~~Indoctrination~~- Briefing of Contractors.

9.14.6.1

Prior to beginning work on projects, an introductory meeting shall be held with the contractors, subcontractors, and representatives of the cultural resource property.

9.14.6.2

All persons involved in the construction process shall be thoroughly briefed on the significance and importance of the structure, spaces, character-defining features, and collections prior to beginning work.

9.14.6.3

The initial meeting shall cover the project fire safety program, including special protection for existing facilities and contents, emergency precautions, notification of both emergency services and curatorial staff, and security issues pertinent to the project.

Statement of Problem and Substantiation for Public Input

While Merriam-Webster's definition of the word "indoctrination" can mean to instruct in the fundamentals of a subject, the wider understanding of this word has a negative connotation and is associated with another definition of this word by Merriam-Webster as "imbuing with a usually partisan or sectarian opinion, point of view, or principle". This same source states that the word "to many people" means to brainwash. If you say to someone that their indoctrination has been scheduled for a particular day and time, it does not engender a positive vibe for the recipient and will likely mean something entirely different to them than what was intended. Since a later subsection refers to contractors being "briefed", it is proposed that the term "Briefing" be used instead for the header of this section. "Briefing" carries with it a more accurate intent, which is to give precise instructions, essential information. Section 3.1 makes it clear that meanings of words not specifically defined in the code shall be assigned their "ordinarily accepted meaning" as defined in Merriam-Webster. As the ordinarily accepted meaning of "indoctrination" is negative, rather than positive, a word with a more positively understood meaning should be used instead. NFPA 914 has applied this same change.

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Public Input No. 10-NFPA 909-2022 [Section No. 9.14.14.5.3]

9.14.14.5.3

Portable fire extinguishers shall be readily accessible and protected from accidental damage.

Statement of Problem and Substantiation for Public Input

See substantiation for PI 9. A fire extinguisher needs to be readily accessible as the proposed definition in PI 9 would indicate.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 9-NFPA 909-2022 [New Section after 3.3.69]	

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Submittal Date: Thu Aug 04 10:09:16 EDT 2022

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Public Input No. 27-NFPA 909-2023 [Section No. 11.2.3]

11.2.3

Draperies, curtains, and other similar loosely hanging furnishings and decorations shall meet the flame propagation performance criteria contained in NFPA 701 of Test Method 1 or Test Method 2, as appropriate, from NFPA 701 .

Statement of Problem and Substantiation for Public Input

This is consistent with the language in NFPA 909 for decorations (in the next section) and ensures that the material does not comply (as is frequently the case) with the old "small-scale test: test that used to be in NFPA 701, but was deleted as inappropriate over 30 years ago.

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Committee: CUL-AAA



Public Input No. 21-NFPA 909-2022 [Section No. 11.4.12]

11.4.12*

Trash containers, dumpsters, and other central waste-disposal units located outside shall be kept at a minimum distance of 4.6 m (15 ft) from all parts of a building exterior, including but not limited to windows, doors, roof eaves, and utility controls, except as permitted by 11.4.13.

11.4.13

Trash containers or dumpsters constructed of noncombustible materials, limited combustible materials, or materials which comply with a peak rate of heat release not exceeding 300 kW/m² when tested in accordance with ASTM E1354 (Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter) at an incident heat flux of 50 kW/m², in the horizontal orientation, shall be permitted to be kept at a distance of 1.5 m (5 ft) from the building exterior.

(Also, add ASTM E1354 (Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter) (2022c) into section 2, on referenced ASTM standards).

Statement of Problem and Substantiation for Public Input

Fire codes (including NFPA 1 and NFPA 101) have permitted for several editions the use of waste containers meeting these requirements. Experience has shown that materials tested to ASTM E1354 (cone calorimeter, also known internationally as ISO 5660) as required by the public input provide sufficient fire safety that they do not need to be 15 feet away from the building. The new proposed provision will allow more flexibility in the choice of materials for the waste containers, without decreasing fire safety.

Associated with this public input, the annex material will be proposed for revision.

Note that NFPA 101 and NFPA 5000 often allow the use of limited combustible materials in many areas where only noncombustible materials are permitted because such materials have been shown to be of very low ignitability and minimal heat release, even though they fail the requirements for noncombustible materials in ASTM 136.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 22-NFPA 909-2022 [Section No. A.11.4.12]	
Public Input No. 22-NFPA 909-2022 [Section No. A.11.4.12]	

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Committee: CUL-AAA



Public Input No. 11-NFPA 909-2022 [Section No. 11.8.5]

11.8.5 Cabling.

~~Readily accessible~~ Accessible cabling installations for all systems within the property shall be inspected for physical damage, missing box covers, electrical overloading, and connection integrity in compliance with *NFPA 70*.

Statement of Problem and Substantiation for Public Input

See substantiation for PI 9. In this instance, the word "accessible" is more appropriate, to differentiate from those instances where equipment needs to be "readily accessible", per the proposed definition in PI 9.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 9-NFPA 909-2022 [New Section after 3.3.69]</u>	

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Public Input No. 17-NFPA 909-2022 [Section No. 13.2.1]

13.2.1

The Where large crowds are anticipated, the event coordinator and fire safety manager shall coordinate their efforts to ensure that the number of occupants admitted to the building is monitored and controlled ~~so~~ and that the occupant load does not exceed the capacity of the means of egress, ~~nor for egress for~~ the number of exits required by the applicable building code, fire code, or life safety code .

Statement of Problem and Substantiation for Public Input

This PI is in keeping with the same change in wording made to the corresponding section in NFPA 914. This clarifies that the fire safety manager needs to work in tandem with the event coordinator for special events where large crowds are anticipated and simplifies the language regarding their responsibilities.

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Public Input No. 2-NFPA 909-2022 [Section No. 13.3.3]

13.3.3

Prior to performance or event, staff (especially temporary or part-time staff), contractor personnel, attendees, and participants, including individuals with disabilities, shall be notified of the following:

- (1) How fire alarms are annunciated (i.e., audibly, visually, by voice communication, or a combination of these methods)
- (2) Locations of exit routes, exits, and assembly points
- (3) How to safely evacuate the area

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to this section of the document. The unique needs of occupants with disabilities are often overlooked. This addition serves as a reminder that not every occupant is capable of independent evacuation and to address the needs of those with disabilities when providing the required information.

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Submittal Date: Mon Apr 18 14:17:04 EDT 2022

Committee: CUL-AAA



Public Input No. 12-NFPA 909-2022 [Section No. 15.3.3]

15.3.3

The protection plan shall be readily- accessible to the fire department and shall include provisions for the following:

- (1) Notifying the appropriate emergency response agency and directing first responders to the location of the incident
- (2) Posting emergency telephone numbers on or adjacent to all telephones
- (3) * Developing evacuation procedures for all areas to include occupants that require special evacuation assistance
- (4) Identifying historical records such as marriage, birth, and baptismal certificates, valuable artifacts, and relics of special significance and providing for their removal, salvage, or both
- (5) Developing a security program to accomplish the goals and objectives in accordance with Sections 4.2 and 4.3

Statement of Problem and Substantiation for Public Input

See substantiation for PI 9. In this instance, the word "accessible" is more appropriate to differentiate from those instances where equipment needs to be "readily accessible", per the proposed definition in PI 9.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 9-NFPA 909-2022 [New Section after 3.3.69]	

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Public Input No. 3-NFPA 909-2022 [Section No. 15.5.1]

15.5.1

All staff and employees of the place of worship and key volunteers shall be trained in the provisions of the emergency evacuation procedures in the protection plan, including evacuation procedures for individuals with disabilities, and the fire department notification procedures.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to this section of the document. The added language serves as a reminder that individuals with disabilities will likely be in attendance and that procedures for their evacuation may differ from the procedures for the independent evacuation of individuals without disabilities.

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Public Input No. 22-NFPA 909-2022 [Section No. A.11.4.12]

A.11.4.12

Trash containers are frequently the site of deliberate fires. The intent of this section is to ensure that trash containers are sufficiently separated from the building so that a fire in the trash container will not spread to the building, unless the trash containers are constructed of materials complying with 11.4.13.

Trash containers should not be easily moved. ~~Wheeled containers, especially those made of plastic, should~~ containers should be kept within a locked compound at least 40 m 5 m (30 ft 15 ft) ~~from~~ from the facility. ~~Containers made partly or wholly of plastic should not be used anywhere within or adjacent to the facility. , unless they are constructed of~~ materials complying with 11.4.13. Trash containers constructed of combustible materials should not be stored within the facility.

A.11.4.13

See NFPA 101 for the requirements that a material needs to comply to be characterized as a limited combustible material.

Statement of Problem and Substantiation for Public Input

Section 11.4.2 says that the trash containers cannot be closer than 15 ft from the building. It is not consistent with that to require that they be stored at a distance of 30 ft: the distances should be the same. PI 21 recommends allowing trash containers made of materials with good fire performance to be closer to the building. The material of construction of those containers may well be a plastic. It doesn't matter what type of material it is as long as the fire performance is good and that is what this PI recommends. Note that the proposed fire test in PI 21 is the cone calorimeter (known as ASTM E1354 in the US and ISO 5660 internationally), which has been shown to measure the critical fire property, namely the heat release rate.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 21-NFPA 909-2022 [Section No. 11.4.12]	
Public Input No. 21-NFPA 909-2022 [Section No. 11.4.12]	

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Public Input No. 5-NFPA 909-2022 [Section No. B.2.2.17]

B.2.2.17 National Capital Trolley Museum, Colesville, Maryland — September 28, 2003.

Estimated \$8 million loss. A fire, believed to be electrical in nature, in a storage building, next door to the museum, destroyed eight cars and much of the building, causing an \$8 million loss. Attendance reportedly dropped 25 percent after the fire because the public believed the fire ~~crippled~~ destroyed the museum, which actually reopened six weeks after the fire. The early morning fire burned through the roof and destroyed the trolley cars inside. Among those lost was an 1898 car that swept snow from the tracks in Washington with large brooms made of bamboo reeds. An experimental car from the 1940s and 1950s was destroyed, as was a car that once ferried passengers from Washington to the Great Falls tourist spot on the Potomac River. The wood and masonry museum building did not have an automatic fire suppression system. The museum was rebuilt with steel and protected with an automatic sprinkler system.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the existing terminology. The substitute change provided is more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect. “Crippled” is a word the disability community wishes to avoid whenever possible. While not used here in reference to a person, the word “crippled” is archaic and, in this case, means the same as “destroyed” and which more clearly describes the specific circumstance.

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Public Input No. 4-NFPA 909-2022 [Section No. B.4.2.35]

B.4.2.35 Oklahoma Church — 1996.

Total loss. At 4:01 a.m. a passerby called 911 to report a fire in this one-story frame structure with brick veneer. The structure was 46 m × 15 m (150 ft × 50 ft) and was closed for the night. Arriving firefighters found heavy smoke conditions and fire showing. The west wing was fully involved, and the fire had vented through the south side of the gable roof. The roof of the west side collapsed 20 to 30 minutes later. The fire spread to the east section of the building and that portion of the roof collapsed onto the floor area. The structure, valued at \$225,000, and the contents, valued at \$125,000, were totally destroyed. No injuries were reported.

An investigation revealed that a window had been broken out, and a glass container filled with gasoline had been tossed inside the dining room area. The arsonist used a match to light the gasoline. Two days later, a 35-year-old white male was arrested for arson. The suspect had been arrested for arson twice as a teenager in another state. He was judged incompetent to stand trial and transferred to a ~~mental~~ psychiatric hospital. Given the perpetrator's condition, law enforcement officials felt the crime was not racially motivated, although the church had a predominantly African American congregation.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the existing terminology. The substitute change provided is more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect. The term “mental” hospital is no longer used. “Psychiatric” hospital is more acceptable to the community of people with mental illness. The phrase “mental health facility” is also acceptable.

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Public Input No. 16-NFPA 909-2022 [Section No. C.3]

C.3 Glossary of Fire Protection Systems.

Table C.3(a), Table C.3(b), Table C.3(c), and Table C.3(d) describe detection, alarm, and extinguishing systems that are appropriate for use in cultural resource properties. Included are comments about the intended or optimum applications of each system and recommendations for system applications. Insofar as possible, nontechnical terminology has been used so that the information presented can be readily understood by persons who have been delegated fire safety responsibility.

Table C.3(a) Classification of Fire Detection Systems by Method of Detection

<u>Type</u>	<u>Description</u>	<u>Comments</u>
Smoke detection systems	These systems use devices that respond to the smoke particles produced by a fire. They operate on the ionization, photoelectric, cloud chamber, or other smoke particle analysis principle of operation. Spot-type smoke detectors use either the ionization or the photoelectric principle of operation. Line-type (also called linear beam type) smoke detectors use the photoelectric principle. Aspiration-type smoke detectors use either ionization, photoelectric, cloud chamber, laser, or other particle analysis principle of operation.	These systems are intended for early warning. Some are designed for installation in ventilation ducts. (See <i>NFPA 72</i>.) Properly installed, smoke detectors can detect smoke particles in very early stages of fire in the areas where they are located. The selection of a particular detector or mixture of or types of detectors should be made by a fire protection engineer and based on building and fire-load conditions.
Heat detection systems	These systems use heat-responsive devices of either the spot or line type. They are mounted on exposed ceiling surfaces or on a sidewall near the ceiling. Heat detectors are designed to respond when the operating element reaches a predetermined temperature (fixed temperature detector), when the temperature rises at a rate exceeding a predetermined value (rate-of-rise detector), or when the temperature of the air surrounding the device reaches a predetermined level, regardless of the rate of temperature rise (rate compensation detector). Some devices incorporate both fixed temperature and rate-of-rise detection principles. Spot-type detectors are usually small devices a few inches in diameter. Line-type detectors are usually lengths of heat-sensitive cable or small bore metal tubing.	These systems are relatively low cost. They cannot detect small, smoldering fires. Line-type detectors can be installed in a relatively inconspicuous manner by taking advantage of ceiling designs and patterns. (See <i>NFPA 72</i>.) The air temperature surrounding a fixed temperature device at the time it operates usually is considerably higher than the rated temperature, because it takes time for the air to raise the temperature of the operating element to its set point. This is called thermal lag. Rate compensation devices compensate for thermal lag and respond more quickly when the surrounding air reaches the set point. Given the monetary value and irreplaceable nature of typical museum collections, early-warning smoke detection systems should be considered for optimum protection. Where warranted, air-sampling-type detector systems should be considered. These systems are also less conspicuous and minimize disruption to architectural integrity. Proper selection of a particular detector or a mixture of detectors should be made by a fire protection engineer and based on building and fire-load conditions.

<u>Type</u>	<u>Description</u>	<u>Comments</u>
Flame detection systems	These systems use devices that respond to radiant energy visible to the human eye (approximately 4000 to 7000 angstroms) or to radiant energy outside the range of human vision [usually infrared (IR), ultraviolet (UV), or both]. Flame detectors are sensitive to glowing embers, coals, or actual flames with energy of sufficient intensity and spectral quality to initiate the detector.	Because flame detectors are essentially line-of-sight devices, special care should be taken in their application to ensure that their ability to respond to the required area of fire in the zone that is to be protected will not be unduly compromised by the permanent or temporary presence of intervening structural members or other opaque objects or materials. (See NFPA 72.)

Table C.3(b) Classification of Fire Alarm Systems by Method of Operation

<u>Type</u>	<u>Description</u>	<u>Comments</u>
Protected premises fire alarm system	This system operates in the protected premises and is responsive to the operation of a manual fire alarm box, waterflow in a sprinkler system, or automatic detection of a fire by a smoke, heat, or flame-detecting system.	The main purpose of this type of system is to provide an evacuation alarm for the occupants of the building. Someone must always be present to transmit the alarm to fire authorities. (See NFPA 72.)
Auxiliary fire alarm system	This system utilizes a standard municipal fire alarm box to transmit a fire alarm from a protected property to municipal fire headquarters. The alarms are received on the same municipal equipment and are carried over the same transmission lines as are used to connect fire alarm boxes located on streets. Operation is initiated by the local fire detection and alarm system installed at the protected property.	Some communities accept this type of system, but others do not. (See NFPA 72 and NFPA 1221.)
Central station fire alarm system	This type of alarm system connects protected premises to a privately owned central station, monitors the connecting lines constantly, and records any indication of fire, supervisory, or other trouble signals from the protected premises. A central station is listed and is required to provide a certificate when providing central station services. When a signal is received, the central station takes such action as is required, such as informing the municipal fire department of a fire or notifying the police department of intrusion.	This is a flexible system. It can handle many types of alarms, including trouble within systems at protected premises. (See NFPA 72.)
Remote supervising station fire alarm system	This system connects protected premises over telephone lines to a remote station, such as a fire station or a police station. It includes a separate receiver for individual functions being monitored, such as fire alarm signal or sprinkler waterflow alarm. Normally these systems are located at the local jurisdiction's communications center; however, a listed central station can provide remote supervising station services.	(See NFPA 72.)
Proprietary fire alarm system	This system serves contiguous or noncontiguous properties under one ownership from a supervising station at the protected property. It is similar to a central station system but is owned by the protected property.	This system requires 24-hour attendance at the proprietary supervising station. (See NFPA 72.)

<u>Type</u>	<u>Description</u>	<u>Comments</u>
Emergency voice/alarm communication systems	This system is used to supplement any of the other systems listed in this table by permitting voice communication throughout a building so that instructions can be given to building occupants. During a fire emergency, prerecorded messages can be used to instruct the occupants to take emergency action, or fire department personnel can transmit live messages, or both.	(See NFPA 72.)

Table C.3(c) Classification of Fire Detection and Alarm Systems by Type of Control

<u>Type</u>	<u>Description</u>	<u>Comments</u>
Conventional system	This type of fire detection system utilizes copper wire to interconnect all initiating devices and notification appliances to the fire alarm control panel. The wiring must be installed in a closed-loop fashion for each zone circuit to ensure proper electrical supervision or monitoring of the integrity of the circuit conductors for integrity.	This is the most common type of fire alarm system. It provides basic alarm, trouble, and supervisory signal information and is used for small- to medium-size systems. These systems provide limited information such as the zone in alarm.
Addressable system	This system utilizes initiating devices and control points, each assigned a unique three- or four-digit number that is the detector's "address." The fire alarm control panel's microprocessor is programmed with this address number. All activity by or affecting the device is monitored and recorded at the control panel.	This type of system provides more detailed information about alarm, trouble, or supervisory conditions. Essentially, the system is "zoned" by device rather than by an entire floor or area. The equipment for addressable systems is more costly, but generally installation costs are reduced substantially, operations are more flexible, and maintenance is more efficient.
Addressable analog system	This type of system is identical to the addressable system, with the exception that the smoke and heat detectors connected to the microprocessor are analog devices. The analog devices sense the fire signature and continuously send information to the control panel microprocessor, which determines the sensitivity, alarm point, and maintenance window of the analog device. Accordingly, this system is also called "intelligent" or "smart."	Analog systems provide the maximum flexibility and information that can be obtained from a fire alarm system. These computer-based systems do require sophisticated technical expertise to maintain and service, so this should be considered in the design process. Addressable analog fire detection systems allow for the execution of preprogrammed sensitivity levels for smoke detectors based on the time of day or days of the week, ranging from a low-sensitivity level during the period the premise is occupied to a high-sensitivity level when only employees are present or the protected premise is vacant.
Wireless system	This system uses battery-powered initiating devices, which transmit the alarm or trouble signal to a receiver/control panel. Each initiating device can be individually identified by the control panel for annunciation purposes.	The battery in each initiating device will last for a minimum of 1 year but needs to be replaced whenever the initiating device transmits a battery depletion signal to the control panel. Wireless systems can be used where it is not possible or feasible to install the electrical cable needed by hard-wired systems. The notification appliances are still

<u>Type</u>	<u>Description</u>	<u>Comments</u>
		required to be wired to a fire alarm control panel. Typically these systems are used in conjunction with one of the systems described above.

Table C.3(d) Glossary of Fire Extinguishing Systems

<u>Type</u>	<u>Description</u>	<u>Comments</u>
Wet pipe automatic sprinkler system	This permanently piped water system is under pressure and uses heat-actuated sprinklers. When a fire occurs, the sprinklers exposed to the high heat operate and discharge water individually to control or extinguish the fire.	This type of system automatically detects and controls fire. It should not be installed in spaces subject to freezing and might not be the best choice in spaces where the likelihood of mechanical damage to sprinklers or piping is high, such as in low-ceiling areas, and could result in accidental discharge of water. Where there is a potential for water damage to contents, such as books, works of art, records, and furnishings, the system can be equipped with mechanically operated on-off or cycling heads to minimize the amount of water discharged (see on-off automatic sprinkler system). In most instances, the operation of only one sprinkler will control a fire until the arrival of firefighters. Often, the operation of a sprinkler system will make the use of hose lines by firefighters unnecessary, thus reducing the amount of water put onto the fire and the subsequent amount of water damage. (See <i>NFPA 13</i> and <i>NFPA 22</i> .)
Preaction automatic sprinkler system	This system employs automatic sprinklers attached to a piping system containing air that might or might not be under pressure, with a supplemental fire detection system installed in the same area as the sprinklers. When the fire detection system is actuated by a fire, a valve opens allowing water to flow into the sprinkler system piping and to be discharged from any sprinklers that are opened subsequently by the heat from the fire.	This system automatically detects and controls fire and can be installed in areas subject to freezing with the exception of a special listed pre-primed preaction system. It minimizes the potential for accidental discharge of water due to mechanical damage to sprinklers or piping and is used in earthquake zones or where system leaks could pose an unacceptable risk to collections that are especially sensitive to water damage, such as pen and ink drawings on paper or works of art made with water-soluble materials. The overall reliability of this system is lower than that of a wet pipe system in several respects: failure of the actuation system would prevent operation of the sprinklers, except by manual operation of the system control valve, a preaction system requires a significantly higher level of regular maintenance to prevent additional potential failure modes; and the long-term presence of oxygen combined with water trapped at low-points or at water traps created by rolled groove joints or moisture in the compressed air used to maintain pressure in the system can cause severe corrosion in steel sprinkler system piping. In order to minimize the potential for pinhole leaks or corrosion related obstructions in the system, steps should be taken to eliminate the potential for trapped water in the piping, to limit the introduction of fresh, oxygen laden, water into the system, and to ensure regular inspections of the interior of steel piping for indications of corrosion. (See <i>NFPA 13</i> and <i>NFPA 22</i> .)
On-off automatic sprinkler	This system is similar to the preaction system, except that the fire	In addition to the favorable feature of the automatic wet pipe system, these systems have the ability to automatically stop the flow of water when it is no

<u>Type</u>	<u>Description</u>	<u>Comments</u>
system	detector operation acts as an electrical interlock, causing the control valve to open at a predetermined temperature and close when normal temperature is restored. If the fire rekindles after its initial control, the valve reopens, and water again flows from the opened sprinklers. The valve continues to open and close in accordance with the temperatures sensed by the fire detectors.	longer needed, thus eliminating unnecessary water damage. (See NFPA 13 and NFPA 22.)
Dry pipe automatic sprinkler system	This type of system employs automatic sprinklers attached to a piping system that contains air under pressure. When a sprinkler operates, the air pressure is reduced, thus allowing the dry pipe valve to open and water to flow through any opened sprinklers. This system must be installed properly to avoid possible corrosion issues.	(See the comments for wet pipe automatic sprinkler system.) This system can protect areas subject to freezing. Water supply must be in a heated area. The long-term presence of oxygen combined with water trapped at low-points or at water traps created by rolled groove joints or moisture in the compressed air used to maintain pressure in the system can cause severe corrosion in steel sprinkler system piping. In order to minimize the potential for pinhole leaks or corrosion-related obstructions in the system steps should be taken to eliminate the potential for trapped water in the piping, to limit the introduction of fresh, oxygen laden, water into the system, and to ensure regular inspections of the interior of steel piping for indications of corrosion. (See NFPA 13 and NFPA 22.)
Standpipe and hose system	This is a piping system in a building to which hoses are connected for emergency use by building occupants or the fire department.	This system is a desirable complement to an automatic sprinkler system. Staff must be trained to use hose effectively. (See NFPA 14.)
Clean agent system	This permanently piped system uses a limited, stored supply of a gaseous extinguishing agent under pressure and discharge nozzles to totally flood an enclosed space. The extinguishing agent is released automatically by a suitable detection system, and fire is extinguished by chemical or mechanical means.	This system causes no agent damage to protected books, manuscripts, records, paintings, or other valuable objects; it also leaves no agent residue. Clean agents are low in toxicity, but the products of decomposition of some agents during a fire could be hazardous. Therefore, the fire area should be promptly evacuated when a fire alarm sounds prior to agent discharge. Clean agents might not extinguish deep-seated fires in ordinary solid combustibles, such as paper and fabrics, but they are effective on surface fires in these materials. These systems need special precautions to avoid damaging effects caused by their extremely rapid release. The high-velocity discharge from nozzles might be sufficient to dislodge substantial objects directly in the path. Where carbon dioxide systems are used, personnel should evacuate before agent discharge to avoid suffocation. (See NFPA 12 and

<u>Type</u>	<u>Description</u>	<u>Comments</u>
<i>NFPA 2001.)</i>		
Dry chemical system	This permanently piped system discharges a dry chemical from fixed nozzles by means of an expellant gas. The system either totally floods an enclosed space or applies the dry chemical directly onto the fire in a local application. The dry chemical extinguishes fires by the interaction of the dry chemical particles to stop the chain reaction that takes place in flame combustion. The dry chemical is released mechanically or with a suitable detection system.	Because this system leaves a powdery deposit on all exposed surfaces in and around the hazard being protected, it requires cleanup. This type of system provides excellent protection from fire when it is installed in the ducts and hood over cooking equipment such as deep fat fryers, range griddles, and broilers that could be a source of ignition. It might not extinguish deep-seated fires, but it is effective on surface fires. (See <i>NFPA 17.</i>)
High-expansion foam system	This fixed extinguishing system generates a foam agent for total flooding of confined spaces and for volumetric displacement of vapor, heat, and smoke. It acts on a fire in the following ways: (1) Prevents free movement of air (2) Reduces the oxygen concentration at the fire (3) Cools (4) Is released automatically by a suitable detection system	Where personnel might be exposed to a high-expansion foam discharge, suitable safeguards should be provided to ensure prompt evacuation of the area. The discharge of large amounts of high-expansion foam can inundate personnel, blocking vision, making hearing difficult, and creating discomfort in breathing. It also leaves residue and requires cleanup. Properly designed, a high-expansion foam system used in conjunction with water sprinklers provides more positive control and extinguishment than either extinguishment system used independently. (See <i>NFPA 11.</i>)
Wet chemical extinguishing system	This system uses a liquid agent usually released by automatic mechanical thermal linkage to extinguish fire by chemical or mechanical means. It is effective for restaurant, commercial, and institutional hoods, plenums, ducts, and associated cooking appliances.	This system leaves agent residue that is confined to the protection area(s) and requires cleanup. It is excellent for service facilities having range hoods and ducts. (See <i>NFPA 17A.</i>)
Fine water mist system	In general, this piped system or modular, pressurized container system delivers a fine	A distribution system connected to a water supply or water and atomizing media supplies that is equipped with one or more nozzles capable of delivering water mist intended to control, suppress, or extinguish fires

<u>Type</u>	<u>Description</u>	<u>Comments</u>
Hybrid fire-extinguishing system	water mist. Water droplet size ranges to a maximum 1000 m.	and that has been demonstrated to meet the performance requirements of its listing and NFPA 750. (See NFPA 750.)
	A fire-extinguishing system capable of delivering a simultaneous discharge of water mist and an inert gas agent (usually nitrogen) in a controlled proportion from a common discharge device that results in a dilution of oxygen concentration (less than 16 percent) producing atomized water droplets (10 µm). The atomized water droplets provide a large available surface area for heat absorption and are easily converted to steam to provide cooling and oxygen dilution.	This system can be used for total flooding of an enclosure or for local application discharged directly onto a burning surface. Due to the controlled nitrogen pressure, there is reduced stress on the enclosure, reducing the need for room pressure relief vents. The controlled discharge rate also allows time for egress while providing cooling as it extinguishes the fire. No toxic components or by-products are used and there are minimal clean-up requirements following discharge. This system is specifically designed to meet the challenge of protecting high value assets. Unlike twin fluid water mist systems, where gas is used solely as a medium to atomize water, hybrid systems provide a simultaneous application of water and gas so that both play a role in the extinguishment process. . (See NFPA 770.)

Statement of Problem and Substantiation for Public Input

See substantiation for PI-15

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 15-NFPA 909-2022 [Section No. 9.12.14]	

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Public Input No. 13-NFPA 909-2022 [Chapter J]

Annex J Fire System Maintenance Checklists

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

J.1 Introduction.

All fire protection and fire safety systems need to be maintained to ensure their operational reliability. These checklists provide the user with an outline of what the contractor or maintenance person should be following. Those responsible for the cultural resource property's operation and safety are encouraged to use professionals to perform the tests, maintenance, and service of all fire protection systems and fire protection–related elements.

J.2 Maintenance of Automatic Sprinkler and Standpipe Systems.

Each alarm, dry pipe, preaction, and deluge valve should have maintenance tags (annual, 5 year) attached for recording the inspector's initials, date, pressure readings, and confirmation on maintenance/inspections performed on the system. Checklists detailing maintenance should be kept by the office responsible for maintenance. All problems noted should be corrected before initialing the maintenance tag.

During any renovation or inspection of an automatic sprinkler system the following should be reported to the facility manager for correction:

- (1) Sprinklers that are damaged, blocked by storage, painted, or otherwise impaired. (Construction, occupancy changes, and changes to heating lighting and air conditioning systems can require relocating, adding, or replacing sprinklers.)
- (2) Pipe hangers with mechanical injury and corrosion.
- (3) Pipes or fittings with signs of leakage or corrosion.

General Requirements for All Sprinkler and Standpipe Systems

- Annually, inspect water pressure and air pressure gauges to make sure they are within
 - ☐ normal range. Investigate a loss of pressure of more than 10 percent. Record new pressure readings on the attached tag.
 - ☐ Annually, inspect control valve labels to ensure they are accurate. Replace missing signs and re-label inaccurate signs.
- Annually, inspect fire department connections to make sure inlets are unobstructed, that the
 - ☐ protective caps are in place, that they are conspicuously marked and readily accessible for the fire department, and that hose threads are in good condition.
 - ☐ Annually, lubricate each valve stem and reseat to prevent leaks.
 - ☐ Annually, close and reopen each post indicator and outside stem and yoke (OS&Y) valve.
 - ☐ Annually, inspect fire department connections before freezing weather. The connection should be drained through the ball drip from the check valve to assure it will not freeze.
 - ☐ Every 5 years, replace the gaskets in check valves.
 - ☐ Every 5 years, recalibrate and/or replace pressure gages, if necessary.
 - ☐ Every 5 years conduct an interior corrosion inspection of system piping.
- Fifty years after installation, remove a representative sample of sprinklers (at least two per
 - ☐ floor) and have them operationally tested at a testing laboratory. Based on tests, replace sprinklers if necessary. Test a sampling of the sprinklers every 10 years thereafter.
- Fifty years after installation, inspect the sprinkler system in at least five remote and low point locations to determine the degree of pipe corrosion. Where corrosion is found, have a fire
 - ☐ protection engineer or sprinkler designer determine the hydraulic performance of the sprinkler system.

Wet Pipe and Antifreeze Systems

- Annually, open the inspector's test connection and test all alarms (water motor alarm and/or
 - ☐ flow/pressure switch).
 - ☐ Annually, before freezing weather, test the freezing point of antifreeze solutions with a hydrometer. Maintain the solution below the estimated minimum temperature.
 - ☐ Annually, make sure wet pipe systems are properly protected from freezing.

Dry, Deluge, and Preaction Systems

- Annually, before freezing weather, operate the heating system in enclosures housing valves
 - ☐ to ensure temperature can be maintained above 5.5 C (42°F).
 - ☐ Annually, before freezing weather, open all low point drains to remove condensation and clean plugged or obstructed sprinklers.
 - ☐ Annually, remove face plates of dry, deluge, and preaction valves and examine interior for corrosion and condition of gasket.

- ☐ Annually, trip test the dry pipe, deluge, or preaction valve. Ensure quick opening devices operate properly. Once the main valve trips, quickly close the control valve.
Every 3 years, flush system with water. The system should be filled with water for 2 days before flushing to allow pipe scale and deposits to soften. Drain system and then flush.
- ☐ cross mains first by attaching 50 mm (2 in.) fire hose at the end of the cross main. Flow water until clear. Also, record the residual water pressure from the supply side water pressure gauge. Remove and reinstall all pendant sprinklers after flushing is complete.
- ☐ Annually, activate preaction and deluge systems by operating the fire detection devices.
- ☐ Close the control valve to prohibit water from entering the system.
- ☐ Annually, lubricate air compressors on preaction and dry systems in accordance with manufacturer recommendations.
- ☐ Annually, test low air pressure alarm on preaction and dry systems. Close the water supply valve. Slowly release air from the system by slowly opening the inspectors test valve. Release enough pressure to sound the alarm. Avoid tripping the dry pipe valve.
- ☐ Quarterly, determine dry pipe system priming water level by slowly opening the priming water level test valve. If only air escapes, close the test valve and add about one quart of water. Repeat the procedure until water comes out of the test valve.
- ☐ Annually, flow test open sprinklers on deluge sprinkler systems during warm weather.

J.3 Maintenance of Fire Detection and Alarm Systems.

Fire detection and alarm systems should be tested at regular intervals. Test methods and frequency of tests should be in accordance with *NFPA 72*. Some of the tests that should be performed are as follows.

Alarms

- ☐ Annually, test audible devices, visible devices, and emergency voice/alarm communication equipment.

Control and Annunciation Units

- ☐ Quarterly for unmonitored systems and annually for monitored systems, test all functions, interfaced equipment, main and standby power supply, and fuses.

Batteries

- ☐ Annually, test the charger. Conduct a 30-minute discharge test semiannually for lead acid batteries and annually for nickel-cadmium batteries.

Alarm Initiating Devices

- ☐ Annually, test all smoke detectors, fire alarm boxes, and restorable heat detectors. Smoke detector sensitivity should be checked as detailed in *NFPA 72*.
- ☐ Other tests, depending on the type of fire alarm system installed, should be conducted as detailed in *NFPA 72*.

J.4 Maintenance of Fire Hose Stations.

Where fire hose is allowed, hose stations should have monthly and annual (all-weather) maintenance tags attached for recording the inspector's initials, date, and confirmation on maintenance/ inspections performed on the system. Checklists detailing maintenance should be kept by the office responsible for maintenance. All problems noted should be corrected before initialing maintenance tag.

- ☐ Inspect fire hose stations monthly. Hose stations should contain a minimum of 45 m (150 ft) of hose, hose nozzle, and hydrant wrench. Hose should not be damaged or show mildew. Hose needs to be neatly rolled or racked.
- ☐ Monthly test nozzles to confirm that they can be easily opened and closed.
- ☐ Rerack or rewind hose annually.

J.5 Maintenance of Fire Hydrants.

Fire hydrants should have annual maintenance tags attached for recording the inspector's initials, date, and confirmation on maintenance/inspections performed on the system. Checklists detailing maintenance should be kept by the office responsible for maintenance. All problems noted should be corrected before initialing maintenance tag.

- ☐ Annually, inspect fire hydrants in the fall to ensure the following:

- (1) Tightness of hydrant outlet
- (2) No leaks in top of hydrant
- (3) No cracks in hydrant barrel
- (4) Hydrant drain is clear
- (5) Turning nut is not worn down with rounded corners
- (6) Undamaged nozzle threads

- ☐ Annually, lubricate operating nut, parking, and trust collars.

Annually perform a flow test to check for proper hydrant operation

- ☐ and to test the available water supply in accordance with NFPA 291. Flow water from each hydrant.

J.6 Maintenance of Fire Pumps.

Fire pumps should have weekly and annual maintenance tags attached for recording the inspector's initials, date, and confirmation on maintenance/inspections performed on the system. Water flow meters should have 5-year maintenance tags attached. Checklists detailing maintenance should be kept by the cultural resource property. All problems noted should be corrected before initialing the maintenance tag.

Weekly

Close system valve to avoid pressurizing the automatic sprinkler system. Turn jockey pump off and gradually release pressure in the sprinkler system to confirm that low system pressure turns fire pump on. Run pump for 10 minutes. Check for excessive heat or water leakage at

- ☐ packing glands. At the end of the test, confirm that the fire pump and jockey pump controllers are on automatic and the pump supply and discharge valves and the sprinkler system valves are open.

- ☐ Record suction and discharge pressure on maintenance tag.

Annually

- ☐ Perform annual flow test in accordance with NFPA 20.

Turn jockey pump off and gradually release pressure in the sprinkler system to confirm that

- ☐ low system pressure turns fire pump on.

- ☐ Confirm proper operation of remote annunciation for pump on and power supervision on fire alarm control unit.

Close and open control valves to ensure proper operation. Also, confirm that tamper switches

- ☐ on control valves are operational.

- ☐ Lubricate motors and engines in accordance with manufacturer recommendations.

Every 5 Years

- ☐ Calibrate the water flow meter, if one is installed, during the annual flow test.

J.7 Maintenance of Water Storage Tanks Used for Fire Protection.

Water storage tanks used for fire protection should have monthly, annual, and 5-year maintenance tags attached at the main control valve for recording the inspector's initials, date, and confirmation on maintenance/inspections performed on the system. Checklists detailing maintenance should be kept by the office responsible for maintenance. All problems noted should be corrected before initialing maintenance tag.

☐ Check water level in storage tanks monthly.

☐ Operate control valves monthly to assure they are properly arranged (generally open) and operational.

☐ Inspect storage tanks annually for the following:

-

(1) General condition of the tank, including loose scale, leaky seams or rivets, and paint

-

(2) Ladders on tanks for structural adequacy and the presence of rust

-

(3) The roof of storage tanks for structural stability and the presence of rust

-

(4) Sway bracing for elevated water storage tanks for structural adequacy and the presence of rust

☐ Conduct a flow test annually to make sure that equipment is performing properly, pipes are unobstructed, and appropriate valves are open. Perform in conjunction with fire hydrant annual tests (*See Section J.4*).

☐ Approximately every 5 years, thoroughly clean the interior and exterior of the tank and repaint. Temporary water supplies for fire protection need to be provided before the tank is drained.

J.8 Maintenance of Halon Systems.

Halon systems should have monthly, annual, and 5-year maintenance tags attached to the halon cylinders for recording the inspector's initials, date, and confirmation on maintenance/inspections performed on the system. Checklists detailing maintenance should be kept by the office responsible for maintenance. All problems found should be corrected before initialing the maintenance tag. (Fire alarm functions should be maintained in accordance with Section J.1.) The use of halon is being phased out due to environmental concerns. However, existing systems are allowed to remain installed in the United States and to be maintained in operating condition.

Monthly

- ☐ Inspect the halon cylinders and piping for physical damage.

Record the new pressure reading on the maintenance tag. Pressure needs to be within

- ☐ 10 percent of previous reading on the maintenance tag. Low readings require weighing the tank to confirm low pressure. Report confirmed low readings. Do not refill system.

Annually

Weigh cylinders and determine if weight is within 5 percent of previous reading on the

- ☐ maintenance tag. Record pressure on maintenance tag. Report low readings. Do not refill system.

- ☐ Operate control valves and correct any problems found.

Perform an operational test on system without discharging halon. (Remove the control heads

- ☐ from the halon cylinders and operate the fire detectors.) Correct any problems found.

Every 5 Years

- ☐ Replace rubber hoses.

- ☐ Perform a fan pressurization test in the room.

J.9 Maintenance of Emergency Generator and Emergency Lighting.

Emergency generators should have weekly and annual maintenance tags attached for recording the inspector's initials, date, and confirmation of maintenance/inspections performed on the system. Checklists detailing maintenance should be kept by the office responsible for maintenance.

- (1) Operate emergency generators weekly. Correct potential operational problems.
- (2) Operate emergency generator under a simulated load biannually.
- (3) Lubricate motors and engines annually in accordance with manufacturer recommendations.
- (4) Perform an emergency lighting test biannually using the emergency generator. Fire pump(s), fire alarm systems, and electronic exit locking systems should be tested on emergency power concurrently.

Monthly

- ☐ Inspect the halon cylinders and piping for physical damage.

Record the new pressure reading on the maintenance tag. Pressure needs to be within

- ☐ 10 percent of previous reading on the maintenance tag. Low readings require weighing the tank to confirm low pressure. Report confirmed low readings. Do not refill system.

Annually

Weigh cylinders and determine if weight is within 5 percent of previous reading on the

- ☐ maintenance tag. Record pressure on maintenance tag. Report low readings. Do not refill system.
- ☐ Operate control valves and correct any problems found.
- ☐ Perform an operational test on system without discharging halon. (Remove the control heads from the halon cylinders and operate the fire detectors.) Correct any problems found.

Every 5 Years

- ☐ Replace rubber hoses.
- ☐ Perform a fan pressurization test in the room.

J.10 Maintenance of Water Spray Systems for Kitchens.

Annually, inspect contracts to confirm water spray systems are being maintained in accordance with manufacturer recommendations, including the following:

- (1) The monthly inspection of systems is done by a company specializing in the maintenance of these systems.
- (2) Sprinkler heads are clean of grease.
- (3) Gas and electric power shut-off are tested.
- (4) Water-wash hood cleaning systems are operational.
- (5) Sprinklers need to be replaced in accordance with manufacturer recommendations.
- (6) Manual pull stations send a signal to the control room.
- (7) Sprinklers are of the correct temperature rating and located directly above grease producing equipment at the correct height.
- (8) Monthly and annual maintenance tags are attached for recording the inspector's initials, date, and confirmation on maintenance/inspections performed on the system. Checklists detailing maintenance should be kept by the responsible office.

J.11 Maintenance of Dry Chemical Systems.

Annually, inspect maintenance contracts to ensure dry chemical systems are being maintained in accordance with manufacturer recommendations, including the following:

- (1) The monthly inspection of a system is being done by a company specializing in the maintenance of these systems.
- (2) Nozzles are clean of grease.
- (3) Gas and electric power shut-off are tested.
- (4) Water-wash hood cleaning systems are operational.
- (5) Fusible links are replaced annually.
- (6) Manual pull stations send a signal to the control room.
- (7) Fusible links are of the correct temperature rating.
- (8) Nozzles are located directly above grease producing equipment at the correct height.
- (9) Pressure on gauge is adequate.
- (10) Manual release stations are operational and readily accessible.
- (11) Monthly and annual maintenance tags are attached for recording the inspector's initials, date, and confirmation on maintenance/inspections performed on the system. Checklists detailing maintenance should be kept by the responsible office.

J.12 Maintenance of Fire Doors and Fire Dampers.

Personnel responsible for maintenance should have location maps of fire doors and fire dampers and checklists detailing maintenance on each door or damper.

Fire Doors

- ☐ Annually, inspect fire doors for the following items. Correct any problems found.

-

(1) Door envelope does not have punctures or broken seams.

-

(2) Self-closer is intact and allows door to latch closed.

-

(3) If a sliding door, chains and cables operate smoothly over all pulleys and guides.

-

(4) Doors have not been modified in the field (e.g., by the installation of louvers).

-

(5) Coordinators are securely attached and adjusted properly.

-

(6) Clearances around the door do not exceed the following:

-

(a) Between door and frame — 3.2 mm ($\frac{1}{8}$ in.)

-

(b) Between meeting edges of doors — 3.2 mm ($\frac{1}{8}$ in.)

-

(c) Between bottom of door and raised sill — 9.5 mm ($\frac{3}{8}$ in.)

-

(d) Between bottom of door and floor (no sill) — 19.0 mm ($\frac{3}{4}$ in.)

Annually, test doors normally held open by automatic closing

devices to confirm proper operation. Sliding doors need to be

- ☐ allowed to close completely to check the operation of the guides and rollers. Correct any problems found.

- ☐ Annually, lubricate guides and bearings.

Fire Dampers

Annually, test fire dampers to ensure hinges and other moving parts operate properly. Remove fusible links, operate damper, and

- ☐ check latch (if provided). It is desirable to operate dampers with normal system airflow to ensure that they are not held open by the air stream. Correct any problems found.

Annually, lubricate moving parts of fire damper. Note that smoke

- ☐ dampers should be tested with the operation of fire detectors in accordance with Section J.3.

J.13 Maintenance of Stair Pressurization and Smoke Venting Systems.

Fans used for stairwell pressurization and smoke venting should have annual maintenance tags attached for recording the inspector's initials, date, and confirmation on maintenance/inspections performed on the system. Checklists detailing maintenance should be kept by the office responsible for maintenance.

- Annually, perform an air pressure test in stairwells having pressurization fans to make sure all system parts and controls are operational, and design air pressures (not to exceed NFPA 101 requirements) are obtained.
- Annually lubricate fan motors in accordance with manufacturer recommendations.

J.14 Maintenance of Portable Fire Extinguishers.

Each extinguisher needs to have an inspection tag.

Inspect extinguishers monthly. An extinguisher inspection includes ensuring extinguishers are fully charged, in their designated locations, physically undamaged, not tampered with, not obstructed, and that the hydrostatic test is up to date (*see Table J.14*). The inspector should initial the inspection tag after the extinguisher is found in good working order.

- (1) Report obstructed or out-of-place extinguishers to the building manager.
- (2) Replace any extinguisher that is physically damaged or that has a broken or missing tamper indicator (plastic seal around the handle).
- (3) Replace any extinguisher on which the gauge indicates "recharge" or, in the case of carbon dioxide extinguishers, when there is a weight loss of 10 percent or more (the weight is listed on the label of the extinguisher). For example, if the label indicates 15.2 kg (33½ lb), replace the extinguisher when the weight goes below 14 kg (31 lb). The weight should be checked semiannually.
- (4) Replace any extinguisher requiring a hydrostatic test in accordance with the dates listed below. Each extinguisher is marked with the date of the last hydrostatic test (e.g., 1/26/80 or 1@80). Look for the most recent date and calculate when the extinguisher needs to be tested again. For example, a carbon dioxide extinguisher dated 1@80 should be retested in January 1985. (When an extinguisher needs to be replaced, use a spare extinguisher of the same type and at least equal rating as the one being replaced.)

Table J.14 Extinguisher Hydrostatic Test Periods.

<u>Extinguisher Types</u>	<u>Hydrostatic Test Period</u>
Dry chemical	12 years
Carbon dioxide	5 years
Stored water pressure	5 years
Halon	12 years

J.15 Maintenance of Lightning Protection Systems.

Those responsible for maintenance/inspection should have detailed drawings of lightning protection systems and checklists detailing maintenance.

- Annually, inspect system for mechanical damage.
- Annually, test all connections for electrical resistance. If resistance to ground is more than 5 ohms, make necessary changes to reduce it to 5 ohms or less.

Statement of Problem and Substantiation for Public Input

See substantiation for PI 9. In these instances (Sections J2 and J11), the term "readily accessible" is more appropriate, per the proposed definition in PI 9, as this equipment needs to be more than simply "accessible".

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 9-NFPA 909-2022 [New Section after 3.3.69]</u>	

Submitter Information Verification

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Public Input No. 20-NFPA 909-2022 [Section No. N.1.2.1]

N.1.2.1 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, 2019 2022 .

ASTM E1355, *Standard Guide for Evaluating the Predictive Capability of Deterministic Fire Models*, 2012 (2018).

ASTM E1472, *Standard Guide for Documenting Computer Software for Fire Models*, 2007 (withdrawn 2011).

Statement of Problem and Substantiation for Public Input

date update

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Public Input No. 24-NFPA 909-2022 [Section No. N.1.2.9]

N.1.2.9 UL Publications.

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

UL 263, *Fire Tests of Building Construction and Materials*, 2011, revised ~~2019~~ 2021 .

UL 294, *Access Control System Units*, 2018.

UL 305, *Panic Hardware*, 2012, revised ~~2017~~ 2022 .

UL 437, *Key Locks*, 2013, revised 2017.

UL 634, *Connectors and Switches for Use with Burglar-Alarm Systems*, 2007, revised ~~2015~~ 2020 .

UL 681, *Installation and Classification of Burglar and Holdup Alarm Systems*, 2014, revised ~~2018~~ 2020 .

UL 768, *Combination Locks*, 2006, revised 2018.

UL 1034, *Burglary-Resistant Electric Locking Mechanisms*, 2011, revised ~~2015~~ 2020 .

UL 2058, *Outline of Investigation for High Security Electronic Locks*, 2005.

Statement of Problem and Substantiation for Public Input

This PI updates current UL references.

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Committee: CUL-AAA