Public Comment No. 36-NFPA 13-2023 [Section No. 3.3.8]

3.3.8 Area of Discharge.

The floor area covered by a sprinkler that takes into account any walls or obstructions whose summation determines the remote area. *(See Figure A.28.3.4.2.1.)* (AUT-~~SSI~~ SSD)

Statement of Problem and Substantiation for Public Comment

This term should be assigned to SSD.

Related Item

• FR-1157

Submitter Information Verification

Submitter Full Name: Kevin Hall
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Affiliation: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 09 17:28:56 EST 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected
Resolution: Reassignment from SSI to SSD is an action to be taken by the Correlating Committee.

Public Comment No. 135-NFPA 13-2023 [Section No. 3.3.22]

3.3.22* Blocking.

3.3.22 * Blocking. A means by which the horizontal spread of flame or heat during a fire event is stopped by the installation of materials ~~equivalent to or less than the combustibility of the structural member to~~ that will stay in place before and during sprinkler operation to limit the channeling of heat ~~within the~~ between structural members. (AUT-SSD)

Statement of Problem and Substantiation for Public Comment

During the First Draft, the committee preferred the term “blocking” to “fire-stopping” and inserted this new definition. As such, the terminology needs to be consistent. This proposed text also clarifies what is intended with the use of the term “blocking”.

This material was developed by the Sloped Ceiling Task Group, which was formed by the Technical Committee on Sprinkler Systems Discharge Criteria to incorporate the results of the FPRF Project on Sprinklers Under Sloped Ceilings into NFPA 13. The Task Group consisted of Ken Isman (Chair), Wes Baker, Chase Browning, Mike Joanis, Larry Frank, Joe Noble, Abram Selim Fouad, Kevin Hall, Carry Webber, and Karl Wiegand.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 136-NFPA 13-2023 [Section No. A.3.3.22]	

Related Item

- FR 1331

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 26 10:49:33 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1077-NFPA 13-2023
Statement: It was established during the first draft that the preferred term “blocking” be used instead of “fire-stopping.” As such, the terminology needs to be consistent. This proposed text also clarifies what is intended with the use of the term “blocking."

Public Comment No. 17-NFPA 13-2023 [Section No. 3.3.146]

~~**3.3.146** – Occupancies.~~

~~**3.3.146.1** – Extra Hazard (Group 1) (EH1).~~

~~Occupancies or portions of other occupancies where the quantity and combustibility of contents are very high or dust, lint, or other materials are present, introducing the probability of rapidly developing fires with high rates of heat release but with little or no combustible or flammable liquids. (AUT-SSD)~~

~~**3.3.146.2** – Extra Hazard (Group 2) (EH2).~~

~~Occupancies or portions of other occupancies with moderate to substantial amounts of flammable or combustible liquids or occupancies where shielding of combustibles is extensive. (AUT-SSD)~~

~~**3.3.146.3** – Light Hazard.~~

~~Occupancies or portions of other occupancies where the quantity and/or combustibility of contents is low and fires with relatively low rates of heat release are expected. (AUT-SSD)~~

~~**3.3.146.4** – Ordinary Hazard (Group 1) (OH1).~~

~~Occupancies or portions of other occupancies where combustibility is low, quantity of combustibles is moderate, stockpiles of contents do not exceed 8 ft (2.4 m), and fires with moderate rates of heat release are expected. (AUT-SSD)~~

~~**3.3.146.5** – Ordinary Hazard (Group 2) (OH2).~~

~~Occupancies or portions of other occupancies where the quantity and combustibility of contents are moderate to high, stockpiles of contents with moderate rates of heat release do not exceed 12 ft (3.7 m), and stockpiles of contents with high rates of heat release do not exceed 8 ft (2.4 m). (AUT-SSD)~~

Statement of Problem and Substantiation for Public Comment

Regardless of whether or not the definitions have been long standing, the current definitions conflict with the requirements in Chapter 4 -- specifically with reference to heat release rate. In their current form, these are not definitions -- they are requirements, and the only appropriate location is in Chapter 4.

Related Item

• PI-140

Submitter Information Verification

Submitter Full Name: Kevin Hall
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Affiliation: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Wed Mar 08 16:23:34 EST 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: It is important that these definitions be retained as there are other definitions in the fire protection community that use the same term, but are defined differently. This could cause confusion in the industry. 4.3 should be modified to align with the definitions (for example heat release rates).

Public Comment No. 162-NFPA 13-2023 [New Section after 4.2]

4.3* Approved Storage Floor Plan

The owner(s) of a building or structure where a fire sprinkler system protecting storage or their authorized agent shall provide an approved storage floor plan showing all areas of the building designed for storage in accordance with the following sections of this standard:

(1) Chapters 20 through 26

(2) 4.4.1.6 for miscellaneous tire storage

4.3.1

The approved storage floor plan shall be mounted in an approved location.

Statement of Problem and Substantiation for Public Comment

First Revision No. 1246 added a requirement to Chapter 28 to provide an approved storage plan for all storage occupancies. While this requirement is a positive addition to the standard, it belongs in Chapter 4 (General Requirements) and not in Chapter 28 (Acceptance). This requirement is an owner's responsibility and as such this comment seeks to relocate this requirement to Chapter 4. A related PC has been submitted to relocate the annex language of this section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 163-NFPA 13-2023 [New Section after A.4.2(4)]	
Public Comment No. 168-NFPA 13-2023 [Section No. 28.2]	

Related Item

- FR-1246

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
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Street Address:
City:
State:
Zip:
Submittal Date: Mon May 29 17:34:01 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected
Resolution: This content belongs in chapter 28.

Public Comment No. 18-NFPA 13-2023 [Section No. 4.2]

4.2* ~~Owner's Certificate~~ Basis of Design .

The owner(s) of a building or structure where the fire sprinkler system is going to be installed or their authorized agent shall provide the sprinkler system installer with the following information prior to the layout and detailing of the fire sprinkler system *[see Figure A.28.1(b)]*:

(1) Intended use of the building, including the materials within the building and the maximum height and arrangement of any storage configuration

(2) A preliminary plan of the building or structure along with the design concepts necessary to perform the layout and detail for the fire sprinkler system

(3) * Determination and confirmation of the water supply including any necessary adjustments

(4) * Any special knowledge of the water supply, including known environmental conditions that might be responsible for corrosion, including microbiologically influenced corrosion (MIC)

(5) Whether seismic protection is required and the applicable short period response parameter

(6) Any special knowledge of the general environment in which the system will be installed that might be responsible for corrosion, including airborne chemicals that could contact system components or chemical solutions that might be exposed to the sprinkler system components

Statement of Problem and Substantiation for Public Comment

Users of the document get caught up on the word "Owner" in the Owner's Certificate. It would be more appropriate to call the document what it is -- a basis of design. This would align with the roles and responsibilities detailed in SFPE's PS 2020-1.

Related Item

• PI-212 • PI-252 • PI-356 • PI-391

Submitter Information Verification

Submitter Full Name: Kevin Hall
Organization: American Fire Sprinkler Association
Affiliation: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Wed Mar 08 16:27:30 EST 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1174-NFPA 13-2023

Statement: The title was revised to make it clear that this information is needed for designing the sprinkler system. (2) was added because storage layout plans are often required by the fire code when a building is going to be used for storage purposes and this plan is needed for the sprinkler design, when applicable. (6) was updated to align with ASCE/SEI 7-22. "A.4.2 (3) was revised to read "A.4.2(4)" and "A.4.2(4)" was revised to read "A.4.2(5)." A.4.2 was updated to align with ASCE/SEI 7.

CC note No. 14-NFPA 13-2023 [Section No. 4.2]

Review section 4.2(5) and Figure A.28.1(b) to make sure it aligns with any changes to the seismic revisions of Chapter 18 during the A2024 revision cycle (currently requires Ss while the A2024 revision will require Sds). Update owners certificate. Coordinate with AUT-HBS committee.

Public Comment No. 19-NFPA 13-2023 [Section No. 4.2]

4.2* Owner's Certificate.

The owner(s) of a building or structure where the fire sprinkler system is going to be installed or their authorized agent shall provide the sprinkler system installer with the following information prior to the layout and detailing of the fire sprinkler system *[see Figure A.28.1(b)]*:

(1) Intended use of the building, including the materials within the building and the maximum height and arrangement of any storage configuration

(2) Approved storage floor plan

(3) A preliminary plan of the building or structure along with the design concepts necessary to perform the layout and detail for the fire sprinkler system

(4) * Determination and confirmation of the water supply including any necessary adjustments

(5) * Any special knowledge of the water supply, including known environmental conditions that might be responsible for corrosion, including microbiologically influenced corrosion (MIC)

(6) Whether seismic protection is required and the applicable short period response parameter

(7) Any special knowledge of the general environment in which the system will be installed that might be responsible for corrosion, including airborne chemicals that could contact system components or chemical solutions that might be exposed to the sprinkler system components

Statement of Problem and Substantiation for Public Comment

The approved storage floor plan is a requirement of the fire code and the owner. This needs to be provided at the start of the project with the Owner's certificate. The current location of the approved storage floor plan in the first draft report in plans and calculations is not appropriate.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 20-NFPA 13-2023 [Section No. 28.2]	

Related Item

• FR-1246

Submitter Information Verification

Submitter Full Name: Kevin Hall
Organization: American Fire Sprinkler Association
Affiliation: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Wed Mar 08 16:32:12 EST 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-1174-NFPA 13-2023

Statement: The title was revised to make it clear that this information is needed for designing the sprinkler system. (2) was added because storage layout plans are often required by the fire code when a building is going to be used for storage purposes and this plan is needed for the sprinkler design, when applicable. (6) was updated to align with ASCE/SEI 7-22. "A.4.2 (3) was revised to read "A.4.2(4)" and "A.4.2(4)" was revised to read "A.4.2(5)." A.4.2 was updated to align with ASCE/SEI 7.

CC note No. 14-NFPA 13-2023 [Section No. 4.2]

Review section 4.2(5) and Figure A.28.1(b) to make sure it aligns with any changes to the seismic revisions of Chapter 18 during the A2024 revision cycle (currently requires Ss while the A2024 revision will require Sds). Update owners certificate. Coordinate with AUT-HBS committee.

Public Comment No. 191-NFPA 13-2023 [Section No. 4.2]

4.2* Owner's Certificate.

The owner(s) of a building or structure where the fire sprinkler system is going to be installed or their authorized agent shall provide the sprinkler system installer with the following information prior to the layout and detailing of the fire sprinkler system *[see Figure A.28.1(b)]*:

(1) Intended use of the building, including the materials within the building and the maximum height and arrangement of any storage configuration

(2) A preliminary plan of the building or structure along with the design concepts necessary to perform the layout and detail for the fire sprinkler system

(3)~~*~~ Determination and confirmation of the adequacy of the water supply ~~including any necessary adjustments~~ as identified in 5.2.2

(4) * Any special knowledge of the water supply, including known environmental conditions that might be responsible for corrosion, including microbiologically influenced corrosion (MIC)

(5) Whether seismic protection is required and the applicable short period response parameter

(6) Any special knowledge of the general environment in which the system will be installed that might be responsible for corrosion, including airborne chemicals that could contact system components or chemical solutions that might be exposed to the sprinkler system components

Statement of Problem and Substantiation for Public Comment

There are far too many challenges tied to both the change in Facility Managers coupled with the possible change in Vendors to put this responsibility solely on the owner. This complicates the code beyond the majority of inspector's and owner's comprehension based on hundreds of locations with various facilities managers and vendors. I believe that 5.2.2 covers the necessary requirements.

Related Item

• FR-1170

Submitter Information Verification

Submitter Full Name: Joshua Brackett
Organization:
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 30 22:40:00 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution:	The water supply in the Owner's Certificate was the work the task group over several revision cycles. This provides the owner or authorized agent the guidance that they need for obtaining water supply information that needs to be supplied to those performing the design and layout of the sprinkler system.

Public Comment No. 49-NFPA 13-2023 [Section No. 4.2]

4.2* Owner's Certificate.

The owner(s) of a building or structure where the fire sprinkler system is going to be installed or their authorized agent shall provide the sprinkler system installer with the following information prior to the layout and detailing of the fire sprinkler system *[see Figure A.28.1(b)]*:

(1) Intended use of the building, including the materials within the building and the maximum height and arrangement of any storage configuration

(2) A preliminary plan of the building or structure along with the design concepts necessary to perform the layout and detail for the fire sprinkler system

(3) * Determination and confirmation of the water supply including any necessary adjustments

(4) * Any special knowledge of the water supply, including known environmental conditions that might be responsible for corrosion, including microbiologically influenced corrosion (MIC)

(5) Whether seismic protection is required and the applicable ~~short period response parameter~~ design spectral response acceleration at short periods, S_{DS}

(6) Any special knowledge of the general environment in which the system will be installed that might be responsible for corrosion, including airborne chemicals that could contact system components or chemical solutions that might be exposed to the sprinkler system components

Statement of Problem and Substantiation for Public Comment

Modifies the requirement in the owner's certificate to align with the new requirements in Chapter 18 for seismic design.

Related Item

• CN-14

Submitter Information Verification

Submitter Full Name: Kevin Hall
Organization: American Fire Sprinkler Association
Affiliation: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 09 18:08:58 EST 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1174-NFPA 13-2023

Statement: The title was revised to make it clear that this information is needed for designing the sprinkler system. (2) was added because storage layout plans are often required by the fire code when a building is going to be used for storage purposes and this plan is needed for the sprinkler design, when applicable. (6) was updated to align with ASCE/SEI 7-22. "A.4.2 (3) was revised to read "A.4.2(4)" and "A.4.2(4)" was revised to read "A.4.2(5)." A.4.2 was updated to align with ASCE/SEI 7.

CC note No. 14-NFPA 13-2023 [Section No. 4.2]

Review section 4.2(5) and Figure A.28.1(b) to make sure it aligns with any changes to the seismic revisions of Chapter 18 during the A2024 revision cycle (currently requires Ss while the A2024 revision will require Sds). Update owners certificate. Coordinate with AUT-HBS committee.

Public Comment No. 99-NFPA 13-2023 [Section No. 4.2]

4.2* Owner's Certificate.

The owner(s) of a building or structure where the fire sprinkler system is going to be installed or their authorized agent shall provide the sprinkler system installer with the following information prior to the layout and detailing of the fire sprinkler system *[see Figure A.28.1(b)]*:

(1) Intended use of the building, including the materials within the building and the maximum height and arrangement of any storage configuration

(2) A preliminary plan of the building or structure along with the design concepts necessary to perform the layout and detail for the fire sprinkler system

(3)

(4)* ~~Determination and confirmation of the water supply including any necessary adjustments~~

(5)* ~~Any special knowledge of the water supply, including known environmental conditions that might be responsible for corrosion, including microbiologically influenced corrosion (MIC)~~

(6) ~~Whether seismic protection is required and the applicable short period response parameter~~

(7)

(8) ~~Any special knowledge of the general environment in which the system will be installed that might be responsible for corrosion, including airborne chemicals that could contact system components or chemical solutions that might be exposed to the sprinkler system components~~

Statement of Problem and Substantiation for Public Comment

During the development of the 2002 Edition of NFPA 13, NFSA submitted Proposal 13-20 to add a new section regarding the Owners Certificate. the proposal included three items: intended use of the building; preliminary plan of the building; special knowledge regarding MIC. NFSA substantiated the proposal by saying that "Proper application of NFPA 13 requires certain information from the building owner." During the ROP phase, the Committee only accepted the first two items, stating that it "should not be the owners responsibility to determine if MIC is a concern in the area." Obviously the Committee revised their position during the ROC phase.

The expectation that the owner can identify the need for seismic bracing, the design criteria for such bracing, and the need to adjust the water supply test information goes well beyond the original intent of the Owners Certificate and is beyond the capability of most building owners. These items are the responsibility of the individual or entity who designs the system (see A.28.1). While the current language does say "or their authorized agent" there is no requirement in NFPA 13 that systems be designed by a registered design professional retained by the owner.

What happens if the owner does not identify the need to adjust the water supply test data or for seismic bracing and the owner does not retain a registered design professional? Does the fact that the owner does not disclose that information on the Owners Certificate provide a basis that the contractor, who does the layout of the system without construction documents prepared by a registered design professional, does not have to investigate the need to adjust the water supply test data or determine the need for seismic bracing or the design criteria for such bracing? During the Committee meeting, some contractors indicated that they do not have the expertise to determine if the water supply test

data needs to be adjusted. If the technician doing the layout of the system for the contractor does not have the expertise to apply these requirements of the standard, how can we reasonably expect a building owner to give the contractor the information needed to properly layout the system?

The concept of an Owners Certificate is a valid concept but it needs to be returned to the original reason for an Owners Certificate as presented by NFSA in their original proposal. Other design considerations, such as water supply test data adjustments and seismic design criteria, need to remain with the designer of the system regardless of whether that individual is a registered design professional or a technician employed by the contractor.

In a related Comment, I have proposed the language be moved to A.28.1.

Related Item

• FR 1170

Submitter Information Verification

Submitter Full Name: William Koffel
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Street Address:
City:
State:
Zip:
Submittal Date: Fri May 12 14:38:15 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: The items in the owner's certificate need to remain as they provide critical information to design and layout of the sprinkler system. The term "owner" is prefaced with "authorized agent" to support the fact that somebody knowledgeable in these items should be retained to gather this information and provide it to the sprinkler contractor. The authorized agent could be the engineer of record, sprinkler contractor, the owner's representative, etc.

Public Comment No. 131-NFPA 13-2023 [Section No. 4.3]

~~**4.3** – Qualified Personnel.~~

~~Qualified personnel shall meet at least one of the following qualifications:~~

(1) ~~Meets the requirements and training for a given field acceptable to the AHJ~~

(2) ~~Is certified by an approved fire protection certification organization~~

(3) ~~Is registered, licensed, or certified by a state or local authority to perform design or installation of sprinkler systems~~

Statement of Problem and Substantiation for Public Comment

Adding specific requirements to meet the definition of Qualified Personnel is not needed. NFPA 13 and other installation standards have traditionally left it to the jurisdiction or AHJ to determine specific actions for conformance with the term "qualified". I believe the users of the standard are best served by leaving this issue to be applied as broadly as possible. I have personally seen no positive impact from the addition of these requirements in other standards. The impact has been neutral at best and negative where these the requirements are used to limit access for individuals to work in the field. In the end, the contractor or business owner is ultimately responsible for the quality of the design and installation of the system.

Related Item

• FR 1135

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 24 16:55:34 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-1080-NFPA 13-2023

Statement: The standard requires knowledgeable and experienced personnel to perform the work found in the standard. It is up to the jurisdiction enforcing codes and standards to determine what constitutes "qualified personnel." It is the responsibility of the contractor to train their personnel for the jobs they will be performing in conformance with the jurisdiction's requirements.

Public Comment No. 156-NFPA 13-2023 [Section No. 4.3]

~~**4.3** – Qualified Personnel.~~

~~Qualified personnel shall meet at least one of the following qualifications:~~

(1) ~~Meets the requirements and training for a given field acceptable to the AHJ~~

(2) ~~Is certified by an approved fire protection certification organization~~

(3) ~~Is registered, licensed, or certified by a state or local authority to perform design or installation of sprinkler systems~~

Statement of Problem and Substantiation for Public Comment

This comment seeks to delete this language which was submitted as FR-1173. As stated in the substantiation of related PC-154, The existing language "knowledgeable and experienced" is appropriate and as stated in the last revision cycle, state and local jurisdictions are charged with the responsibility to determine qualifications and the proposed language in 4.3 is not appropriate to be included in NFPA 13.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 155-NFPA 13-2023 [Section No. 3.3.180]	related
Public Comment No. 154-NFPA 13-2023 [Section No. 1.2.2]	related

Related Item

• FR-1173

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 29 13:44:40 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1080-NFPA 13-2023

Statement: The standard requires knowledgeable and experienced personnel to perform the work found in the standard. It is up to the jurisdiction enforcing codes and standards to determine what constitutes "qualified personnel." It is the responsibility of the contractor to train their personnel for the jobs they will be performing in conformance with the jurisdiction's requirements.

Public Comment No. 97-NFPA 13-2023 [Section No. 4.3]

~~**4.3** – Qualified Personnel.~~

~~Qualified personnel shall meet at least one of the following qualifications:~~

(1) ~~Meets the requirements and training for a given field acceptable to the AHJ~~

(2) ~~Is certified by an approved fire protection certification organization~~

(3) ~~Is registered, licensed, or certified by a state or local authority to perform design or installation of sprinkler systems~~

Statement of Problem and Substantiation for Public Comment

The definition of "qualified personnel" is now provided in Chapter 3. There is now two areas in the code that defines qualified personnel and they are not consistent. Just because a person might comply with items 2 or 3, that does not necessarily make them "qualified" for a specific task.

Related Item

• FR-113, FR-1008

Submitter Information Verification

Submitter Full Name: Peter Larrimer
Organization: US Department of Veterans Affa
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 12 10:44:56 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-1080-NFPA 13-2023

Statement: The standard requires knowledgeable and experienced personnel to perform the work found in the standard. It is up to the jurisdiction enforcing codes and standards to determine what constitutes "qualified personnel." It is the responsibility of the contractor to train their personnel for the jobs they will be performing in conformance with the jurisdiction's requirements.

Public Comment No. 208-NFPA 13-2023 [New Section after 4.4.1.7.1]

4.4.1.7.2

The protection criteria for low-piled storage shall be selected from Table 4.4.1.7.2.

Table 4.4.1.7.2 Discharge Criteria for Low-Piled Storage

Commodity	Type of Storage
Class I	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage
Class II	
Class II	
Class III	
Class IV	
Class IV	Palletized, bin box, shelf, and solid-piled
	Single-, double-, or multiple-row rack, and back-to-back shelf storage
	Single-, double-, or multiple-row rack
Group A Plastic (All)	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage

Notes:

1. In-rack sprinklers not required for open-frame racks. Install in-rack sprinklers in accordance with Section 25

2. Install one level of in-rack sprinklers in open-frame racks in accordance with Section 25.2.2. Install in-rack s

Additional Proposed Changes

File Name	Description	Approved
Proposed_Table_4.4.1.7.2.pdf	Proposed Table 4.4.1.7.2	

Statement of Problem and Substantiation for Public Comment

Current table 4.4.1.7.1 tries to do too much attempting to capture all combinations of miscellaneous/low-piled storage, storage heights, building heights, commodities, open-frame/solid shelf, etc. Splitting miscellaneous and low-piled storage into separate tables improves use and understanding and minimizes chances for errors.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 207-NFPA 13-2023 [Section No. 4.4.1.7.1]	

Related Item

• PI 220, FR 1338 • PC 207

Submitter Information Verification

Submitter Full Name: Cary Webber
Organization: Reliable Automatic Sprinkler Company Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 31 09:56:47 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1167-NFPA 13-2023
Statement: Reorganizing and separating out miscellaneous and low-piled storage to make it easier for the end user to follow.

4.4.1.7.2

The protection criteria for low-piled storage protected by ceiling sprinklers only shall be selected from table 4.4.1.7.2, except as noted.

Table 4.4.1.7.2 Discharge Criteria for Low-Piled Storage

Commodity	Type of Storage	Storage Height		Maximum Ceiling Height		Design Curve Figure 19.2.3.1.1	In-Rack Sprinklers	Inside Hose		Total Combined Inside and Outside Hose		Duration (Minutes)
		ft	m	ft	m			gpm	L/min	gpm	L/min	
Class I to Class IV												
Class I	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage	≤12	≤3.7	---	---	OH2	See note 1	0, 50, 100	0, 190, 380	250	950	90
Class II		≤10	≤3.0	---	---	OH2	See note 1	0, 50, 100	0, 190, 380	250	950	90
Class II		>10 to ≤12	>3.0 to ≤3.7	---	---	OH2	See note 1	0, 50, 100	0, 190, 380	250	950	90
Class III		≤12	≤3.7	---	---	OH2	See note 1	0, 50, 100	0, 190, 380	250	950	90
Class IV		≤10	≤3.0	---	---	OH2	See note 1	0, 50, 100	0, 190, 380	250	950	90
Class IV	Palletized, bin box, shelf, and solid-piled	>10 to ≤12	>3.0 to ≤3.7	32	10	OH2	See note 1	0, 50, 100	0, 190, 380	250	950	90
	Single-, double-, or multiple-row rack, and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	32	10	EH1	See note 1	0, 50, 100	0, 190, 380	500	1900	120
	Single-, double-, or multiple-row rack	>10 to ≤12	>3.0 to ≤3.7	32	10	See 25.2.2	See note 2	0, 50, 100	0, 190, 380	250	950	90
Group A Plastic Storage												
Group A Plastic (All)	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage	≤5	≤1.5	---	---	OH2	See note 1	0, 50, 100	0, 190, 380	250	950	90

Notes:

1. In-rack sprinklers not required for open-frame racks. Install in-rack sprinklers in accordance with Section 25.3 in solid shelf racks.
2. Install one level of in-rack sprinklers in open-frame racks in accordance with Section 25.2.2. Install in-rack sprinklers in accordance with Section 25.3 in solid shelf racks.

Public Comment No. 207-NFPA 13-2023 [Section No. 4.4.1.7.1]

4.4.1.7.1

The protection criteria for ~~miscellaneous and low-piled storage~~ miscellaneous storage protected by ceiling sprinklers only shall be selected from Table 4.4.1.7.1.

Table 4.4.1.7.1 Discharge Criteria for Miscellaneous ~~and Low-Piled~~ Storage

Commodity		Type of Storage	Storage Height ft	Storage Height m	Maximum Ceiling Height ft	Maximum Ceiling Height m	Design from 19.2.3.1.1	In-Rack Sprinklers Required	Inside Hose gpm	Inside Hose L/m
Class I to Class IV										
Class I		Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage	≤12	≤3.7	—	—	OH1	No	0, 50, 100	0, 19 38
Class II			≤10	≤3.0	—	—	OH1	No	0, 50, 100	0, 19 38
Class II			>10 to ≤12	>3.0 to ≤3.7	—	—	OH2	No	0, 50, 100	0, 19 38
Class III			≤12	≤3.7	—	—	OH2	No	0, 50, 100	0, 19 38
Class IV			≤10	≤3.0	—	—	OH2	No	0, 50, 100	0, 19 38
Class IV		Palletized, bin box, shelf, and solid-piled	>10 to ≤12	>3.0 to ≤3.7	32	9.8	OH2	No	0, 50, 100	0, 19 38
Class IV		Single-, double-, or multiple-row rack, and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	32	9.8	EH1	No	0, 50, 100	0, 19 38
		Single-, double-, or multiple-row rack	>10 to ≤12	>3.0 to ≤3.7	32	9.8	See ~~Chapter 25~~ 25 .2.1	~~+1 level of in-rack~~ See note 1	0, 50, 100	0, 19 38
Group A Plastic Storage										
Cartoned	Nonexpanded and expanded	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack,	≤5	≤1.5	—	—	OH2	No	0, 50, 100	0, 19 38
			>5 to ≤10	>1.5 to ≤3.0	15	4.6	EH1~~No~~	See Note 2	0, 50, 100	0, 19 38
			>5 to ≤10	>1.5 to ≤3.0	20	6.1	EH2~~No~~	See Note 2	0, 50, 100	0, 19 38

Commodity		Type of Storage	Storage Height ft	Storage Height m	Maximum Ceiling Height ft	Maximum Ceiling Height m	Design from 19.2.3.1.1	In-Rack Sprinklers Required	Inside Hose gpm	Inside Hose L/m
		and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	17	5.2	EH2~~No~~	See Note 2	0, 50, 100	0, 19 38
		Solid-piled, palletized, bin box, shelf, and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	32	9.8	EH2~~No~~	See Note 2	0, 50, 100	0, 19 38
		Single-, double-, or multiple-row rack	>10 to ≤12	>3.0 to ≤3.7	32	9.8	See ~~Chapter 25~~ 25 .	~~+ 1 level of in-rack~~	2.1	Se note
Exposed	Nonexpanded and expanded	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage	≤5	≤1.5	—	—	OH2~~No~~	See Note 2	0, 50, 100	0, 19 38
		Solid-piled, palletized, bin box, shelf, and back-to-back shelf storage	>5 to ≤8	>1.5 to ≤2.4	28	8.5	EH2~~No~~	See Note 2	0, 50, 100	0, 19 38
		Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back	>5 to ≤10	>1.5 to ≤3.0	15	4.6	EH2~~No~~	See Note 2	0, 50, 100	0, 19 38

Commodity		Type of Storage	Storage Height ft	Storage Height m	Maximum Ceiling Height ft	Maximum Ceiling Height m	Design from 19.2.3.1.1	In-Rack Sprinklers Required	Inside Hose gpm	Inside Hose L/m
		shelf storage								
	Nonexpanded	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage	>5 to ≤10	>1.5 to ≤3.0	20	6.1	EH2~~No~~	See Note 2	0, 50, 100	0, 19 38
	Expanded	Single-, double-, or multiple-row rack	>5 to ≤10	>1.5 to ≤3.0	20	6.1	See ~~Chapter 25~~ 25 .	~~+1 level of in-rack~~	2.1	Se note
	Nonexpanded and expanded	Solid-piled, palletized, bin box, shelf, and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	17	5.2	EH2~~No~~	See Note 2	0, 50, 100	0, 19 38
		Single-, double-, or multiple-row rack	>10 to ≤12	>3.0 to ≤3.7	17	5.2	EH2~~No~~	See Note 2	0, 50, 100	0, 19 38
			>10 to ≤12	>3.0 to ≤3.7	32	9.8	See ~~Chapter 25~~ 25 .	~~+1 level of in-rack~~	2.1	Se note
Tire Storage										
Tires		On floor or on side	>5 to ≤12	>1.5 to ≤3.7	32	9.8	EH1~~No~~	NA	0, 50, 100	0, 19 38
		On floor, on tread, or on side	≤5	≤1.5	—	—	OH2~~No~~	NA	0, 50, 100	0, 19 38
		Single-, double-, or multiple-row racks, on tread or on side	≤5	≤1.5	—	—	OH2	No	0, 50, 100	0, 19 38

Commodity	Type of Storage	Storage Height ft	Storage Height m	Maximum Ceiling Height ft	Maximum Ceiling Height m	Design from 19.2.3.1.1	In-Rack Sprinklers Required	Inside Hose gpm	Inside Hose L/m
	Single-row rack, portable, on tread or on side	>5 to ≤12	>1.5 to ≤3.7	32	9.8	EH1	No	0, 50, 100	0, 19 38
	Single-row rack, fixed, on tread or on side	>5 to ≤12	>1.5 to ≤3.7	32	9.8	EH1	No	0, 50, 100	0, 19 38
		>5 to ≤12	>1.5 to ≤3.7	32	9.8	See ~~Chapter 25~~ 25 .	~~+1 level of in-rack~~	2.1	Se note
Rolled Paper Storage									
Heavyweight and mediumweight	On end	≤10	≤3.0	30	9.1	OH2~~No~~	NA	0, 50, 100	0, 19 38
Tissue and lightweight	On end	≤10	≤3.0	30	9.1	EH1~~No~~	NA	0, 50, 100	0, 19 38

Notes:

1. Install one level of in-rack sprinklers in open-frame and solid shelf racks in accordance with Section 25.2.1.

2. In-rack sprinklers not required for open-frame racks. Install in-rack sprinklers in accordance with Section 25.3 in solid shelf racks.

3. Install one level of in-rack sprinklers in open-frame racks in accordance with Section 25.2.1. Install in-rack sprinklers in accordance with Section 25.3 in solid shelf racks.

Additional Proposed Changes

File Name	Description	Approved
Table_4.4.1.7.1.pdf	Table 4.4.1.7.1	

Statement of Problem and Substantiation for Public Comment

Current table 4.4.1.7.1 tries to do too much attempting to capture all combinations of miscellaneous/low-piled storage, storage heights, building heights, commodities, open-frame/solid shelf, etc. Splitting miscellaneous and low-piled storage into separate tables improves use and understanding and minimizes chances for errors.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 208-NFPA 13-2023 [New Section after 4.4.1.7.1]	

Related Item

• PI 220, FR 1338

Submitter Information Verification

Submitter Full Name: Cary Webber

Organization:	Reliable Automatic Sprinkler Company Inc
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed May 31 09:39:14 EDT 2023
Committee:	AUT-SSD

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-1175-NFPA 13-2023
Statement:	Reorganizing and separating out miscellaneous and low-piled storage to make it easier for the end user to follow.

4.4.1.7.1

The protection criteria for miscellaneous storage protected by ceiling sprinklers only shall be selected from table 4.4.1.7.1, except as noted.

Table 4.4.1.7.1 Discharge Criteria for **Miscellaneous Storage**

Commodity		Type of Storage	Storage Height		Maximum Ceiling Height		Design Curve Figure 19.2.3.1.1	In-Rack Sprinklers	Inside Hose		Total Combined Inside and Outside Hose		Duration (minutes)
			ft	m	ft	m			gpm	L/min	gpm	L/min	
Class I to Class IV													
Class I		Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage	≤12	≤3.7	---	---	OH1	No	0, 50, 100	0, 190, 380	250	950	90
Class II			≤10	≤3.0	---	---	OH1	No	0, 50, 100	0, 190, 380	250	950	90
Class II			>10 to ≤12	>3.0 to ≤3.7	---	---	OH2	No	0, 50, 100	0, 190, 380	250	950	90
Class III			≤12	≤3.7	---	---	OH2	No	0, 50, 100	0, 190, 380	250	950	90
Class IV			≤10	≤3.0	---	---	OH2	No	0, 50, 100	0, 190, 380	250	950	90
Class IV		Palletized, bin box, shelf, and solid-piled	>10 to ≤12	>3.0 to ≤3.7	32	10	OH2	No	0, 50, 100	0, 190, 380	250	950	90
		Single-, double-, or multiple-row rack, and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	32	10	EH1	No	0, 50, 100	0, 190, 380	500	1900	120
		Single-, double-, or multiple-row rack	>10 to ≤12	>3.0 to ≤3.7	32	10	See 25.2.1	See note 1	0, 50, 100	0, 190, 380	250	950	90
Group A Plastic Storage													
Cartoned	Nonexpanded and expanded	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage	≤5	≤1.5	---	---	OH2	No	0, 50, 100	0, 190, 380	250	950	90
			>5 to ≤10	>1.5 to ≤3.0	15	4.6	EH1	See note 2	0, 50, 100	0, 190, 380	500	1900	120
			>5 to ≤10	>1.5 to ≤3.0	20	6.1	EH2	See note 2	0, 50, 100	0, 190, 380	500	1900	120
			>10 to ≤12	>3.0 to ≤3.7	17	5.2	EH2	See note 2	0, 50, 100	0, 190, 380	500	1900	120
		Solid-piled, palletized, bin box, shelf, and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	32	10	EH2	See note 2	0, 50, 100	0, 190, 380	500	1900	120
		Single-, double-, or multiple-row rack	>10 to ≤12	>3.0 to ≤3.7	32	10	See 25.2.1	See note 3	0, 50, 100	0, 190, 380	250	950	90
Exposed	Nonexpanded and expanded	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage	≤5	≤1.5	---	---	OH2	See note 2	0, 50, 100	0, 190, 380	250	950	90
		Solid-piled, palletized, bin box, shelf, and back-to-back shelf storage	>5 to ≤8	>1.5 to ≤2.4	28	8.5	EH2	See note 2	0, 50, 100	0, 190, 380	500	1900	120
		Single-, double-, or multiple-row rack	>5 to ≤10	>1.5 to ≤3.0	15	4.6	EH2	See note 2	0, 50, 100	0, 190, 380	500	1900	120
	Nonexpanded	Solid-piled, palletized, bin box, shelf, single-, double-, or multiple-row rack, and back-to-back shelf storage	>5 to ≤10	>1.5 to ≤3.0	20	6.1	EH2	See note 2	0, 50, 100	0, 190, 380	500	1900	120
	Expanded	Single-, double-, or multiple-row rack	>5 to ≤10	>1.5 to ≤3.0	20	6.1	See 25.2.1	See note 3	0, 50, 100	0, 190, 380	250	950	90
	Nonexpanded and expanded	Solid-piled, palletized, bin box, shelf, and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	17	5.2	EH2	See note 2	0, 50, 100	0, 190, 380	500	1900	120
		Single-, double-, or multiple-row rack	>10 to ≤12	>3.0 to ≤3.7	17	5.2	EH2	See note 2	0, 50, 100	0, 190, 380	500	1900	120
			>10 to ≤12	>3.0 to ≤3.7	32	10	See 25.2.1	See note 3	0, 50, 100	0, 190, 380	250	950	90

Notes:

1. Install one level of in-rack sprinklers in open-frame and solid shelf racks in accordance with Section 25.2.1.
2. In-rack sprinklers not required for open-frame racks. Install in-rack sprinklers in accordance with Section 25.3 in solid shelf racks.
3. Install one level of in-rack sprinklers in open-frame racks in accordance with Section 25.2.1. Install in-rack sprinklers in accordance with Section 25.3 in solid shelf racks.

Public Comment No. 175-NFPA 13-2023 [Section No. 4.4.1.7.3]

4.4.1.7.3

For miscellaneous storage ~~having~~ of Class I through IV commodities up to 12 ft (3.7 m) and Group A plastics up to 5 ft (1.5 m) having solid shelf racks, ~~protection of racks in accordance with~~ the requirements of Section 25. ~~4 shall only be required where in-rack sprinklers are required by Table~~ 3 shall not apply. In-rack sprinkler protection to comply with 4.4.1.7. ~~1~~ 2 .-

Statement of Problem and Substantiation for Public Comment

More clearly aligns with previous edition, also corrects incorrect reference to Section 25.4.

Related Item

• PI 220, FR 1338

Submitter Information Verification

Submitter Full Name: Cary Webber
Organization: Reliable Automatic Sprinkler Company Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 30 12:21:51 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution:
Statement: Reorganizing and separating out miscellaneous and low-piled storage to make it easier for the end user to follow.

Public Comment No. 177-NFPA 13-2023 [Section No. 4.4.1.7.5]

4.4.1.7.5

For low-piled storage having solid shelves, in-rack sprinkler protection in accordance with Section 25.4 ~~shall~~ 3 shall be required, with corresponding ceiling protection in accordance with 25.2.2.4. ~~1.~~

Statement of Problem and Substantiation for Public Comment

Corrects incorrect reference to Section 25.4.

Related Item

• PI 220, FR 1338

Submitter Information Verification

Submitter Full Name: Cary Webber
Organization: Reliable Automatic Sprinkler Company Inc
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 30 12:26:34 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1081-NFPA 13-2023
Statement: Reorganizing and separating out miscellaneous and low-piled storage to make it easier for the end user to follow.

Public Comment No. 101-NFPA 13-2023 [Section No. 4.5.1]

4.5.1

The maximum floor area on any one floor to be protected by sprinklers supplied by any one sprinkler system riser or combined system riser shall be as follows:

(1) Light hazard — 52,000 ft^2 (4830 m^2)

(2) Light hazard protected with a wet pipe system and the system water flow and supervisory alarms are transmitted to a supervising station in accordance with NFPA 72 - 78,000 ft^2 (7250 m^2)

(3) Ordinary hazard — 52,000 ft^2 (4830 m^2)

(4) * Extra hazard — Hydraulically calculated — 40,000 ft^2 (3720 m^2)

(5) High-piled Storage — High-piled storage (as defined in 3.3.104) and storage covered by other NFPA standards — 40,000 ft^2 (3720 m^2)

(6) In-rack Storage — 40,000 ft^2 (3720 m^2)

A.4.4.1 (2) Should the system be impaired, it should be noted that the increased area will result in impairment procedures in accordance with NFPA 25 being applied to the larger area which could have operational and economic impact on the building.

Statement of Problem and Substantiation for Public Comment

The Committee Input proposed an option that provides more flexibility with respect to the system protection area limitations. However, CI 1281 provides for no additional protection to increase the system protection area limits and it applies to all types of sprinkler systems. While allowing a reduced number of systems, CI 1281 provides no limit to the size of any one system. Using the example provided in CI 1281, is it assumed that the four systems are almost the same size or are three systems at 52,000 square feet and the fourth system is the only one with an increase.

The proposed language uses the same concept of rounding off but it still contains a maximum system protection area. The 78,000 square feet represents a 50% increase that can be applied to all the systems in the building. However, to utilize the increase the system waterflow alarm and supervisory alarms must be transmitted to an alarm supervising station. The transmission of the alarm and supervisory signals to a supervising station is required for most sprinkler systems by US building codes, NFPA 1, NFPA 101, and NFPA 5000.

Over the years, proposed increases in the system protection area limitations has been restricted to light hazard occupancies. Given the fact that sprinkler system reliability does vary by occupancy classification and system type, the proposed language restricts the increase to wet pipe systems protecting a light hazard occupancy. However, for systems that meet the criteria, the approach proposed in this Public Comment is less restrictive than the Committee Input. Using the same scenario as used in CI 1281, the language proposed in this Public Comment would allow the building to be protected with three systems.

Related Item

• CI 1281

Submitter Information Verification

Submitter Full Name: William Koffel
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City:
State:
Zip:
Submittal Date: Fri May 12 15:45:36 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-1082-NFPA 13-2023

Statement: This revision to wet systems allows for flexibility in light hazard occupancies where the building area is slightly over a system size limitation. The proposed language uses the concept of rounding off for an increase in system size but it still contains a maximum system protection area. The 78,000 square feet represents a 50% increase that can be applied to all the systems in the building. However, to utilize the increase the system waterflow alarm and supervisory alarms must be transmitted to an alarm supervising station. The transmission of the alarm and supervisory signals to a supervising station is required for most sprinkler systems by US building and life safety codes, NFPA 1, NFPA 101, and NFPA 5000.

Public Comment No. 91-NFPA 13-2023 [Section No. 4.5.1]

4.5.1–

~~The maximum floor area~~

Minimum Number of Systems.

4.5.1.1*

The minimum number of systems shall be determined by dividing the total floor area by the nominal floor area determined by 4.4.1.2 using normal rounding conventions.

A.4.5.1.1

As an example, a 230,000 ft^2 light hazard occupancy would require a minimum of 4 systems which could permit the system area to be increased to 57,500 ft^2.

$$Number\ of\ systems = \frac{Total\ Floor\ Area}{Nominal\ Floor\ Area\ per\ System}$$

$$Number\ of\ systems = \frac{230{,}000\ ft^2}{52{,}000\ ft^2}$$

$$Number\ of\ systems = 4.42$$

$$(Rounds\ to\ 4\ systems)$$

4.5.1.2

The nominal floor area on any one floor to be protected by sprinklers supplied by any one sprinkler system riser or combined system riser shall be as follows:

(1) Light hazard — 52,000 ft^2 (4830 m^2)

(2) Ordinary hazard — 52,000 ft^2 (4830 m^2)

(3) * Extra hazard — Hydraulically calculated — 40,000 ft^2 (3720 m^2)

(4) High-piled Storage — High-piled storage (as defined in 3.3.104) and storage covered by other NFPA standards — 40,000 ft^2 (3720 m^2)

(5) In-rack Storage — 40,000 ft^2 (3720 m^2)

4.5.1.3

The maximum floor area on any one floor for any hazard to be protected by sprinklers supplied by any one sprinkler system riser or combined system riser shall not exceed 65,000 ft^2.

Statement of Problem and Substantiation for Public Comment

This proposal seeks to update the existing system size limitations in NFPA 13. The origin of the system area limitations was insurance company requirements associated with pipe schedule design that limited the number of sprinklers controlled by a single valve to 400 sprinklers. Most of the system area limitations were established by multiplying the maximum protection area for upright/pendent sprinklers

by 400.
This proposal adds a section to provide a nominal floor area per system and a requirement to determine the minimum number of systems to avoid strict application of the previous system area limitations. The 65,000 ft2 maximum system size limitation gives the design professional the necessary flexibility to layout systems with regards to steel, walls, and ceiling layouts. This is a reasonable maximum size limitation and most actual system sizes will fall well below this limitation.
Examples:
Floor Size / Nom Sys Size = Actual Number of System and Approx Sizes
60,000 ft2 / 40,000 ft2 = 1.5 or 2 systems at approx. 30,000 ft2
59,000 ft2 / 40,000 ft2 = 1.475 or 1 system at 59,000 ft2
100,000 ft2 / 40,000 ft2 = 2.5 or 3 systems at approx. 33,333 ft2
95,000 ft2 / 40,000 ft2 = 2.375 or 2 systems at approx. 47,500 ft2
65,000 ft2 / 52,000 ft2 = 1.25 or 1 system at 65,000 ft2
70,000 ft2 / 52,000 ft2 = 1.346 or 2 systems at approx. 35,000 ft2 – (65,000 ft2 max size limitation)

Related Item

• CI 1281

Submitter Information Verification

Submitter Full Name: George Stanley
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City:
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Submittal Date: Thu May 11 09:13:36 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-1082-NFPA 13-2023

Statement: This revision to wet systems allows for flexibility in light hazard occupancies where the building area is slightly over a system size limitation. The proposed language uses the concept of rounding off for an increase in system size but it still contains a maximum system protection area. The 78,000 square feet represents a 50% increase that can be applied to all the systems in the building. However, to utilize the increase the system waterflow alarm and supervisory alarms must be transmitted to an alarm supervising station. The transmission of the alarm and supervisory signals to a supervising station is required for most sprinkler systems by US building and life safety codes, NFPA 1, NFPA 101, and NFPA 5000.

Public Comment No. 183-NFPA 13-2023 [New Section after 5.1.4.3]

5.1.4.3* Inhibitors

A.5.1.4.3 VCIs entering a sprinkler system as vapor and used in powder form are not part of the water supply. Requirements for air supply are applicable to VCIs.

Statement of Problem and Substantiation for Public Comment

VCIs are one (1) of five (5) different classifications. VCI is applied through attachment of equipment to the air supply to a dry pipe or preaction sprinkler system.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 181-NFPA 13-2023 [New Section after 3.3.241]	
Public Comment No. 182-NFPA 13-2023 [New Section after A.3.3.241.2]	
Public Comment No. 185-NFPA 13-2023 [New Section after 7.8.3]	

Related Item

• PI-340 • PI-341

Submitter Information Verification

Submitter Full Name: Mark Hopkins
Organization: Terpconsulting
Affiliation: General Air Products
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City:
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Zip:
Submittal Date: Tue May 30 14:48:48 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1101-NFPA 13-2023
Statement: Vapor corrosion inhibitors are applied through equipment attached to the air supply for dry-pipe or preaction systems.

Public Comment No. 147-NFPA 13-2023 [Section No. 19.2.3.2.4]

19.2.3.2.4 Sloped Ceilings.

Where spray sprinklers, including extended-coverage and quick-response sprinklers, are installed under a ceiling/roof deck with a slope that exceeds 2 in 12, one of the following requirements shall be implemented:

~~A~~

(1) A horizontal false ceiling capable of withstanding an uplift force of 3 lb/ft^2 (14.6 kg/m^2) is installed below the sloped ceiling and supplemented with ceiling sprinklers.

~~The~~

(2) The design area for the ceiling sprinkler system is increased by 30 percent for unobstructed construction.

- ~~The design area for the ceiling sprinkler system is increased by 30 percent for obstructed construction where the slope exceeds 4 in 12.~~

(3) For obstructed construction where the ceiling slope does not exceed 4 in 12, the sprinkler system criteria specified in Chapter 19 shall apply when all of the following conditions are met:

(a) Purlins or beams supporting the roof deck run across the roof slope.

(b) Purlins or beams do not exceed 18 in (450 mm) deep.

(c) Purlins or beams do not exceed 5 ft (1.5m) on center.

(d) Bays created by the solid structural members are not more than 40 ft (12m) on center.

(e) Purlin or beam channels are provided with blocking above each solid structural member.

(4) For obstructed construction where the ceiling slope does not exceed 4 in 12, install sprinklers in every channel.

(5) For obstructed construction that does not meet Item (3) or Item (4) the design area for the ceiling sprinkler system is increased by 30 percent.

Additional Proposed Changes

File Name	Description	Approved
19.2.3.2.4.docx	Clean version of the proposed section	

Statement of Problem and Substantiation for Public Comment

Based on the discussion at the First Draft Meeting and a re-evaluation of the information from the FPRF testing program, the Sloped Ceiling Task Group is recommending a different approach to incorporating the results of the testing into NFPA 13. This approach will be incorporated in the following steps:

1. Return the positioning of standard spray sprinklers and extended coverage sprinklers with respect to obstructed construction to the 2022 edition rules
2. Allow the user, when protecting non-storage occupancies with a sloped ceiling, to select one of two options:
a. Locate the sprinkler in accordance with the old rules and take the 30% increase in design area
b. Locate the sprinkler in accordance with new rules in order to avoid the 30% increase. The sprinkler location rules for selecting this option will be in Chapter 19.

This approach has a less dramatic effect on the users of NFPA 13 and is still supported by the data of the test program. Ultimately, this approach is more likely to be more user friendly to the typical design professional and will provide options that were not permitted under the 2022 and previous editions of the standard while retaining the status quo for those familiar with the older rules and still wanting to select sprinkler protection using those parameters.

This material was developed by the Sloped Ceiling Task Group, which was formed by the Technical Committee on Sprinkler Systems Discharge Criteria to incorporate the results of the FPRF Project on Sprinklers Under Sloped Ceilings into NFPA 13. The Task Group consisted of Ken Isman (Chair), Wes Baker, Chase Browning, Mike Joanis, Larry Frank, Joe Noble, Abram Selim Fouad, Kevin Hall, Carry Webber, and Karl Wiegand.

Related Item

• FR 1175

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 26 14:26:04 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1173-NFPA 13-2023
Statement: Based on the discussion at the First Draft Meeting and a re-evaluation of the information from the FPRF testing program, the following changes are recommended:

1. Return the positioning of standard spray and extended coverage sprinklers with respect to obstructed construction to the 2022 edition rules

2. Allow the user to protect a storage occupancy with a sloped ceiling with the sprinkler location information in Chapter 20 rather than Chapter 10.

This approach has a less dramatic effect on the users of NFPA 13 and is still supported by the data of the test program. Ultimately, this approach is more likely to be more user friendly to the typical design professional and will provide options that were not permitted under the 2022 and previous editions of the standard while retaining the status quo for those familiar with the older rules and still wanting to select sprinkler protection using those parameters.

Public Comment No. 57-NFPA 13-2023 [Sections 19.2.3.2.6, 19.2.3.2.7]

Sections 19.2.3.2.6, 19.2.3.2.7

19.2.3.2.6 ~~High-Temperature Sprinklers.~~

~~Where high-temperature sprinklers are used for~~

Extra Hazard Occupancies.

19.2.3.2.6.1

For extra hazard occupancies, the system area of ~~sprinkler~~ operation shall be permitted to be reduced by 25 percent without revising the density, but not to less than 2000 ft^2 (185 m^2) ~~.~~

~~**19.2.3.2.7** –~~

~~Where~~ where one of the following conditions occur:

(1) High-temperature sprinklers are used

(2) K-11.2 (160) or larger sprinklers are used

~~with Extra Hazard Group 1 or Extra Hazard Group 2 design curves and~~

~~(1)~~

19.2.3.

~~1.1, the design area shall be permitted to be reduced by 25 percent but not below 2000 ft^2 (185 m^2), regardless of temperature rating~~

2.6.2

The 25 percent reduction permitted by 19.2.3.2.6.1 shall only be permitted to be applied once .

Statement of Problem and Substantiation for Public Comment

The current structure for the 25% reduction is unclear that the reduction can only be taken once with either high-temperature sprinklers or large orifice sprinklers. This revisions makes the intent of the section clearer and will clarify the application of the requirements for multiple adjustments.

Related Item

• CN-36 • PI-318 • PI-319

Submitter Information Verification

Submitter Full Name: Kevin Hall
Organization: American Fire Sprinkler Association
Affiliation: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Sat Mar 18 21:40:13 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-1084-NFPA 13-2023
Statement:	The current structure for the 25% reduction is unclear that the reduction can only be taken once with either high-temperature sprinklers or large orifice sprinklers. This revision makes the intent of the section clearer and will clarify the application of the requirements for multiple adjustments. Based on the fire testing data available at this time, the ceiling heights have been limited to 30 feet in height for taking the reduction.

Public Comment No. 159-NFPA 13-2023 [New Section after 19.5]

19.6 Car Stackers and Car Lift Systems

19.6. 1 For buildings having car stackers and car lift systems sprinkler protection shall be provided based upon 19.6.2, 19.6.3 or 19.6.4.

19.6.2* Where sidewall or in-rack sprinklers are installed in buildings having car stackers and car lift systems with 2 cars stacked vertically and the sprinklers are placed under each level of cars, the ceiling sprinklers shall be designed based upon the occupancy classification of parking garages.

A.19.6.2 See A.10.3.2 (9)

19.6.3 Where sidewall or in-rack sprinklers are installed in buildings having car stackers and car lift systems with more than 2 cars stacked vertically and the sprinklers are placed under each level of cars, water demand requirements shall be in accordance with Chapter 25 and shall

19.6.4 Where the car stacker or car lift system design and/or operation prohibits sprinkler coverage under the cars, the ceiling system shall be designed to compensate for the shielded floor area

A.19.6.4 *See A.4.4.4.2*

Statement of Problem and Substantiation for Public Comment

This proposed change adds additional clarity on how to address car stackers and adds additional clarity on automatic retrieval systems used in parking garages. Where sprinklers are provided below each level of cars, the cars are treated as an obstruction and the ceiling system would be based upon the overall classification of the parking garage. This comment builds upon Pi-310 which was rejected with the reasoning that "Occupancy classification is the responsibility of the design professional". This comment addresses this concern and gives guidance to the design professional.

Related Item

• PI-310

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 29 17:00:07 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution:	Variations in car stack systems and lack of supporting test data limits the effort to put prescriptive criteria together for this configuration at this time.

Public Comment No. 148-NFPA 13-2023 [Section No. 20.9.1]

20.9.1

~~Ceiling Slope~~

Sloped Ceilings .

~~Except as permitted by 20.9.1.1~~

~~or 20.9.1.2~~

, the sprinkler system criteria specified in Chapters 20 through 26 shall apply to buildings with ceiling slopes not exceeding 2 in 12 (16.

~~7 percent~~

7 percent) .

20.9.1.1

~~Unobstructed and Obstructed Construction with any Sprinkler Type.~~

~~* **Protection Options.** - Where the ceiling slope is greater than 2 in 12 (16.7 percent), storage shall be permitted to be protected by any one of the following methods:~~

~~(1) Protect storage with in-rack sprinklers in accordance with one of the options in~~

~~Section~~

25.7 , provided that no storage is placed above the highest level of in-rack sprinklers.

(2) Install a horizontal false ceiling capable of withstanding an uplift force of 3 lb/

~~ft 2~~

ft² (15 kg/

~~m 2~~

m²) below the sloped ceiling and supplemented with ceiling sprinklers below.

(3) Install sprinklers per guidance in Chapters 20 through 26 , which permits a ceiling that exceeds 2 in 12.

~~**20.9.1.2** Obstructed Construction with ESFR Sprinklers.~~

~~Where the ceiling slope is greater than 2 in 12 (16.7 percent) but~~

(4) For obstructed construction where the ceiling slope does not exceed 4 in 12 and the storage is protected with CMDA sprinkler approach, install sprinklers in every channel.

(5) For unobstructed construction where the ceiling slope does not exceed 4 in 12, increase the design area of the ceiling sprinklers by 50% from the criteria in Chapters 20 through 26 unless that criteria is specifically for sloped ceilings

(6) For obstructed construction where the ceiling slope does not exceed 4 in 12

~~(33.3 percent)~~

, the

~~ESFR~~

sprinkler system criteria specified in Chapters 20 through 26 shall apply when all of the following conditions are

~~satisfied~~

met :

(a) Purlins or beams supporting the roof deck run across the roof slope.

(b) Purlins or beams do not exceed 18 in

~~.~~

(450 mm) deep.

(c) Purlins or beams do not exceed 5 ft (1.

~~5 m~~

5m) on

~~centers~~

center .

~~Purlins or beams are supported by girders~~

(d) Bays created by the solid structural members are not more than 40 ft (

~~12 m~~

12m) on

~~centers~~

center .

(e) Purlin or beam channels are

~~firestopped~~

provided with blocking above each

~~girder.~~

solid structural member.

A.20.9.1.1 The intent is to have a structural member that prevents the passage of heat. The member can have holes for penetrations with reasonable clearance and penetration sealant is not expected.

Additional Proposed Changes

File Name	Description	Approved
20-9-1.docx	This is a clean version of the proposed sections	

Statement of Problem and Substantiation for Public Comment

Based on the discussion at the First Draft Meeting and a re-evaluation of the information from the FPRF testing program, the Sloped Ceiling Task Group is recommending a different approach to incorporating the results of the testing into NFPA 13. This approach will be incorporated in the following steps:

1. Return the positioning of standard spray and extended coverage sprinklers with respect to obstructed construction to the 2022 edition rules
2. Allow the user to protect a storage occupancy with a sloped ceiling with the sprinkler location information in Chapter 20 rather than Chapter 10.

This approach has a less dramatic effect on the users of NFPA 13 and is still supported by the data of the test program. Ultimately, this approach is more likely to be more user friendly to the typical design professional and will provide options that were not permitted under the 2022 and previous editions of the standard while retaining the status quo for those familiar with the older rules and still wanting to

select sprinkler protection using those parameters.

This material was developed by the Sloped Ceiling Task Group, which was formed by the Technical Committee on Sprinkler Systems Discharge Criteria to incorporate the results of the FPRF Project on Sprinklers Under Sloped Ceilings into NFPA 13. The Task Group consisted of Ken Isman (Chair), Wes Baker, Chase Browning, Mike Joanis, Larry Frank, Joe Noble, Abram Selim Fouad, Kevin Hall, Carry Webber, and Karl Wiegand.

Related Item

• FR 1208

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 26 14:33:12 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-1161-NFPA 13-2023

Statement: Based on the discussion at the First Draft Meeting and a re-evaluation of the information from the FPRF testing program, the following changes are recommended:

1. Return the positioning of standard spray and extended coverage sprinklers with respect to obstructed construction to the 2022 edition rules

2. Allow the user to protect a storage occupancy with a sloped ceiling with the sprinkler location information in Chapter 20 rather than Chapter 10.

This approach has a less dramatic effect on the users of NFPA 13 and is still supported by the data of the test program. Ultimately, this approach is more likely to be more user friendly to the typical design professional and will provide options that were not permitted under the 2022 and previous editions of the standard while retaining the status quo for those familiar with the older rules and still wanting to select sprinkler protection using those parameters.

The term "firestopped" was changed to "blocking" to maintain consistency within the document.

20.9.1 Sloped Ceilings. Except as permitted by 20.9.1.1, the sprinkler system criteria specified in Chapters 20 through 26 shall apply to buildings with ceiling slopes not exceeding 2 in 12 (16.7 percent).

20.9.1.1 * Protection Options. Where the ceiling slope is greater than 2 in 12 (16.7 percent), storage shall be permitted to be protected by any one of the following methods:

(1) Protect storage with in-rack sprinklers in accordance with one of the options in 25.7, provided that no storage is placed above the highest level of in-rack sprinklers.

(2) Install a horizontal false ceiling capable of withstanding an uplift force of 3 lb/ft² (15 kg/m²) below the sloped ceiling and supplemented with ceiling sprinklers below.

(3) Install sprinklers per guidance in Chapters 20 through 26, which permits a ceiling that exceeds 2 in 12.

(4) For obstructed construction where the ceiling slope does not exceed 4 in 12 and the storage is protected with CMDA sprinkler approach, install sprinklers in every channel.

(5) For unobstructed construction where the ceiling slope does not exceed 4 in 12, increase the design area of the ceiling sprinklers by 50% from the criteria in Chapters 20 through 26 unless that criteria is specifically for sloped ceilings

(6) For obstructed construction where the ceiling slope does not exceed 4 in 12, the sprinkler system criteria specified in Chapters 20 through 26 shall apply when all of the following conditions are met:

(a) Purlins or beams supporting the roof deck run across the roof slope.

(b) Purlins or beams do not exceed 18 in (450 mm) deep.

(c) Purlins or beams do not exceed 5 ft (1.5m) on center.

(d) Bays created by the solid structural members are not more than 40 ft (12m) on center.

(e) Purlin or beam channels are provided with blocking above each solid structural member.

Delete 20.9.1.2

A.20.9.1.1 The intent is to have a structural member that prevents the passage of heat. The member can have holes for penetrations with reasonable clearance and penetration sealant is not expected.

Public Comment No. 74-NFPA 13-2023 [Section No. 23.2.2]

23.2.2

~~All design areas shall~~
The determination of the design area shall be based on one of the following:

(1) *The design area shall consist of the most hydraulically demanding 12 sprinklers, with four sprinklers on each of three branch lines*

~~, unless otherwise specified.~~

(1) .

(2) *Where portions of this standard require a design greater than 12 sprinklers, the design area shall consist of four sprinklers on each of the branch lines.*

(3) *Where specifically listed, the number of sprinklers forming the basis of design shall be permitted to be in accordance with the listing.*

Statement of Problem and Substantiation for Public Comment

A.7.1.1 lists two test standards that are appropriate for ESFR sprinklers, UL 199 & FM 2008. FM 8-9 permits design basis less than 12 sprinklers in some cases. This change allows the use of ESFR sprinklers in accordance with their listing. The 12 sprinkler design basis in NFPA 13 was originally introduced by FM for 14 K-factor ESFR's. The performance of larger K-factor ESFR's is significantly improved over those initial ESFR's.

Related Item

• PI 297

Submitter Information Verification

Submitter Full Name: Mark Fessenden
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 11 09:32:37 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: The existing language does not exclude new sprinklers from being used with less than 12 sprinklers in the design area as long as they comply with all of the conditions, requirements, and limitations of their listing in accordance with 7.1.1.1. New technology for storage applications needs to be tested in accordance with the test requirements of chapter 24.

Public Comment No. 217-NFPA 13-2023 [Section No. 23.3.1]

23.3.1

Protection of palletized, solid-piled, or rack storage of Class I through Class IV and Group A commodities shall be in accordance with Table 23.3.1.

Table 23.3.1 ESFR Sprinkler Ceiling-Only Options for Solid Pile; Palletized; and Single-, Double-, and Multiple-Row Rack Storage

Commodity[a]	Maximum Ceiling/Roof Height		Maximum Storage Height		ESFR Sprinklers — Pendent Orientation Minimum Operating Pressure psi (bar)				ESFR Sprinklers — Upright Orientation Minimum Operating Pressure psi (bar)	
					Nominal K-Factors				Nominal K-Factors	
	ft	m	ft	m	14 (200)	16.8 (240)	22.4 (320)	25.2 (360)	14 (200)	16.8 (240)
Class I through Class IV and cartoned nonexpanded Group A plastics	25	7.6	20	6.1	50 (3.4)[b]	35 (2.4)[b]	25 (1.7)[b]	15 (1.0)[b]	50 (3.4)[b]	35 (2.4)[b]
	30	9.1	25	7.6	50 (3.4)	35 (2.4)	25 (1.7)	15 (1.0)	50 (3.4)	35 (2.4)
	35	10.7	30	9.1	75 (5.2)[b]	52 (3.6)[b]	35 (2.4)	20 (1.4)	75 (5.2)	52 (3.6)
	40	12.2	35	10.7	—	52 (3.6)	40 (2.8)[b]	25 (1.7)	—	—
	45	13.7	40	12.2	—	—	40 (2.8)	40 (2.8)	—	—
Cartoned expanded Group A plastics	25	7.6	20	6.1	50 (3.4)[b]	35 (2.4)[b]	35 (2.4)[b]	35 (2.4)[b]	50 (3.4)[b]	35 (2.4)[b]
	30	9.1	25	7.6	50 (3.4)[b]	35 (2.4)[b]	35 (2.4)	35 (2.4)	50 (3.4)	35 (2.4)
	35	10.7	30	9.1	—	—	75 (5.2)[b]	60 (4.1)[b]	—	—
	40	12.2	35	10.7	—	—	75 (5.2)[b]	60 (4.1)[b]	—	—
	45	13.7	40	12.2	—	—	—	—	—	—
Exposed nonexpanded, Group A plastics	25	7.6	20	6.1	50 (3.4)[b]	35 (2.4)[b]	35 (2.4)[b]	35 (2.4)[b]	—	—
	30	9.1	25	7.6	50 (3.4)	35 (2.4)	35 (2.4)	35 (2.4)	—	—
	35	10.7	30	9.1	—	—	75 (5.2)	60 (4.1)[b]	—	—
	40	12.2	35	10.7	—	—	75 (5.2)	60 (4.1)	—	—
	45	13.7	40	12.2	In-rack sprinklers required. See Chapter 25.	In-rack sprinklers required. See Chapter 25.	—	—	—	—

Commodity[a]	Maximum Ceiling/Roof Height		Maximum Storage Height		ESFR Sprinklers — Pendent Orientation Minimum Operating Pressure psi (bar) Nominal K-Factors				ESFR Sprinklers — Upright Orientation Minimum Operating Pressure psi (bar) Nominal K-Factors	
	ft	m	ft	m	14 (200)	16.8 (240)	22.4 (320)	25.2 (360)	14 (200)	16.8 (240)
Exposed expanded Group A plastics	25	7.6	20	6.1	—	—	—	30 (2.0)[c] or 60 (4.1)[d]	—	—
	30	9.1	25	7.6	—	—	—	30 (2.0)[c] or 60 (4.1)[d]	—	—
	—	—	—	—	—	—	—	—	—	—
	35	10.7	30	9.1	—	—	—	60 (4.1)[c,d]	—	—
	40	12.2	35	10.7	—	—	—	60 (4.1)[c,d]	—	—
	45	13.7	40	12.2	—	—	—	—	—	—

[a]See 20.3.2 for information regarding protection of lower hazard commodities with higher hazard criteria.

[b]These options are based on the testing criteria of the higher hazard and have not been specifically tested.

[c]These options apply when all requirements in Section 23.4 are applied including vertical barriers.

[d]This option applies to palletized and solid pile storage in a closed array.

Revise Table to include criteria over 45 building heights.

Additional Proposed Changes

File Name	Description	Approved
Table_23.3.1.pdf		

Statement of Problem and Substantiation for Public Comment

FM 8-9 (Interim Revision January 2022) Table 17b includes updated criteria for 33.6, 28.0, 25.2, and 22.4 k-factor sprinklers which includes extended ceiling heights.

Related Item

• PI 492

Submitter Information Verification

Submitter Full Name: Mark Fessenden
Organization: Johnson Controls
Street Address:
City:
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Zip:
Submittal Date: Wed May 31 15:18:58 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: No new information has been provided since the first draft. The proposed language is in conflict with the test requirements of chapter 24 when presenting new technology.

Table 23.3.1 ESFR Sprinkler Ceiling-Only Options for Solid Pile; Palletized; and Single-, Double-, and Multiple-Row Rack Storage

Commodity[a]	Maximum Ceiling/Roof Height		Maximum Storage Height		ESFR Sprinklers — Pendent Orientation Minimum Operating Pressure psi (bar) Nominal K-Factors						ESFR Sprinklers — Upright Orientation Minimum Operating Pressure psi (bar) Nominal K-Factors	
	ft	m	ft	m	14 (200)	16.8 (240)	22.4 (320)	25.2 (360)	28.0 (400)	33.6 (480)	14 (200)	16.8 (240)
Class I through Class IV and cartoned nonexpanded Group A plastics	25	7.6	20	6.1	50 (3.4)[b]	35 (2.4)[b]	25 (1.7)[b]	15 (1.0)[b]	---	---	50 (3.4)[b]	35 (2.4)[b]
	30	9.1	25	7.6	50 (3.4)	35 (2.4)	25 (1.7)	15 (1.0)	---	---	50 (3.4)	35 (2.4)
	35	10.7	30	9.1	75 (5.2)[b]	52 (3.6)[b]	35 (2.4)	20 (1.4)	---	---	75 (5.2)	52 (3.6)
	40	12.2	35	10.7	—	52 (3.6)	40 (2.8)[b]	25 (1.7)	---	---	—	—
	45	13.7	40	12.2	—	—	40 (2.8)	40 (2.8)	---	---	—	—
	50	15.2	45	13.7	---	---	63[e,f,g] (4.3)	50[e,f,g] (3.5)	40[e,f,g] (2.8)	55[e,f,g] (3.8)	—	—
	55	16.8	50	15.2	---	---	---	---	80[e,f,g] (5.5)	55[e,f,g] (3.8)	—	—
Cartoned expanded Group A plastics	25	7.6	20	6.1	50 (3.4)[b]	35 (2.4)[b]	35 (2.4)[b]	35 (2.4)[b]			50 (3.4)[b]	35 (2.4)[b]
	30	9.1	25	7.6	50 (3.4)[b]	35 (2.4)[b]	35 (2.4)	35 (2.4)			50 (3.4)	35 (2.4)
	35	10.7	30	9.1	—	—	75 (5.2)[b]	60 (4.1)[b]	—	—	—	—
	40	12.2	35	10.7	—	—	75 (5.2)[b]	60 (4.1)[b]	—	—	—	—
	45	13.7	40	12.2	—	—	—	—	—	—	—	—
Exposed nonexpanded, Group A plastics	25	7.6	20	6.1	50 (3.4)[b]	35 (2.4)[b]	35 (2.4)[b]	35 (2.4)[b]	—	—	—	—
	30	9.1	25	7.6	50 (3.4)	35 (2.4)	35 (2.4)	35 (2.4)	—	—	—	—
	35	10.7	30	9.1	—	—	75 (5.2)	60 (4.1)[b]	—	—	—	—
	40	12.2	35	10.7	—	—	75 (5.2)	60 (4.1)	—	—	—	—
	45	13.7	40	12.2	In-rack sprinklers required. See Chapter 25.	In-rack sprinklers required. See Chapter 25.	—	—	—	—	—	—
Exposed expanded Group A plastics	25	7.6	20	6.1	—	—	—	30 (2.0)[c] or 60 (4.1)[d]	—	—	—	—
	30	9.1	25	7.6	—	—	—	30 (2.0)[b,c] or 60 (4.1)[d]	—	—	—	—
	~~32~~	~~9.8~~			—	—	—	—	—	—	—	—
	35	10.7	30	9.1	—	—	—	60 (4.1)[c,d]	—	—	—	—
	40	12.2	35	10.7	—	—	—	60 (4.1)[b,c,d]	—	—	—	—
	45	13.7	40	12.2	—	—	—	—	—	—	—	—

[a] See 20.3.2 for information regarding protection of lower hazard commodities with higher hazard criteria.

[b] These options are based on the testing criteria of the higher hazard and have not been specifically tested.

[b,c] These options apply when all requirements in Section ~~27.4~~ 23.4 are applied including vertical barriers.

[c,d] This option applies to palletized and solid pile storage in a closed array.

e The maximum vertical distance from ceiling to sprinkler thermal element shall not exceed 13 in. (325 mm) unless specifically listed.

f The minimum aisle width shall not be less than 8 ft (2.4 m) unless specifically listed.

g The number of sprinklers forming the basis of design shall be permitted to be in accordance with the listing. Where listing limitations or installation instructions differ from the requirements of this standard the listing limitations and installation instructions shall apply.

Public Comment No. 117-NFPA 13-2023 [Sections 24.2, 24.3]

Sections 24.2, 24.3

24.2* Sprinkler Design Criteria for Palletized and Solid-Piled, Storage of Class I Through Class IV and Plastic Commodities.

24.2.1

Protection of palletized and solid-piled storage of Class I through Class IV and cartoned nonexpanded plastic commodities shall be permitted to be protected in accordance with Table 24.2.1.

Table 24.2.1 Extended Coverage, CMSA [K-factor 25.2 (360)] Sprinkler Design Criteria for Palletized and Solid-Piled Storage of Class I Through Class IV and Cartoned Nonexpanded Plastic Commodities

~~. (2 8 bar)12 ft × 12 ft. 3.7 m × 3.7 m)~~

~~144 ft . (13 m 2)~~

Storage Arrangement	Commodity Class	Maximum Storage Height*		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers
		ft	m	ft	m			
Palletized and solid-piled	Class I through Class IV, encapsulated and nonencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6
		25	7.6	35	10.7	25.2 (360) Upright/ pendent	Wet	8

Storage Arrangement	Commodity Class	Maximum Storage Height*		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers
		ft	m	ft	m			
		25	7.6	35	10.7	25.2 (360) Upright/pendent	Wet	8
		30	9.1	35	10.7	25.2 (360) Upright/pendent	Wet	8
(2 30	9 .1	35	10.7	25.2 (360) Upright	Wet	8 40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18 m^2)	

*A The following minimum clearance of 5 ft (1.5 m) shall be provided from the sprinkler deflector to the top of storage: 3 ft (900 mm) for Pendent sprinklers and 5 ft (1 .5 m) for Upright sprinklers.

24.3* Sprinkler Protection Criteria for Open-Frame Rack Storage of Class I Through Class IV and Plastic Commodities.

24.3.1

Protection of single-, double-, and multiple-row racks without solid shelves of Class I through Class IV and cartoned nonexpanded plastic commodities shall be permitted to be protected in accordance with Table 24.3.1.

Table 24.3.1 Extended Coverage, CMSA [K-Factor 25.2 (360)] Sprinkler Design Criteria for Single-, Double-, and Multiple-Row Racks Without Solid Shelves of Class I Through Class IV and Cartoned Nonexpanded Plastic Commodities

~~pendent . (2 8 bar)12 ft × 12 ft. 3.7 m × 3.7 m)~~

~~144 ft - (13 m 2)~~

Storage Arrangement	Commodity Class	Maximum Storage Height*		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Numb of Desi Sprinkl
		ft	m	ft	m			
Single-, double-, and multiple-row racks without solid shelves (no open-top containers)	Class I through Class IV, encapsulated and nonencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6
		25	7.6	35	10.7	25.2 (360) Upright/ pendent	Wet	8

Storage Arrangement	Commodity Class	Maximum Storage Height*		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Numb of Desi Sprinkl
		ft	m	ft	m			
		25	7.6	35	10.7	25.2 (360) Upright/pendent	Wet	8
		30 Pendent	9.1 Wet	35 8	10.7 40 psi	25.2 (360) Upright/		
(2 30	9 .1	35	10.7	25.2 (360) Upright	Wet	8 40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18 m^2)	

*A *The following minimum clearance of 5 ft (1.5 m) shall be provided from the sprinkler deflector to the top of storage: 3 ft (900 mm) for Pendent sprinklers and 5 ft (1 .5 m) for Upright sprinklers.

24.3.2

Protection of Class I through Class IV and cartoned nonexpanded plastic commodities stored on single-, double-, or multiple-row racks without solid shelves or solid-piled, palletized, storage arrangements shall be permitted to be protected in accordance with Table 24.3.2.

Table 24.3.2 CMSA K-25.2 (K-360) Standard Coverage Sprinkler Design Criteria for Single-, Double-, and Multiple-Row Racks Without Solid Shelves and Solid-Piled, Palletized Storage Arrangement of Class I Through IV and Cartoned Nonexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/Orientation	System Type	Num of De Sprin
		ft	m	ft	m			
Solid-piled, palletized, and single-, double-, and multiple-row racks without solid shelves (no open-top containers)	Class I–IV encapsulated and nonencapsulated, and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Upright	Wet	1
						25.2 (360) Pendent		

24.3.3

Protection of open rack storage of Class I through Class III commodities with dry pipe systems using standard response upright sprinkler design criteria and high-temperature-rated sprinklers shall be in accordance with Table 24.3.3.

Table 24.3.3 Standard Response Upright Sprinkler Design Criteria for Open Rack Storage of Class I Through Class III Commodities (Using High-Temperature-Rated Sprinklers)

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
Rack storage without solid shelves (no open-top containers)	Class I, Class II, or Class III	35	10.7	40	12.2	25.2 (360)	Dry	24	15*	1.0*
		40	12.2	45	13.7	25.2 (360)	Dry	12	50†	3.4†
		45	13.7	50	15.2	33.6 (480)	Dry	15	50†	3.4†
		50	15.2	55	16.7	33.6 (480)	Dry	16	50†	3.4†

*25-second water delivery time maximum.

†20-second water delivery time maximum. For the 12-sprinkler design incorporate a 500 gpm (1900 L/min) hose stream allowance and a 90-minute duration.

24.3.3.1

For protection criteria using a minimum operating pressure of 15 psi (1 bar), a maximum water delivery time of 25 seconds shall be used.

24.3.3.2

For protection criteria using a minimum operating pressure of 50 psi (3.4 bar), a maximum water delivery time of 20 seconds shall be used.

Statement of Problem and Substantiation for Public Comment

FR1220 and FR1222 changed requirements in Sections 24.2 and 24.3 that have been part of NFPA 13 for more than 10 years. Such changes were made without supporting test data. This Public Comment is intended to be supported by new and additional test data.

Related Item

• FR1220 • FR1222

Submitter Information Verification

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Submittal Date: Thu May 18 15:36:43 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected
Resolution: After reviewing fire test data, a discrepancy was discovered which verified first draft action.

Public Comment No. 104-NFPA 13-2023 [Section No. 25.2.1.4.1]

25.2.1.4.1

Where in-rack sprinklers are installed in accordance with this chapter to protect miscellaneous rack storage of Class I through Class IV commodities, Group A plastic commodities, and rubber tires up to and including 12 ft (3.7 m) in height under a maximum 32 ft (9.8 m) high ceiling, the ceiling-level sprinkler design criteria shall be a 0.20 gpm/ft^2 (~~0.~~ 8.2 mm/min) density over a 1500 ft^2 (140 m^2) area of ceiling-level sprinkler operation.

Statement of Problem and Substantiation for Public Comment

No need for additional zero and comma . it should be 8.2 only

Related Item

• FR

Submitter Information Verification

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Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1086-NFPA 13-2023
Statement: The additional zero and comma is an error. It should be 8.2 only

Public Comment No. 103-NFPA 13-2023 [Section No. 25.2.2.4.1]

25.2.2.4.1

Where in-rack sprinklers are installed in accordance with this section to protect low-piled rack storage of Class I through Class IV and Group A plastic commodities, that does not meet the definition of miscellaneous storage, the ceiling-level design shall be a 0.20 gpm/ft^2 (~~0.~~ 8.2 mm/min) density over a 1500 ft^2 (140 m^2) area of ceiling-level sprinkler operation.

Statement of Problem and Substantiation for Public Comment

No need for additional zero and comma . it should be 8.2 only

Related Item

• FR

Submitter Information Verification

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Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1087-NFPA 13-2023
Statement: No need for additional zero and comma . it should be 8.2 only

Public Comment No. 102-NFPA 13-2023 [Section No. 25.4.2.1.2.1(A)]

(A)

For single-, double-, and multiple-row rack storage of exposed nonencapsulated Class I through Class IV commodities stored over 12 ft (3.7 m) and up to and including 25 ft (7.6 m) in height, the ceiling-level sprinkler design in terms of density [gpm/ft^2 (mm/min)] over a 2000 ft^2 (186 m^2) area of ceiling-level sprinkler operation, with the provision of in-rack sprinklers, shall be in accordance with the following:

(1) For exposed nonencapsulated Class I commodities, see Table 25.4.2.1.2.1(A)(a)

(2) For exposed nonencapsulated Class II commodities, see Table 25.4.2.1.2.1(A)(b)

(3) For exposed nonencapsulated Class III commodities, see Table 25.4.2.1.2.1(A)(c)

(4) For exposed nonencapsulated Class IV commodities, see Table 25.4.2.1.2.1(A)(d)

Table 25.4.2.1.2.1(A)(a) CMDA Ceiling-Level Sprinkler Design Requirements for Exposed Nonencapsulated Class I Commodities Stored Over 12 ft (3.7 m) and Up to 25 ft (7.6 m) in Height Supplemented with In-Rack Sprinklers

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
15 (4.6)	35 (10.7)	Single- and double-row racks	8 (2.4)	1	0.15 (6.1)	0.15 (6.1)
				More than 1 but not every tier level	0.15 (6.1)	0.15 (6.1)
				Every tier level	0.15 (6.1)	0.15 (6.1)
			4 (1.2)	1	0.15 (6.1)	0.15 (6.2 1)
				More than 1 but not every tier level	0.15 (6.1)	0.15 (6.1)
				Every tier level	0.15 (6.1)	0.15 (6.1)
		Multiple-row racks	Any	1	0.15 (6.1)	0.15 (6.2 1)
				More than 1 but not every tier level	0.15 (6.1)	0.15 (6.1)
				Every tier level	0.15 (6.1)	0.15 (6.1)
18 (5.5)	38 (11.6)	Single- and double-row racks	8 (2.4)	1	0.16 (6.5)	0.18 (7.4)
				More than 1 but not every tier level	0.15 (6.1)	0.15 (6.1)

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
				Every tier level	0.15 (6.1)	0.15 (6.1)
			4 (1.2)	1	0.20 (8.2)	0.22 (8.8)
				More than 1 but not every tier level	0.16 (6.5)	0.17 (7.0)
				Every tier level	0.15 (6.1)	0.15 (6.1)
		Multiple-row racks	Any	1	0.20 (8.2)	0.22 (8.8)
				More than 1 but not every tier level	0.16 (6.5)	0.18 (7.3)
				Every tier level	0.15 (6.1)	0.15 (6.1)
25 (7.6)	45 (13.7)	Single- and double-row racks	8 (2.4)	1	0.19 (7.7)	0.22 (8.8)
				More than 1 but not every tier level	0.15 (6.1)	0.17 (7.0)
				Every tier level	0.15 (6.1)	0.15 (6.1)
			4 (1.2)	1	0.23 (9.4)	0.26 (10.6)
				More than 1 but not every tier level	0.18 (7.3)	0.20 (8.2)
				Every tier level	0.15 (6.1)	0.15 (6.1)
		Multiple-row racks	Any	1	0.23 (9.4)	0.26 (10.6)
				More than 1 but not every tier level	0.18 (7.3)	0.20 (8.2)
				Every tier level	0.15 (6.1)	0.15 (6.1)

Table 25.4.2.1.2.1(A)(b) CMDA Ceiling-Level Sprinkler Design Requirements for Exposed Nonencapsulated Class II Commodities Stored Over 12 ft (3.7 m) and Up to 25 ft (7.6 m) in Height Supplemented with In-Rack Sprinklers

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
15 (4.6)	35 (10.7)	Single- and double-row racks	8 (2.4)	1	0.15 (6.1)	0.15 (6.1)
				More than 1 but not every tier level	0.15 (6.1)	0.15 (6.1)
				Every tier level	0.15 (6.1)	0.15 (6.1)
			4 (1.2)	1	0.15 (6.1)	0.18 (7.3)
				More than 1 but not every tier level	0.15 (6.1)	0.15 (6.1)
				Every tier level	0.15 (6.1)	0.15 (6.1)
		Multiple-row racks	Any	1	0.15 (6.1)	0.18 (7.3)
				More than 1 but not every tier level	0.15 (6.1)	0.15 (6.1)
				Every tier level	0.15 (6.1)	0.15 (6.1)
18 (5.5)	38 (11.6)	Single- and double-row racks	8 (2.4)	1	0.18 (7.3)	0.20 (8.2)
				More than 1 but not every tier level	0.15 (6.1)	0.16 (6.5)
				Every tier level	0.15 (6.1)	0.15 (6.1)
			4 (1.2)	1	0.21 (8.6)	0.26 (10.6)
				More than 1 but not every tier level	0.17 (7.0)	0.20 (8.2)
				Every tier level	0.15 (6.1)	0.15 (6.1)
		Multiple-row racks	Any	1	0.21 (8.6)	0.26 (10.6)
				More than 1 but not every tier level	0.17 (7.0)	0.20 (8.2)

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
				Every tier level	0.15 (6.1)	0.15 (6.1)
25 (7.6)	45 (13.7)	Single- and double-row racks	8 (2.4)	1	0.21 (8.6)	0.24 (9.8)
				More than 1 but not every tier level	0.17 (7.0)	0.19 (7.7)
				Every tier level	0.15 (6.1)	0.15 (6.1)
			4 (1.2)	1	0.25 (10.2)	0.30 (12.2)
				More than 1 but not every tier level	0.20 (8.2)	0.24 (9.8)
				Every tier level	0.15 (6.1)	0.18 (7.3)
		Multiple-row racks	Any	1	0.25 (10.2)	0.30 (12.2)
				More than 1 but not every tier level	0.20 (8.2)	0.24 (9.8)
				Every tier level	0.15 (6.1)	0.18 (7.3)

Table 25.4.2.1.2.1(A)(c) CMDA Ceiling-Level Sprinkler Design Requirements for Exposed Nonencapsulated Class III Commodities Stored Over 12 ft (3.7 m) and Up to 25 ft (7.6 m) in Height Supplemented with In-Rack Sprinklers

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
15 (4.6)	35 (10.7)	Single- and	8 (2.4)	1	0.15 (6.1)	0.17 (7.0)

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
		double-row racks		More than 1 but not every tier level	0.15 (6.1)	0.15 (6.1)
				Every tier level	0.15 (6.1)	0.15 (6.1)
			4 (1.2)	1	0.17 (7.0)	0.20 (8.2)
				More than 1 but not every tier level	0.15 (6.1)	0.16 (6.5)
				Every tier level	0.15 (6.1)	0.15 (6.1)
		Multiple-row racks	Any	1	0.17 (7.0)	0.20 (8.2)
				More than 1 but not every tier level	0.15 (6.1)	0.16 (6.5)
				Every tier level	0.15 (6.1)	0.15 (6.1)
18 (5.5)	38 (11.6)	Single- and double-row racks	8 (2.4)	1	0.21 (8.6)	0.23 (9.3)
				More than 1 but not every tier level	0.17 (7.0)	0.19 (7.7)
				Every tier level	0.15 (6.1)	0.15 (6.1)
			4 (1.2)	1	0.24 (9.8)	0.28 (11.4)
				More than 1 but not every tier level	0.19 (7.7)	0.22 (9.0)
				Every tier level	0.15 (6.1)	0.17 (7.0)
		Multiple-row racks	Any	1	0.24 (9.8)	0.28 (11.4)
				More than 1 but not every tier level	0.19 (7.7)	0.22 (9.0)

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
				Every tier level	0.15 (6.1)	0.17 (7.0)
25 (7.6)	45 (13.7)	Single- and double-row racks	8 (2.4)	1	0.25 (10.2)	0.28 (11.4)
				More than 1 but not every tier level	0.20 (8.2)	0.22 (9.0)
				Every tier level	0.15 (6.1)	0.17 (7.0)
			4 (1.2)	1	0.29 (11.8)	0.33 (13.4)
				More than 1 but not every tier level	0.23 (9.3)	0.26 (10.6)
				Every tier level	0.17 (7.0)	0.20 (8.2)
		Multiple-row racks	Any	1	0.29 (11.8)	0.33 (13.4)
				More than 1 but not every tier level	0.23 (9.3)	0.26 (10.6)
				Every tier level	0.17 (7.0)	0.20 (8.2)

Table 25.4.2.1.2.1(A)(d) CMDA Ceiling-Level Sprinkler Design Requirements for Exposed Nonencapsulated Class IV Commodities Stored Over 12 ft (3.7 m) and Up to 25 ft (7.6 m) in Height Supplemented with In-Rack Sprinklers

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
15 (4.6)	35 (10.7)	Single- and	8 (2.4)	1	0.19 (7.7)	0.22 (9.0)

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
		double-row racks		More than 1 but not every tier level	0.15 (6.1)	0.18 (7.3)
				Every tier level	0.15 (6.1)	0.15 (6.1)
			4 (1.2)	1	0.23 (9.3)	0.27 (11.0)
				More than 1 but not every tier level	0.18 (7.3)	0.21 (8.6)
				Every tier level	0.15 (6.1)	0.16 (6.5)
		Multiple-row racks	Any	1	0.23 (9.3)	0.27 (11.0)
				More than 1 but not every tier level	0.18 (7.3)	0.21 (8.6)
				Every tier level	0.15 (6.1)	0.16 (6.5)
18 (5.5)	38 (11.6)	Single- and double-row racks	8 (2.4)	1	0.27 (11.0)	0.31 (12.6)
				More than 1 but not every tier level	0.22 (9.0)	0.25 (10.2)
				Every tier level	0.16 (6.5)	0.19 (7.7)
			4 (1.2)	1	0.33 (13.4)	0.38 (15.5)
				More than 1 but not every tier level	0.26 (10.6)	0.30 (12.2)
				Every tier level	0.20 (8.2)	0.23 (9.3)
		Multiple-row racks	Any	1	0.33 (13.4)	0.38 (15.5)
				More than 1 but not every tier level	0.26 (10.6)	0.30 (12.2)

Maximum Storage Height ft (m)	Maximum Ceiling Height ft (m)	Storage Arrangement	Aisle Width ft (m)	No. of In-Rack Sprinkler Levels Installed	Ceiling Sprinkler System Design [gpm/ft^2/2000 ft^2 (mm/min/186 m^2)]	
					High-Temperature-Rated Sprinklers	Ordinary- or Intermediate-Temperature-Rated Sprinklers
				Every tier level	0.20 (8.2)	0.23 (9.3)
25 (7.6)	45 (13.7)	Single- and double-row racks	8 (2.4)	1	0.32 (13.0)	0.37 (15.1)
				More than 1 but not every tier level	0.26 (10.6)	0.30 (12.2)
				Every tier level	0.19 (7.7)	0.22 (8.9)
			4 (1.2)	1	0.39 (15.9)	0.45 (18.3)
				More than 1 but not every tier level	0.31 (12.6)	0.36 (14.7)
				Every tier level	0.23 (9.3)	0.27 (10.9)
		Multiple-row racks	Any	2	0.39 (15.9)	0.45 (18.3)
				More than 2 but not every tier level	0.31 (12.6)	0.36 (14.7)
				Every tier level	0.23 (9.3)	0.27 (10.9)

Statement of Problem and Substantiation for Public Comment

Only metric conversion is not consistent with above number in the same table

Related Item

• FR

Submitter Information Verification

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Submittal Date: Mon May 15 02:01:52 EDT 2023

Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1088-NFPA 13-2023
Statement: Metric updates.

Public Comment No. 211-NFPA 13-2023 [Section No. 25.5.1]

25.5.1 Protection of Racks with Solid Shelves.

25.5.1.1 ~~– General.~~

~~**25.5.1.1.1** –~~

~~The requirements of this chapter for the installation of in-rack sprinklers within open rack configurations shall apply to racks with solid shelves except as modified in this section.~~

~~**25.5.1.1.2** –~~

~~CMSA ceiling-level sprinkler design criteria shall be an applicable option for open racks combined with in-rack sprinklers installed in accordance with the criteria for solid shelving.~~

~~**25.5.1.2** – Horizontal Location and Spacing of In-Rack Sprinklers in Racks with Solid Shelves.~~

~~**25.5.1.2.1** –~~

~~Where racks with solid shelves contain storage of Class I through Class IV commodities, the maximum allowable horizontal spacing of in-rack sprinklers shall be 10 ft (3.0 m).~~

~~**25.5.1.2.2** –~~

~~Where racks with solid shelves contain storage of Group A plastic commodities, the maximum allowable horizontal spacing of in-rack sprinklers shall be 5 ft (1.5 m).~~

~~**25.5.1.2.3** * –~~

~~Where racks with solid shelves obstruct only a portion of an open rack, in-rack sprinklers shall be extended beyond the end of the solid shelf a minimum of 4 ft (1.2 m) to the nearest flue space intersection.~~

~~**25.5.1.3** – Vertical Location and Spacing of In-Rack Sprinklers in Racks with Solid Shelves.~~

~~**25.5.1.3.1** –~~

~~Where CMSA ceiling-level sprinklers protect racks with solid shelving, in-rack sprinklers shall be installed beneath all tiers under the highest solid shelf.~~

~~**25.5.1.3.2** –~~

~~Where racks with solid shelves obstruct only a portion of an open rack, in-rack sprinklers shall be installed in accordance with 25.5.1.3.1 . *(See Figure A.25.5.1.2.3 .)*~~

In-rack sprinklers for racks having solid shelves shall be in accordance with Section 25.3.

Statement of Problem and Substantiation for Public Comment

Section 25.3 addresses protection for solid shelves for all CMDA, CMSA, and ESFR ceiling protection, deleted information is redundant.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 210-NFPA 13-2023 [Section No. 25.6.1]	

Related Item

- PI 523, FR 1311

Submitter Information Verification

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Submittal Date: Wed May 31 10:29:30 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1089-NFPA 13-2023
Statement: Section 25.5.1 has been deleted as it is redundant to 25.3.

Public Comment No. 210-NFPA 13-2023 [Section No. 25.6.1]

25.6.1 Protection of Racks with Solid Shelves.

25.6.1.1 ~~– General.~~

~~25.6.1.1.1~~ ~~–~~

~~The requirements of this chapter for the installation of in-rack sprinklers within open rack configurations shall apply to racks with solid shelves except as modified in this section.~~

~~25.6.1.1.2~~ ~~–~~

~~ESFR ceiling-level sprinkler design criteria shall be an applicable option for open racks combined with in-rack sprinklers installed in accordance with the criteria for solid shelving.~~

~~25.6.1.2~~ ~~– Horizontal Location and Spacing of In-Rack Sprinklers in Racks with Solid Shelves.~~

~~25.6.1.2.1~~ ~~–~~

~~Where racks with solid shelves contain storage of Class I through Class IV commodities, the maximum allowable horizontal spacing of in-rack sprinklers shall be 10 ft (3.0 m).~~

~~25.6.1.2.2~~ ~~–~~

~~Where racks with solid shelves contain storage of Group A plastic commodities, the maximum allowable horizontal spacing of in-rack sprinklers shall be 5 ft (1.5 m).~~

~~25.6.1.2.3~~ ~~*~~ ~~–~~

~~Where racks with solid shelves obstruct only a portion of an open rack, in-rack sprinklers shall be extended beyond the end of the solid shelf a minimum of 4 ft (1.2 m) to the nearest flue space intersection.~~

~~25.6.1.3~~ ~~– Vertical Location and Spacing of In-Rack Sprinklers in Racks with Solid Shelves.~~

~~25.6.1.3.1~~ ~~–~~

~~Where ESFR ceiling-level sprinklers protect racks with solid shelving, in-rack sprinklers shall be installed beneath all tiers under the highest solid shelf.~~

~~25.6.1.3.2~~ ~~–~~

~~Where racks with solid shelves obstruct only a portion of an open rack, in-rack sprinklers shall be installed in accordance with 25.6.1.3.1 . (See Figure A.25.6.1.2.3 .)~~

In-rack sprinklers for racks having solid shelves shall be in accordance with Section 25.3.

Statement of Problem and Substantiation for Public Comment

Section 25.3 addresses protection for solid shelves for all CMDA, CMSA, and ESFR ceiling protection; this information is redundant.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 211-NFPA 13-2023 [Section No. 25.5.1]	

Related Item

- PI 523, FR 1311

Submitter Information Verification

Submitter Full Name: Cary Webber
Organization: Reliable Automatic Sprinkler Company Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 31 10:23:06 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1090-NFPA 13-2023
Statement: Section 25.6.1 has been deleted as it is redundant to 25.3.

Public Comment No. 220-NFPA 13-2023 [New Section after 26.9.1.2]

26.X Protection of automatic storage and retrieval systems.

26.X.1 A system designed to meet FM Global Property Loss Data Sheet 8-34.

26.X.2 A wet pipe sprinkler system with K-25.2 (360) K-factor electrically operated sprinklers operating at a minimum pressure of 50 psi (3.4 bar) and calculating 12 sprinklers, four on each of three branchlines, shall be permitted to protect cartoned unexpanded group A plastics in a cubed bin storage system where stored material are retrieved with robotic retrieval vehicles, and the following conditions are met:

(1) Maximum roof height shall be 45 ft (13.7 m) in the protected area.

(2) Maximum storage height shall be 30 ft (9.1 m).

(3) The cubed bin storage system shall be contained within a three-dimensional grid structure arranged in cells, each of which has multiple storage units surrounding a central void or space on different sides, contained within an aluminum structure with steel cladding/paneling on the outer perimeter.

(4) The void space shall enable the unit to be pulled into the void by mechanical means, and allow access to the bins on all sides of the void.

(5) The storage units shall be stacked within the three-dimensional grid structure and aligned voids of stacked cells shall create vertical shafts spanning between upper and lower tracks of the grid structure on which robotic retrieval vehicles can horizontally travel to and from any given shaft.

(6) The robotic retrieval vehicles shall directly access any storage unit via the vertical shafts.

(7) Commodity shall be stored in open top bins of unexpanded exposed plastic having drainage perforations on the bottom a minimum of 24% open.

(8) Water supply duration shall be 60 minutes.

Statement of Problem and Substantiation for Public Comment

Adds protection guidance on Automatic Storage Retrieval Systems.

Related Item

• PI 390

Submitter Information Verification

Submitter Full Name: Mark Fessenden
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 31 16:43:27 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: Specific protection requirements are not listed. Commodities are not provided in the proposal. NFPA 13 includes provisions for using tested applications for storage situations. Directing users to FM Data Sheets for design should not be included in the body of the standard, requirements should brought forward. The reference to the FM Data Sheets should be part of the Annex for additional design guidance. The testing presented applies to a specif manufacturer's configuration. The PC as written is not limited to all of the design features for that one manufacturer's storage layout. For an example see retail storage protection requirements for how this information has been provided in the past. In addition, the pressure and duration need to be revised to align with the test parameters and results.

Public Comment No. 75-NFPA 13-2023 [New Section after 26.9.1.2]

26.10 Special Design for Automobile Storage.

26.10.1 Automated-Type Parking Structures.

26.10.1.1 Automated-Type Parking Structures over two stacks high shall be protected with automatic sprinklers under each level of cars.

26.10.1.2

Protection shall be as follows:

(1) Ceiling design density shall be based on 0.40 gpm/ft2 (16.3 mm/min) density over a 2500 ft2 (230 m2) area for wet pipe sprinkler systems.

(2) Automatic sprinklers under each level of cars shall be ordinary or intermediate temperature, fast response, standard coverage or extended coverage, horizontal sidewall sprinklers, listed for use in ordinary hazard occupancies.

(3) Standard coverage horizontal sidewall sprinklers shall be designed to maintain a minimum discharge pressure of 20 psi (1.4 bar) for the most hydraulically demanding six sprinklers on each level.

(4) Extended coverage horizontal sidewall sprinklers shall be designed to maintain a minimum discharge pressure corresponding to the protection area of coverage prescribed by the listing for the protection of ordinary hazard group 2 occupancies for the most hydraulically demanding six sprinklers on each level.

(5) Under car sprinkler demand shall not be required to be added to the ceiling sprinkler demand.

(6) Minimum flue spaces of 12 in. (150 mm) shall be provided between cars.

(7) Sprinklers located adjacent to each level of cars not more than 6 in. (150 mm) from the outside edge of the car.

(8) Sidewall sprinklers shall be permitted to be install back-to-back throwing in opposite directions.

(9) Aisle widths shall be a minimum of 8 ft (2.4 m).

(10) Water supply duration shall be 120 minutes.

Statement of Problem and Substantiation for Public Comment

NFPA 88A currently requires sprinkler systems installed in automated parking structures to be installed in accordance with NFPA 13, but NFPA 13 does not have design criteria. Until specific design criteria is available from the NFPRF, this add protection criteria involving sprinklers at every level as a basis of design.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 66-NFPA 13-2023 [Section No. A.4.4.3.2]	
Public Comment No. 67-NFPA 13-2023 [Section No. A.4.4.4.2]	
Public Comment No. 68-NFPA 13-2023 [Section No. A.20.4.5.1]	

Related Item

• PI 310

Submitter Information Verification

Submitter Full Name: Mark Fessenden
Organization: Johnson Controls
Street Address:
City:
State:
Zip:
Submittal Date: Tue Apr 11 11:14:38 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: No research data was submitted to support the recommended requirements. It is unknown if these design parameters will provide protection for car stackers.

Public Comment No. 168-NFPA 13-2023 [Section No. 28.2]

~~**28.2** * – Approved Storage Floor Plan.~~

~~**28.2.1** –~~

~~An approved storage floor plan shall be provided showing all areas of the building designed for storage in accordance with the following sections of this standard:~~

(1) ~~Chapters 20 through 26~~

(2) ~~4.4.1.6 for miscellaneous tire storage~~

~~**28.2.2** –~~

~~The approved storage floor plan shall be mounted in an approved location.~~

Statement of Problem and Substantiation for Public Comment

This comment is intended to be in conjunction with PC-162. PC-162 seeks to move the language for the Approved Storage Plan from Chapter 28 to Chapter 4. While this requirement is a positive addition to the standard, it belongs in Chapter 4 (General Requirements) and not in Chapter 28 (Acceptance). This requirement is an owner's responsibility and as such comment 162 seeks to relocate this requirement to Chapter 4. This public comment is to delete this language from Chapter 28.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 162-NFPA 13-2023 [New Section after 4.2]	
Public Comment No. 163-NFPA 13-2023 [New Section after A.4.2(4)]	

Related Item

• FR-1246

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affiliation: NFSA E&S Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 29 21:35:03 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected
Resolution: This content belongs in chapter 28.

Public Comment No. 20-NFPA 13-2023 [Section No. 28.2]

~~**28.2** * – Approved Storage Floor Plan.~~

~~**28.2.1** –~~

~~An approved storage floor plan shall be provided showing all areas of the building designed for storage in accordance with the following sections of this standard:~~

(1) ~~Chapters 20 through 26~~

(2) ~~4.4.1.6 for miscellaneous tire storage~~

~~**28.2.2** –~~

~~The approved storage floor plan shall be mounted in an approved location.~~

Statement of Problem and Substantiation for Public Comment

The approved storage floor plan is a requirement of the fire code and the owner. This needs to be provided at the start of the project with the Owner's certificate. The current location of the approved storage floor plan in the first draft report in plans and calculations is not appropriate.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 19-NFPA 13-2023 [Section No. 4.2]	Adds item to the Owner's Certificate

Related Item

• FR-1246

Submitter Information Verification

Submitter Full Name: Kevin Hall
Organization: American Fire Sprinkler Association
Affiliation: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Wed Mar 08 16:35:36 EST 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected
Resolution: This content belongs in chapter 28.

Public Comment No. 88-NFPA 13-2023 [Section No. 28.3.4.2.1]

28.3.4.2.1*

Where the design is based on the density/area method, the design area shall be a rectangular area having a dimension parallel to the branch lines

~~in accordance with one of the following:For unobstructed construction with ceiling or roof slopes greater than 2 in 12, the dimension parallel to the branch line shall be~~

at least 1.

4

2 times the square root of the area of sprinkler operation (A) used, which shall permit the inclusion of sprinklers on both sides of the cross main.

- ~~For obstructed construction with ceiling or roof slopes greater than 4 in 12, the dimension parallel to the branch line shall be at least 1.4 times the square root of the area of sprinkler operation *(A)* used, which shall permit the inclusion of sprinklers on both sides of the cross main.~~
- ~~For all other situations, the dimension parallel to the branch line shall be at least 1.2 times the square root of the area of sprinkler operation *(A)* used, which shall permit inclusion of sprinklers on both sides of the cross main.~~

Statement of Problem and Substantiation for Public Comment

Upon re-evaluation of the data from the FPRF program, the Sloped Ceiling Task Group has decided that the 1.4 shape factor is not necessary due to the 50% increase to the design area, which causes the dimension parallel to the branch line to be large enough to account for the sprinklers that will open during a fire.

This material was developed by the Sloped Ceiling Task Group, which was formed by the Technical Committee on Sprinkler Systems Discharge Criteria to incorporate the results of the FPRF Project on Sprinklers Under Sloped Ceilings into NFPA 13. The Task Group consisted of Ken Isman (Chair), Wes Baker, Chase Browning, Mike Joanis, Larry Frank, Joe Noble, Abram Selim Fouad, Kevin Hall, Carry Webber, and Karl Wiegand.

Related Item

• FR 1251

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 10 23:03:11 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-1091-NFPA 13-2023
Statement:	Upon re-evaluation of the data from the FPRF program, it has been determined that the 1.4 shape factor is not necessary due to the 50% increase to the design area, which causes the dimension parallel to the branch line to be large enough to account for the sprinklers that will open during a fire.

Public Comment No. 89-NFPA 13-2023 [Section No. 28.3.4.4.1]

28.3.4.4.

~~1~~

1

Where the design area was increased

~~beyond 12~~

to 18 sprinklers due to the slope of the ceiling or roof, the design area shall be

~~calculated in accordance with 28.3.4.2 with the design area *(A)* being the number of sprinklers multiplied by the actual floor area covered by those sprinklers~~

5 sprinklers on the most demanding three branch lines and the 3 most demanding sprinklers on the next most demanding branch line .

Statement of Problem and Substantiation for Public Comment

Rather than providing confusing instructions about coverage areas and trying to figure out what the area is covered by the sprinklers, users of ESFR sprinklers are more used to being told the number of sprinklers to calculate on each branch line. The 5, 5, 5, and 3 sprinklers on the four branch lines makes the most sense.

This material was developed by the Sloped Ceiling Task Group, which was formed by the Technical Committee on Sprinkler Systems Discharge Criteria to incorporate the results of the FPRF Project on Sprinklers Under Sloped Ceilings into NFPA 13. The Task Group consisted of Ken Isman (Chair), Wes Baker, Chase Browning, Mike Joanis, Larry Frank, Joe Noble, Abram Selim Fouad, Kevin Hall, Carry Webber, and Karl Wiegand.

Related Item

• FR 1256

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 10 23:10:43 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1092-NFPA 13-2023

Statement: This provides specific instruction on how to calculate 18 sprinklers in the design area when the area is increased due to slope.

Public Comment No. 203-NFPA 13-2023 [Section No. 28.3.4.7.4.3(A)]

(A)– *

The number of supplemental sprinklers shall include up to a maximum of four adjacent sprinklers attached to a branch line.

Statement of Problem and Substantiation for Public Comment

An asterisk has been added to indicate that proposed Annex language is being submitted for this section.

Related Item

• FR-1268

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 31 08:00:32 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1093-NFPA 13-2023
Statement: Annex language is being added to help explain which sprinklers to include in the hydraulic design when there is more than one line of sprinklers being installed under an obstruction.

Public Comment No. 124-NFPA 13-2023 [Section No. 28.3.4.8.1]

28.3.4.8.1

Pipe friction loss shall be calculated in accordance with the Hazen–Williams formula with *C* values from Table 28.3.4.8.1, as follows:

(1) Pipe, fittings, flexible sprinkler hose fittings, and devices such as valves, meters, flow switches in pipes 2 in. (50 mm) or less in size, and strainers shall be included, and elevation changes that affect the sprinkler discharge shall be calculated.

(2) Tie-in drain piping shall not be included in the hydraulic calculations.

(3) Losses for a tee or a cross shall be calculated where flow direction change occurs based on the equivalent pipe length of the piping segment in which the fitting is included.

(4) The tee at the top of a riser nipple shall be included in the branch line, the tee at the base of a riser nipple shall be included in the riser nipple, and the tee or cross at a cross main–feed main junction shall be included in the cross main.

(5) Losses for straight-through flow in a tee or cross shall not be included.

(6) The loss of reducing elbows based on the equivalent length value of the smallest outlet shall be calculated.

(7) The equivalent length value for the standard elbow on any abrupt 90-degree turn, such as the screw-type pattern, shall be used.

(8) The equivalent length value for a fitting with a bushing shall be the same as for a similarly sized and configured reducing fitting.

(9) The equivalent length value for the long-turn elbow on any sweeping 90-degree turn, such as a flanged, welded, or mechanical joint-elbow type, shall be used. *(See Table 28.3.3.1.1.)*

(10) Losses shall be permitted to be excluded for tapered reducers.

(11) Losses shall be permitted to be excluded for a fitting with or without a bushing, directly connected to a sprinkler, except for flexible sprinkler hose fittings and as required in 28.3.3.1.2 and 28.3.3.4.

(12) Losses for flexible sprinkler hose fittings shall be based upon the number of bends referenced in the listing for the hose length.

(13) Losses through a pressure-reducing valve shall be included based on the normal inlet pressure condition, and pressure loss data from the manufacturer's literature shall be used.

(14) In new systems, an increased *C* value of 120 shall be permitted where nitrogen is provided in accordance with 8.2.10.

Table 28.3.4.8.1 Hazen–Williams *C* Values

Pipe or Tube	*C* Value*
Unlined cast or ductile iron	100
Black steel (dry systems including preaction)	100
Black steel (wet systems including deluge)	120
Black steel (dry system including preaction) using nitrogen†	120
Galvanized steel (dry systems including preaction)	100
Galvanized steel (wet systems including deluge)	120
Galvanized steel (dry systems including preaction) using nitrogen†	120
Plastic all (listed)	150
Cement-lined cast- or ductile iron	140
Copper tube, brass or stainless steel	150
Asbestos cement	140
Concrete	140

*The authority having jurisdiction is permitted to allow other *C* values.

†Nitrogen supply shall be installed in accordance with 8.2.10.

Statement of Problem and Substantiation for Public Comment

Flexible sprinkler hose fittings have a significant pressure loss that needs to be included in the system's hydraulic calculation.

Related Item

• Committee Input 1261

Submitter Information Verification

Submitter Full Name: Kerry Bell
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 19 13:52:57 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1170-NFPA 13-2023
Statement: It is important that the flow losses for flexible sprinkler hose fittings be included in the hydraulic calculations as the flow losses can be significant.

Public Comment No. 125-NFPA 13-2023 [Section No. 28.3.4.8.1]

28.3.4.8.1

Pipe friction loss shall be calculated in accordance with the Hazen–Williams formula with *C* values from Table 28.3.4.8.1, as follows:

(1) Pipe, fittings, and devices such as valves, meters, flow switches in pipes 2 in. (50 mm) or less in size, and strainers shall be included, and elevation changes that affect the sprinkler discharge shall be calculated.

(2) Tie-in drain piping shall not be included in the hydraulic calculations.

(3) Losses for a tee or a cross shall be calculated where flow direction change occurs based on the equivalent pipe length of the piping segment in which the fitting is included.

(4) The tee at the top of a riser nipple shall be included in the branch line, the tee at the base of a riser nipple shall be included in the riser nipple, and the tee or cross at a cross main–feed main junction shall be included in the cross main.

(5) Losses for straight-through flow in a tee or cross shall not be included.

(6) The loss of reducing elbows based on the equivalent length value of the smallest outlet shall be calculated.

(7) The equivalent length value for the standard elbow on any abrupt 90-degree turn, such as the screw-type pattern, shall be used.

(8) The equivalent length value for a fitting with a bushing shall be the same as for a similarly sized and configured reducing fitting.

(9) The equivalent length value for the long-turn elbow on any sweeping 90-degree turn, such as a flanged, welded, or mechanical joint-elbow type, shall be used. *(See Table 28.3.3.1.1.)*

(10) Losses shall be permitted to be excluded for tapered reducers.

(11) Losses shall be permitted to be excluded for a fitting with or without a bushing, directly connected to a sprinkler, except as required in 28.3.3.1.2 and 28.3.3.4.

(12) Losses through a pressure-reducing valve shall be included based on the normal inlet pressure condition, and pressure loss data from the manufacturer's literature shall be used.

(13) In new systems, an increased *C* value of 120 shall be permitted where nitrogen is provided in accordance with 8.2.10.

(14) In new systems, an increased *C* value of 120 shall be permitted where negative pressure is provided in accordance with 8.11 .

Table 28.3.4.8.1 Hazen–Williams *C* Values

Pipe or Tube	*C* Value*
Unlined cast or ductile iron	100
Black steel (dry systems including preaction)	100
Black steel (wet systems including deluge)	120
Black steel (dry system including preaction) using nitrogen†	120
Galvanized steel (dry systems including preaction)	100
Galvanized steel (wet systems including deluge)	120
Galvanized steel (dry systems including preaction) using nitrogen†	120
Plastic all (listed)	150
Cement-lined cast- or ductile iron	140
Copper tube, brass or stainless steel	150
Asbestos cement	140
Concrete	140

*The authority having jurisdiction is permitted to allow other *C* values.

†Nitrogen supply shall be installed in accordance with 8.2.10.

††Negative pressure shall be installed in accordance with 8.11

Statement of Problem and Substantiation for Public Comment

Data has been provided that a C Value of 120 is appropriate for dry and preaction systems using negative pressure.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 122-NFPA 13-2023 [New Section after 8.11]	
Public Comment No. 127-NFPA 13-2023 [Section No. 8.11]	

Related Item

• FR-1037

Submitter Information Verification

Submitter Full Name: Jonathan Roger
Organization: Fireflex Systems
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 19 14:21:46 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1169-NFPA 13-2023
Statement: The vacuum conditions should minimize corrosion. Vacuum systems are listed.

Public Comment No. 169-NFPA 13-2023 [Section No. 28.3.4.8.1]

28.3.4.8.1

Pipe friction loss shall be calculated in accordance with the Hazen–Williams formula with *C* values from Table 28.3.4.8.1, as follows:

(1) Pipe, fittings, and devices such as valves, meters, ~~flow switches in pipes 2 in. (50 mm) or less in size, and~~ and strainers shall be included, and elevation changes that affect the sprinkler discharge shall be calculated.

(2) Tie-in drain piping shall not be included in the hydraulic calculations.

(3) Losses for a tee or a cross shall be calculated where flow direction change occurs based on the equivalent pipe length of the piping segment in which the fitting is included.

(4) The tee at the top of a riser nipple shall be included in the branch line, the tee at the base of a riser nipple shall be included in the riser nipple, and the tee or cross at a cross main–feed main junction shall be included in the cross main.

(5) Losses for straight-through flow in a tee or cross shall not be included.

(6) The loss of reducing elbows based on the equivalent length value of the smallest outlet shall be calculated.

(7) The equivalent length value for the standard elbow on any abrupt 90-degree turn, such as the screw-type pattern, shall be used.

(8) The equivalent length value for a fitting with a bushing shall be the same as for a similarly sized and configured reducing fitting.

(9) The equivalent length value for the long-turn elbow on any sweeping 90-degree turn, such as a flanged, welded, or mechanical joint-elbow type, shall be used. *(See Table 28.3.3.1.1.)*

(10) Losses shall be permitted to be excluded for tapered reducers.

(11) Losses shall be permitted to be excluded for a fitting with or without a bushing, directly connected to a sprinkler, except as required in 28.3.3.1.2 and 28.3.3.4.

(12) Losses through a pressure-reducing valve shall be included based on the normal inlet pressure condition, and pressure loss data from the manufacturer's literature shall be used.

(13) In new systems, an increased *C* value of 120 shall be permitted where nitrogen is provided in accordance with 8.2.10.

Table 28.3.4.8.1 Hazen–Williams *C* Values

Pipe or Tube	*C* Value*
Unlined cast or ductile iron	100
Black steel (dry systems including preaction)	100
Black steel (wet systems including deluge)	120
Black steel (dry system including preaction) using nitrogen†	120
Galvanized steel (dry systems including preaction)	100
Galvanized steel (wet systems including deluge)	120
Galvanized steel (dry systems including preaction) using nitrogen†	120
Plastic all (listed)	150
Cement-lined cast- or ductile iron	140
Copper tube, brass or stainless steel	150
Asbestos cement	140
Concrete	140

*The authority having jurisdiction is permitted to allow other *C* values.

†Nitrogen supply shall be installed in accordance with 8.2.10.

Statement of Problem and Substantiation for Public Comment

Table 28.3.3.1.1 includes equivalent pipe length values for flow switches that are 2 inches or less and for flow switches that are greater than 2 inches, however section 8.3.4.8.1(1) only requires that these values be applied to flow switches 2 in. or less in size. This disparity causes confusion. Additionally the equivalent length values for flow switches do not correspond with the published values from the devices manufacturers and it is unknown where the values from Table 28.3.3.1.1 came from. This comment seeks to delete the language "flow switches in pipes 2 in. or less in size"

Related Item

• PI-231 • PI-349 • CI-1261

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affiliation: NFSA Engineering and Standards Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 29 21:46:07 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: Friction loss through flow switches on small diameter piping is significant and should be considered in the hydraulic calculations. The friction loss can be found in the manufacturer's listing.

Public Comment No. 170-NFPA 13-2023 [Section No. 28.3.4.8.1]

28.3.4.8.1

Pipe friction loss shall be calculated in accordance with the Hazen–Williams formula with *C* values from Table 28.3.4.8.1, as follows:

(1) Pipe, fittings, flexible sprinkler hose fittings, and devices such as valves, meters, flow switches in pipes 2 in. (50 mm) or less in size, and strainers shall be included, and elevation changes that affect the sprinkler discharge shall be calculated.

(2) Tie-in drain piping shall not be included in the hydraulic calculations.

(3) Losses for a tee or a cross shall be calculated where flow direction change occurs based on the equivalent pipe length of the piping segment in which the fitting is included.

(4) The tee at the top of a riser nipple shall be included in the branch line, the tee at the base of a riser nipple shall be included in the riser nipple, and the tee or cross at a cross main–feed main junction shall be included in the cross main.

(5) Losses for straight-through flow in a tee or cross shall not be included.

(6) The loss of reducing elbows based on the equivalent length value of the smallest outlet shall be calculated.

(7) The equivalent length value for the standard elbow on any abrupt 90-degree turn, such as the screw-type pattern, shall be used.

(8) The equivalent length value for a fitting with a bushing shall be the same as for a similarly sized and configured reducing fitting.

(9) The equivalent length value for the long-turn elbow on any sweeping 90-degree turn, such as a flanged, welded, or mechanical joint-elbow type, shall be used. *(See Table 28.3.3.1.1.)*

(10) Losses shall be permitted to be excluded for tapered reducers.

(11) Losses shall be permitted to be excluded for a fitting with or without a bushing, directly connected to a sprinkler, except for flexible sprinkler hose fittings and as required in 28.3.3.1.2 and 28.3.3.4.

(12) Losses for flexible sprinkler hose fittings shall be based upon the number of bends referenced in the listing for the hose length.

(13) Losses through a pressure-reducing valve shall be included based on the normal inlet pressure condition, and pressure loss data from the manufacturer's literature shall be used.

(14) In new systems, an increased *C* value of 120 shall be permitted where nitrogen is provided in accordance with 8.2.10.

Table 28.3.4.8.1 Hazen–Williams *C* Values

Pipe or Tube	*C* Value*
Unlined cast or ductile iron	100
Black steel (dry systems including preaction)	100
Black steel (wet systems including deluge)	120
Black steel (dry system including preaction) using nitrogen†	120
Galvanized steel (dry systems including preaction)	100
Galvanized steel (wet systems including deluge)	120
Galvanized steel (dry systems including preaction) using nitrogen†	120
Plastic all (listed)	150
Cement-lined cast- or ductile iron	140
Copper tube, brass or stainless steel	150
Asbestos cement	140
Concrete	140

*The authority having jurisdiction is permitted to allow other *C* values.

†Nitrogen supply shall be installed in accordance with 8.2.10.

Statement of Problem and Substantiation for Public Comment

This proposal will require that pressure losses of flexible sprinkler hose be included in the system's hydraulic calculation based upon the number of bends referenced in the listing for a particular hose length. By allowing this value to be based upon the number of bends referenced by the listing and not the maximum bends possible, this gives more options to the designer and is keeping with the scope and purpose of NFPA 13 which is the "minimum requirements" to achieve "reasonable" fire protection.

Related Item

• Pi-231 • CI-1261

Submitter Information Verification

Submitter Full Name: Roland Asp
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Submittal Date: Mon May 29 22:16:22 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1170-NFPA 13-2023
Statement: It is important that the flow losses for flexible sprinkler hose fittings be included in the hydraulic calculations as the flow losses can be significant.

Public Comment No. 189-NFPA 13-2023 [Section No. 28.3.4.8.1]

28.3.4.8.1

Pipe friction loss shall be calculated in accordance with the Hazen–Williams formula with *C* values from Table 28.3.4.8.1, as follows:

(1) Pipe, fittings, and devices such as valves, meters, flow switches in pipes 2 in. (50 mm) or less in size, and strainers shall be included, and elevation changes that affect the sprinkler discharge shall be calculated.

(2) Tie-in drain piping shall not be included in the hydraulic calculations.

(3) Losses for a tee or a cross shall be calculated where flow direction change occurs based on the equivalent pipe length of the piping segment in which the fitting is included.

(4) The tee at the top of a riser nipple shall be included in the branch line, the tee at the base of a riser nipple shall be included in the riser nipple, and the tee or cross at a cross main–feed main junction shall be included in the cross main.

(5) Losses for straight-through flow in a tee or cross shall not be included.

(6) The loss of reducing elbows based on the equivalent length value of the smallest outlet shall be calculated.

(7) The equivalent length value for the standard elbow on any abrupt 90-degree turn, such as the screw-type pattern, shall be used.

(8) The equivalent length value for a fitting with a bushing shall be the same as for a similarly sized and configured reducing fitting.

(9) The equivalent length value for the long-turn elbow on any sweeping 90-degree turn, such as a flanged, welded, or mechanical joint-elbow type, shall be used. *(See Table 28.3.3.1.1.)*

(10) Losses shall be permitted to be excluded for tapered reducers.

(11) Losses shall be permitted to be excluded for a fitting with or without a bushing, directly connected to a sprinkler, except as required in 28.3.3.1.2 and 28.3.3.4.

(12) Losses through a pressure-reducing valve shall be included based on the normal inlet pressure condition, and pressure loss data from the manufacturer's literature shall be used.

(13) In new systems, an increased *C* value of 120 shall be permitted where nitrogen is provided in accordance with 8.2.10.

(14) In new systems, an increased C value of 120 shall be permitted where vapor phase corrosion inhibitor is provided in accordance with 8.2.11.

Table 28.3.4.8.1 Hazen–Williams *C* Values

Pipe or Tube	*C* Value*
Unlined cast or ductile iron	100
Black steel (dry systems including preaction)	100
Black steel (wet systems including deluge)	120
Black steel (dry system including preaction) using nitrogen†	120
Black steel (dry system including preaction) using vapor phase corrosion inhibitor**	120
Galvanized steel (dry systems including preaction)	100
Galvanized steel (wet systems including deluge)	120
Galvanized steel (dry systems including preaction) using nitrogen†	120
Galvanized steel (dry systems including preaction) using vapor phase corrosion inhibitor**	120
Plastic all (listed)	150
Cement-lined cast- or ductile iron	140
Copper tube, brass or stainless steel	150

Pipe or Tube	*C* Value*
Asbestos cement	140
Concrete	140

*The authority having jurisdiction is permitted to allow other *C* values.

†Nitrogen supply shall be installed in accordance with 8.2.10.

** Vapor phase corrosion inhibitor used in air supply piping shall be installed in accordance with 8.2.11.

Statement of Problem and Substantiation for Public Comment

A new line has been added for the use of a C value of 120 for vapor phase corrosion inhibitor due to its effectiveness in controlling corrosion.
Note: this comment also modifies Table 28.2.4.8.1 to include a c-120 for VCI. Testing has demonstrated that vapor phase corrosion inhibitor technology provides excellent corrosion protection. Reports show that nano particle vapor phase corrosion inhibitors provide excellent corrosion inhibiting ability (VIA) and have properties allowing for excellent migration into systems.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 187-NFPA 13-2023 [New Section after 8.2]	
Public Comment No. 188-NFPA 13-2023 [Section No. 16.4.2.5]	

Related Item

- • PI-349

Submitter Information Verification

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Submittal Date: Tue May 30 15:24:41 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1171-NFPA 13-2023
Statement: Vapor corrosion inhibitor systems are listed and can minimize corrosion.

Public Comment No. 136-NFPA 13-2023 [Section No. A.3.3.22]

A.3.3.22 Blocking.

Blocking is required in several instances within this standard to restrict the horizontal flow of heat within channels created by obstructed construction, which is referred to as

~~*channeling*~~

"channeling" . The blocking helps reduce the channeling effect created by obstructed construction so that the heat from a fire can fill a specified channel volume before eventually flowing horizontally under the structural members and activating ceiling sprinklers in a timely fashion. See Figure A.3.3.22 for an example of blocking a purlin at the intersection of a girder. _ The material utilized for blocking does not have to have a fire resistive rating

~~, rather it only requires noncombustible materials for the blocking when the structural elements are noncombustible. While it is ideal to have blocking that is tight to the ceiling, the intent of this section is to not require the small gaps created by a corrugated roof decking to be filled. (AUT-SSD)~~

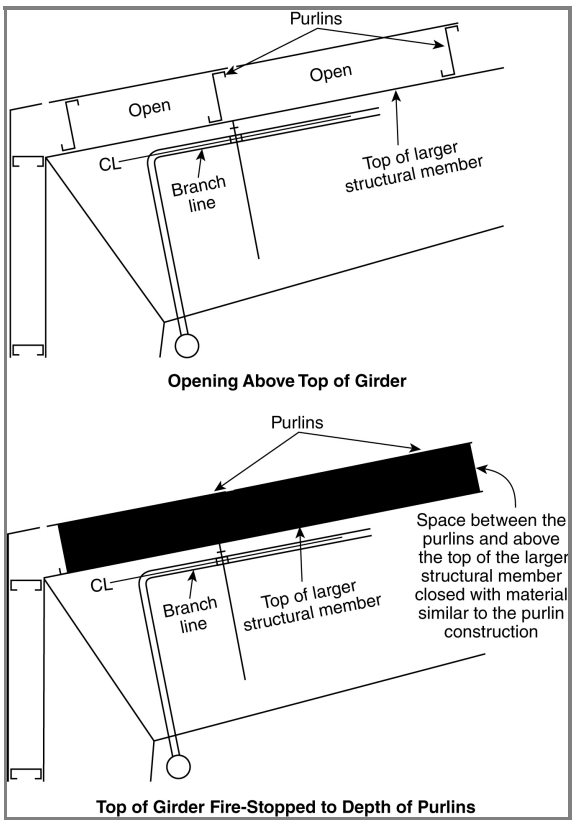
. Blocking is not intended to fill small gaps such as those found in corrugated roofing or other small openings in structural members. (AUT-SSD)

Also note the need to change the following:

1) The caption for the top half of Figure A.3.3.22 needs to be changed from "Opening" to "Openings" so that it reads: "Openings Above Top of Girder"

2) The caption for the bottom half of the Figure needs to be changed to replace "Firestopped" with "Provided with Blocking" so that it reads: "Top of Girder Provided with Blocking to Depth of Purlins".

Figure A.3.3.22 Example of Blocking at Intersection of Purlins and Girders.



Additional Proposed Changes

File Name	Description	Approved
Figure_A-3-3-22.docx	This is how the corrected figure should look	

Statement of Problem and Substantiation for Public Comment

During the First Draft, the committee preferred the term “blocking” to “fire-stopping” and inserted this new definition. As such, the terminology needs to be consistent. This proposed text also clarifies what is intended with the use of the term “blocking”.

This material was developed by the Sloped Ceiling Task Group, which was formed by the Technical Committee on Sprinkler Systems Discharge Criteria to incorporate the results of the FPRF Project on Sprinklers Under Sloped Ceilings into NFPA 13. The Task Group consisted of Ken Isman (Chair), Wes Baker, Chase Browning, Mike Joanis, Larry Frank, Joe Noble, Abram Selim Fouad, Kevin Hall, Carry Webber, and Karl Wiegand.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 135-NFPA 13-2023 [Section No. 3.3.22]	

Related Item

• FR 1331

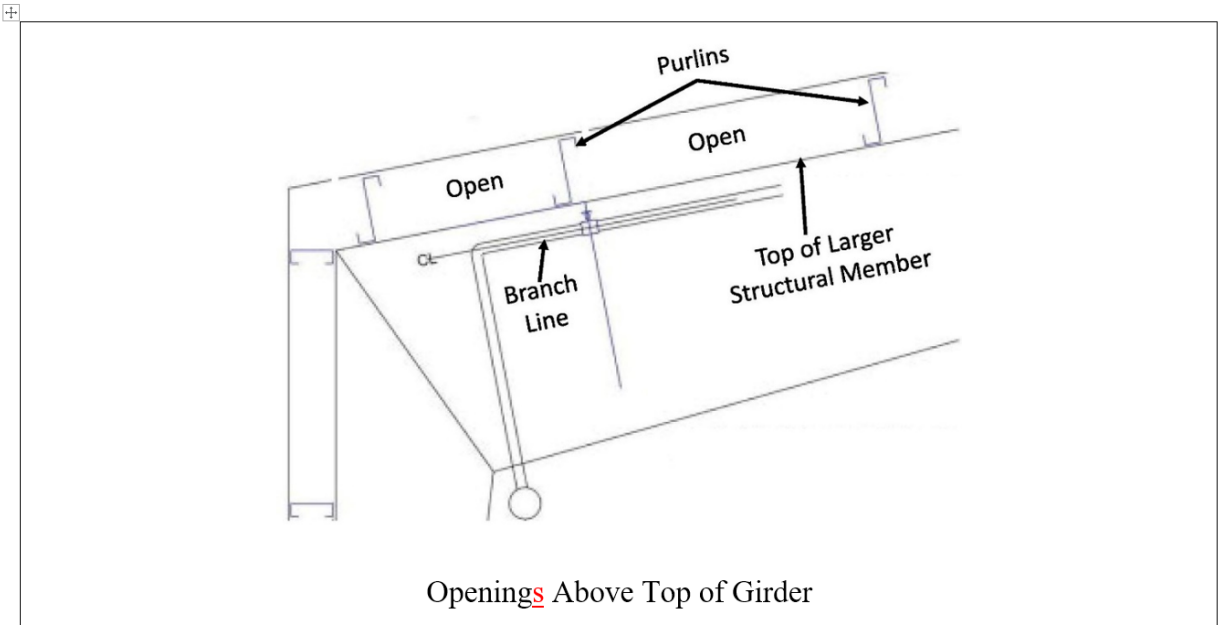
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Committee: AUT-SSD

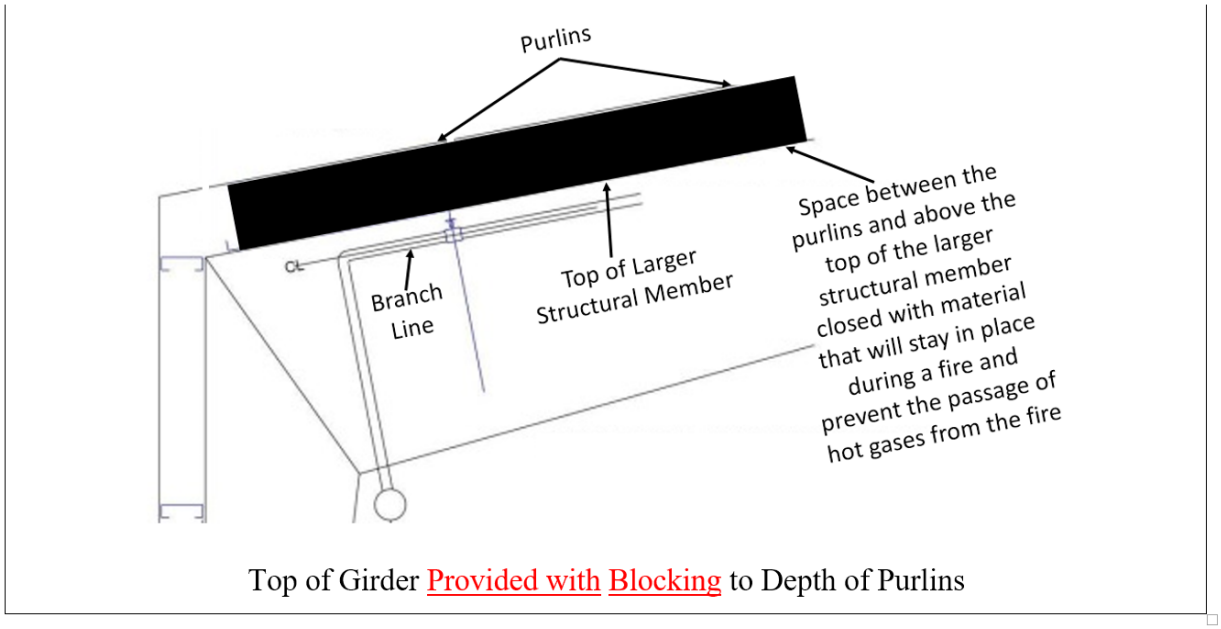
Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1077-NFPA 13-2023
Statement: It was established during the first draft that the preferred term “blocking” be used instead of “fire-stopping.” As such, the terminology needs to be consistent. This proposed text also clarifies what is intended with the use of the term “blocking."

Figure A.3.3.22



Openings Above Top of Girder



Top of Girder Provided with Blocking to Depth of Purlins

FIGURE A.3.3.22 Example of Blocking at Intersection of Purlins and Girders

Public Comment No. 163-NFPA 13-2023 [New Section after A.4.2(4)]

A.4.3

The approved storage floor plan should be of sufficient size to be legible. An approved working plan that includes the needed information can be used rather than creating a separate storage floor plan. It is recommended to have the approved storage floor plan laminated or protected by a similar means, and to mount it close to the sprinkler riser or other approved location.

Typical content to be included on the floor plan should include the following, as applicable:

(1) Locations, dimensions, and height limits of piled, palletized, and rack storage

(2) Commodity classification permitted to be stored in each area

(3) Required clearances between top of storage and sprinkler deflectors

(4) Required clearances between top of storage and ceiling

(5) Aisle dimensions between storage arrays

(6) Location of any required fire department access doors

(7) Location of valves controlling ceiling and in-rack sprinkler water supplies

Type your content here ...

Statement of Problem and Substantiation for Public Comment

This comment is related to PC-162 which seeks to relocate the storage plan provisions from Chapter 28 to Chapter 4. This specific comment seeks to relocate the annex note A.28.2 to A.4.3

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 162-NFPA 13-2023 [New Section after 4.2]	
Public Comment No. 168-NFPA 13-2023 [Section No. 28.2]	

Related Item

• FR-1246

Submitter Information Verification

Submitter Full Name: Roland Asp
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Submittal Date: Mon May 29 19:26:44 EDT 2023

Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: This content belongs in Chapter 28.

Public Comment No. 66-NFPA 13-2023 [Section No. A.4.4.3.2]

A.4.4.3.2

Ordinary hazard (Group 2) occupancies include occupancies having uses and conditions similar to the following:

(1) Agricultural facilities

(2) Automobile parking garages

(3) Barns and stables

(4) Cereal mills

(5) Chemical plants — ordinary

(6) Confectionery products

(7) Distilleries

(8) Dry cleaners

(9) Exterior loading docks (Note that exterior loading docks only used for loading and unloading of ordinary combustibles should be classified as OH2. For the handling of flammable and combustible liquidsor hazardous materials, or where utilized for storage, exterior and interior loading docks should be protected based upon the actual occupancy and the materials handled on the dock, as if the materials were actually stored in that configuration.)

(10) Feed mills

(11) Horse stables

(12) Leather goods manufacturing

(13) Libraries — large stack room areas

(14) Machine shops

(15) Metal working

(16) Mercantile

(17) Paper and pulp mills

(18) Paper process plants

(19) Piers and wharves

(20) Plastics fabrication, including blow molding, extruding, and machining; excluding operations using combustible hydraulic fluids

(21) Post offices

(22) Printing and publishing

(23) Racetrack stable/kennel areas, including those stable/kennel areas, barns, and associated buildings at state, county, and local fairgrounds

(24) Repair garages

(25) Resin application area

(26) Stages

(27) Textile manufacturing

(28) Tire manufacturing

(29) Tobacco products manufacturing

(30) Wood machining

(31) Wood product assembly

(32) Car stackers and car lift systems where sidewall sprinkler protection is provided under each level of cars.

Statement of Problem and Substantiation for Public Comment

NFPA A.10.3.2(9) currently provides guidance on the use of sidewall sprinkler protection for car stackers. This correlates the criteria in chapter 10 to the occupancy example in chapter 4.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 67-NFPA 13-2023 [Section No. A.4.4.4.2]	
Public Comment No. 68-NFPA 13-2023 [Section No. A.20.4.5.1]	
Public Comment No. 75-NFPA 13-2023 [New Section after 26.9.1.2]	

Related Item

- PI310

Submitter Information Verification

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Submittal Date: Tue Apr 04 12:41:22 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: There is no substantiation provided to confirm that cars installed in car stackers and car lift systems is an ordinary hazard group 2 occupancy. No provisions are provided in the body of the standard to state the limits of levels of car stackers and car lift systems and how to properly calculate car stackers and car lift systems. Fire testing is needed to determine how car stackers and car lift systems should be protected. The discharge committee has not reviewed car stackers and car lifter systems beyond two levels high.

Public Comment No. 67-NFPA 13-2023 [Section No. A.4.4.4.2]

A.4.4.4.2

Extra hazard (Group 2) occupancies include occupancies having uses and conditions similar to the following:

(1) Asphalt saturating

(2) Flammable liquids spraying

(3) Flow coating

(4) Manufactured home or modular building assemblies (where finished enclosure is present and has combustible interiors)

(5) Open oil quenching

(6) Plastics manufacturing

(7) Solvent cleaning

(8) Varnish and paint dipping

(9) Car stackers and car lift systems with two cars stacked vertically and ceiling only protection

(10) Diesel fire pump houses and rooms containing pump drivers and fuel tanks

Statement of Problem and Substantiation for Public Comment

Provides clarification that the extra hazard classification for car stackers correlates to systems with ceiling only protection,

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 66-NFPA 13-2023 [Section No. A.4.4.3.2]	
Public Comment No. 68-NFPA 13-2023 [Section No. A.20.4.5.1]	
Public Comment No. 75-NFPA 13-2023 [New Section after 26.9.1.2]	

Related Item

• PI 310

Submitter Information Verification

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Submittal Date: Tue Apr 04 12:52:58 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-1102-NFPA 13-2023
Statement:	Provides clarification that the extra hazard classification for two level car stackers is based on protecting with ceiling only protection.

Public Comment No. 90-NFPA 13-2023 [Section No. A.20.4.1]

A.20.4.1

See Table A.20.4.1.

Table A.20.4.1 Examples of Class I Commodities

Product Heading	Product	
Batteries	Dry cells (excludes lithium, lithium-ion, and other similar exotic metals or combustible electrolyte); without blister packing (if blister packed refer to commodity classification definitions)	
	-	Vehicle; small (e.g., automobile); wet (excludes lithium-ion and other cells containing combustible electrolyte) cells
Empty Containers	Noncombustible	
Flammable/Combustible Liquids	Liquids; up to 20 percent alcohol (e.g., alcoholic beverages, flavoring extracts); metal, glass or ceramic containers	
	-	Liquids; up to 20 percent alcohol (e.g., alcoholic beverages, flavoring extracts); up to 5 gal (20 L) plastic bottles or jars
Food Products — Frozen	Frozen foods; nonwaxed or nonplastic packaging	
Food Products — Non-Frozen	Foods (coffee, fish products, fruit, meat products, nuts, poultry, etc.); metal cans	
	-	Fruits and vegetables (noncombustible semi-liquids); crushed; plastic containers up to 5 gal (20 L)
	-	Fruits and vegetables; fresh; wood spacers, non-plastic trays or containers
	-	Meat; fresh; no plastic packaging; exposed
	-	Milk; paper containers, or plastic bottles or jars up to 5 gal (20 L) plastic bottles or jars
	-	Salt; bagged
Furniture and Bedding	Furniture; metal (e.g., file cabinets or desks with plastic trim); cartoned	
Housing Materials/Appliances	Appliances; major (e.g., stoves, refrigerators); no appreciable plastic interior or exterior trim; ~~cartoned~~ Exposed	
	-	Gypsum board

Product Heading	Product	
	-	Paint; water-based (latex); friction-top metal containers; cartoned
Miscellaneous	Motors; electric	
	-	Transformer; dry or empty (i.e., void of oil)
Noncombustible Liquids	Liquids or semi liquids; PET containers greater than 5 gal (20 L) having a nominal wall thickness greater than 0.25 in. (6 mm)	
	-	Liquids or semi-liquids (e.g., crushed fruits and vegetables); plastic containers up to 5 gal (20 L) capacity
	-	Liquids; cardboard drink boxes, plastic-coated, wax-coated, and/or aluminum-lined; exposed or on corrugated carton trays with plastic sheeting
	-	Liquids; glass bottles or jars; cartoned
Plastic/Rubber	Plastics; stored in fully closed and solid (no openings), metal containers	
Powders/Pills	Powders; noncombustible free-flowing powdered or granular materials (cement, calcium chloride, clay, iron oxide, sodium chloride, sodium silicate, etc.); bagged	
	-	Powders; noncombustible; glass bottles or jars; cartoned
Wire/Cable/Spools	Wire; bare; metal spools, exposed	

Additional Proposed Changes

File Name	Description	Approved
Screenshot_2023-05-11_082406.png	Table A.20(b)	

Statement of Problem and Substantiation for Public Comment

Their is contradiction in tables A.20.4(B) And description of Housing materials in next tables Table A..20.4.1 and Table A.20.4.2 .
In tables Table A.20.4.1 and Table A.20.4.2 . both showing "Appliances; major (e.g., stoves, refrigerators) ; no appreciable plastic interior or exterior trim; cartoned " while in table A.20.4.1 it should be exposed not cartoned to be in compliance with table A.20.4(B) for both exposed / cartooned .

Related Item

• First draft report •

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Submittal Date:	Thu May 11 01:20:10 EDT 2023
Committee:	AUT-SSD

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-1103-NFPA 13-2023
Statement:	Their is contradiction in tables A.20.4(B) And description of Housing materials in next tables Table A..20.4.1 and Table A.20.4.2 . In tables Table A.20.4.1 and Table A.20.4.2 . both showing "Appliances; major (e.g., stoves, refrigerators) ; no appreciable plastic interior or exterior trim; cartoned" while in table A.20.4.1 it should be exposed not cartoned to be in compliance with table A.20.4(B) for both exposed / cartooned .

Δ **Table A.20.4(b)** ***Continued***

Product Heading	Product	NFPA 13
	Milk; paper containers, or plastic bottles or jars up to 5 gal (20 L) plastic bottles or jars	Class I
	Salt; bagged	Class I
	Salt; cartoned	Class II
	Snack foods (e.g., potato chips); plasticized aluminum bags; cartoned	Group A Nonexpanded
	Syrup; wooden container	Class II
Furniture and Bedding	Furniture and bedding; with foam cushioning	Group A Expanded
	Furniture; metal (e.g., file cabinets or desks with plastic trim); cartoned	Class I
	Furniture; wood (e.g., doors, windows, cabinets, etc.); no plastic coverings or foam cushioning	Class III
	Furniture; wood; plastic coverings nonexpanded plastic trim	Class IV
	Box spring; standard (minimal plastic materials)	Class III
	Box spring; wrapped in plastic cover	Class IV
	Mattress; foam (in finished form)	Group A Expanded
Housing Materials/ Appliances	Appliances; major (e.g., stoves, refrigerators); no appreciable plastic interior or exterior trim; cartoned	Class II
	Appliances; major (e.g., stoves, refrigerators); no appreciable plastic interior or exterior trim; exposed	Class I

Public Comment No. 68-NFPA 13-2023 [Section No. A.20.4.5.1]

A.20.4.5.1

See Table A.20.4.5.1.

Table A.20.4.5.1 Examples of Group A Plastic Commodities

Product Heading	Product	Expanded/Nonexpanded	
Batteries	Vehicle; any size (e.g., automobile or truck); empty plastic casing	Nonexpanded	
	-	Vehicle; large (e.g., truck or larger); dry or wet (excludes lithium-ion and other cells containing combustible electrolyte) cells	Nonexpanded
Empty Containers	Rigid plastic (not including PET), up to 32 oz (1 L)	Nonexpanded	
	-	Rigid plastic (not including PET), greater than 32 oz (1 L)	Expanded
Film Rolls, Including Photographic	Film (polypropylene, polyester, polyethylene); rolled on any reel type	Nonexpanded	
Flammable/Combustible Liquids	Lighters; butane; blister-packed; cartoned	Nonexpanded	
	Liquids; up to 20 percent alcohol (e.g. alcoholic beverages, flavoring extracts); greater than 5 gal (20 L) plastic containers with wall thickness greater than ¼ in. (6 mm)	Nonexpanded	
Food Products — Non-Frozen	Margarine; over 50 and up to 80 percent oil	Nonexpanded	
	Milk; any container; stored in solid plastic crates	Nonexpanded	
	-	Snack foods (e.g., potato chips); plasticized aluminum bags; cartoned	Nonexpanded
Furniture and Bedding	Furniture and bedding; with foam cushioning	Expanded	
	-	Mattress; foam (in finished form)	Expanded
Housing Materials/Appliances	Carpet tiles; cartoned	Nonexpanded	
	Floor coverings; vinyl; rolled	Nonexpanded	

Product Heading	Product	Expanded/Nonexpanded	
Miscellaneous	Charcoal; mineral spirit impregnated; bagged	Expanded	
	-	Toys; stuffed; foam or synthetic	Expanded
Noncombustible Liquids	Liquids or semi-liquids; plastic (except PET) containers greater than 5 gal (20 L) capacity having a nominal wall thickness greater than ¼ in. (6 mm)	Nonexpanded	
	-	Liquids; cardboard drink boxes, plastic-coated, wax-coated, and/or aluminum-lined; stored in plastic containers	Nonexpanded
	-	Liquids; plastic bottles or jars; stored in open or solid plastic crates	Nonexpanded
Paper Products	Cartons; wax-coated, single-walled corrugated	Nonexpanded	
	-	Cellulosic paper products; wax-coated (paper plates, cups, etc.); loosely packed; cartoned	Nonexpanded
	-	Matches; wooden; cartoned	Nonexpanded
	-	Tissue products; plastic-wrapped; exposed	Nonexpanded
Plastic/Rubber	ABS (Acrylonitrile-butadiene-styrene copolymer)	Nonexpanded	
	-	Acetal (polyformaldehyde)	Nonexpanded
	-	Acrylic (polymethyl methacrylate)	Nonexpanded
	-	Automobile bumpers and dashboards	Expanded
	-	Butyl rubber	Nonexpanded
	-	Cellulose Acetate Butyrate	Nonexpanded
	-	Containers; nonexpanded plastic gridded or solid; collapsed or nested with no air spaces	Nonexpanded
	-	EPDM (ethylene-propylene rubber)	Nonexpanded
	-	Ethyl Cellulose	Nonexpanded
	-	FRP (fiberglass-reinforced polyester)	Nonexpanded
	-	Nitrile Rubber (acrylonitrile-butadiene rubber)	Nonexpanded

Product Heading	Product	Expanded/Nonexpanded	
	-	Nylon (nylon 6, nylon 6/6)	Nonexpanded
	-	PET (Polyethylene Terephthalate - thermoplastic polyester)	Nonexpanded
	-	Polybutadiene	Nonexpanded
	Polycarbonate	Nonexpanded	
	-	Polyester elastomer	Nonexpanded
	-	Polyethylene	Nonexpanded
	Polypropylene	Nonexpanded	
	-	Polystyrene; foam products (e.g., plates, cups, etc.)	Expanded
	-	Polystyrene; rigid products	Nonexpanded
	-	Polyurethane	Expanded
	-	PVC (polyvinyl chloride) products, greater than 20 percent plasticizer	Nonexpanded
	-	PVF (polyvinyl fluoride)	Nonexpanded
	-	Rubber; natural in blocks; cartoned	Nonexpanded
	-	Rubber; natural; expanded	Expanded
	-	Rubber; natural; nonexpanded	Nonexpanded
	-	Rubber; synthetic (santoprene)	Nonexpanded
	-	SAN (styrene acrylonitrile)	Nonexpanded
	-	SBR (styrene-butadiene rubber)	Nonexpanded
Plastic Containers	Bottles or jars (except PET) greater than 1 gal (4 L) containing noncombustible solids	Nonexpanded	
	-	Bottles or jars (except PET) up to 1 gal (4 L) containing noncombustible solids (Group A, cartoned (treat as cartoned even if exposed)	Nonexpanded
Powders/Pills	Powders; noncombustible; plastic (other than PET) bottles or jars; exposed	Nonexpanded	
	-	Powders; noncombustible; plastic bottles or jars greater than 1 gal (4 L) capacity	Nonexpanded
Textile Materials/Products	Diapers; plastic or nonwoven fabric; plastic-wrapped; exposed	Nonexpanded	
	-	Fabric; vinyl-coated (e.g., tablecloth); cartoned	Nonexpanded

Product Heading	Product	Expanded/Nonexpanded	
	-	Fabric; synthetic (except rayon and nylon; greater than 50/50 blend	Nonexpanded
	-	Fibers; synthetic (except rayon and nylon); baled	Nonexpanded
	-	Thread or yarn; rayon or nylon; plastic spools	Nonexpanded
	-	Thread or yarn; synthetic (except rayon and nylon); greater than 50/50 blend; plastic spools	Nonexpanded
	-	Thread or yarn; synthetic (except rayon and nylon); up to 50/50 blend; plastic spools	Nonexpanded
Wax Products	Candles	Expanded	
	-	Paraffin or petroleum wax; blocks	Expanded
Wire/Cable/Spools	Spools; plastic; empty	Nonexpanded	
	-	Wire; bare; plastic spools; exposed	Nonexpanded
Automobiles	Internal Combustion Engine or Electric Vehicle	Nonexpanded	

Statement of Problem and Substantiation for Public Comment

NFPA 88A currently defers to NFPA 13 for guidance on the protection of rack storage of internal combustion engine and electric vehicles. NFPA 13 does not address this commodity. Current guidance is limited to vehicles two stacks high. The Fire Protection Research Foundation Report "Modern Vehicle Hazards in Parking Garages & Vehicle Carriers" included historic data on heat release rates (Table 7) for select vehicles and figures 11 and 12 includes a comparison between ICE and EV vehicles. Providing guidance on commodity classification will provide design professionals with a starting point upon which they can base a design.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 66-NFPA 13-2023 [Section No. A.4.4.3.2]	
Public Comment No. 67-NFPA 13-2023 [Section No. A.4.4.4.2]	
Public Comment No. 75-NFPA 13-2023 [New Section after 26.9.1.2]	

Related Item

• PI 310

Submitter Information Verification

Submitter Full Name: Mark Fessenden
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State:
Zip:
Submittal Date: Tue Apr 04 14:25:41 EDT 2023

Committee: AUT-SSD

Committee Statement

Committee Action: Rejected

Resolution: No substantiation has been provided to confirm that automobiles should be treated as nonexpanded plastics. Until better data is provided, protection should remain as performance-based.

Public Comment No. 83-NFPA 13-2023 [New Section after A.26.1.1]

A.26.2

Exposed, expanded Group A plastic dunnage, instrument panels, and plastic bumper facia were the automotive components with their related packaging that were utilized in the fire tests. This test commodity used in the large-scale sprinklered fire test proved to be the worst challenge per the large-scale calorimeter tests of available components. See Technical Report of Fire Testing of Automotive Parts in Portable Storage Racking, prepared by Underwriters Laboratories, Project 99NK29106, NC4004, January 5, 2001, and Commodity Hazard Comparison of Expanded Plastic in Portable Bins and Racking, Project 99NK29106, NC4004, September 8, 2000.

Statement of Problem and Substantiation for Public Comment

This is annex text that was in the 2016 edition but omitted from the 2019 and 2022 editions.

Related Item

• FR1218

Submitter Information Verification

Submitter Full Name: Richard Gallagher
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Submittal Date: Tue May 02 13:27:31 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1104-NFPA 13-2023
Statement: This is a pointer to annex text that used to be associated with A.26.2. To avoid duplication, we are pointing the user to where it is now found in A.20.4.13.

Public Comment No. 100-NFPA 13-2023 [Section No. A.28.1]

A.28.1

Preliminary plans should be submitted for review to the authority having jurisdiction prior to the development of working plans *[see Figure A.28.1(a)]*. The preliminary plans can be part of the construction documents submitted in order to obtain a building permit. However, working drawings in accordance with Section 28.1 should be submitted and approved prior to the installation of system equipment. Preliminary plans should include as much information as is required to provide a clear representation of the hazard to be protected, the system design concept, the proposed water supply configuration, and the building construction information pertinent to the system layout and detailing.

The owner's information certificate, shown in Figure A.28.1(b), should be used to obtain a declaration of the intended use of the occupancy to be protected.

Drawings that accompany the certificate should include the following:

(1) Name of owner and occupant

(2) Location, including street address

(3) Point of compass

(4) Construction and occupancy of each building

(5) Building height in feet

(6) Waterflow test information and, if a waterflow test of the city main is available, indicate the following:

(7) Date and time of the test

(8) Name of party that conducted the test

(9) Location of the hydrants where the flow was taken and where static and residual pressure readings were recorded *(see A.5.2.2)*

(10) Size and configuration of mains supplying the hydrants

(11) Size and number of open hydrant butts that flood

(12) Results of the test

(13) Required adjustments to the waterflow test information

(14) Building features such as combustible concealed spaces, floor openings, areas subject to freezing, and areas from which it is intended to omit sprinkler protection

(15) Proposed location and approximate size, if a water supply employing pumps or tanks is contemplated

(16) Name and address of party submitting the preliminary plans

(17) Tentative location of major piping, including mains underground, risers, overhead mains, and fire department connections

(18) The need for seismic protection and the applicable short period response parameter.

Figure A.28.1(a) Typical Preliminary Plan.

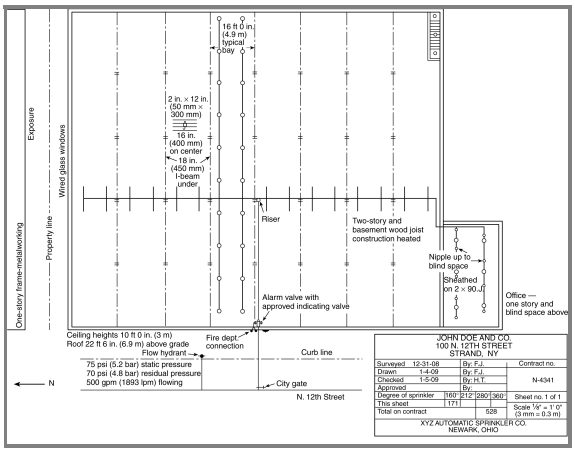
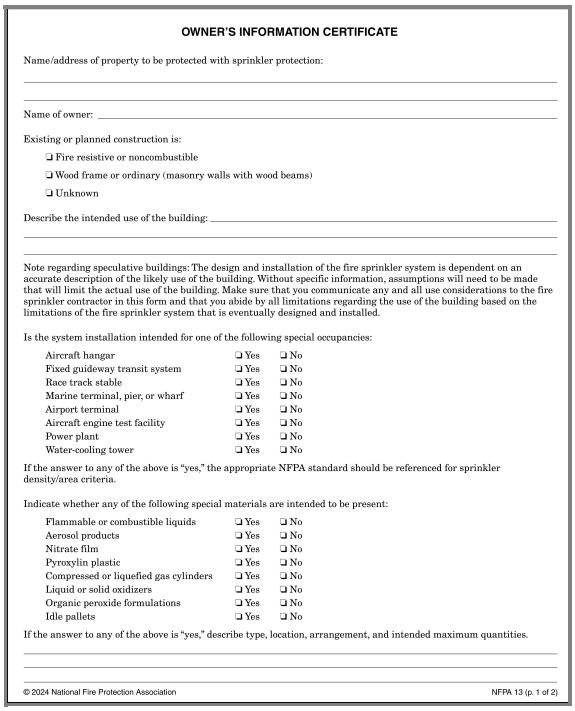


Figure A.28.1(b) Owner's Information Certificate.



OWNER'S INFORMATION CERTIFICATE

Name/address of property to be protected with sprinkler protection:

Name of owner:

Existing or planned construction is:

- ❑ Fire resistive or noncombustible
- ❑ Wood frame or ordinary (masonry walls with wood beams)
- ❑ Unknown

Describe the intended use of the building:

Note regarding speculative buildings: The design and installation of the fire sprinkler system is dependent on an accurate description of the likely use of the building. Without specific information, assumptions will need to be made that will limit the actual use of the building. Make sure that you communicate any and all use considerations to the fire sprinkler contractor in this form and that you abide by all limitations regarding the use of the building based on the limitations of the fire sprinkler system that is eventually designed and installed.

Is the system installation intended for one of the following special occupancies:

Aircraft hangar	❑ Yes	❑ No
Fixed guideway transit system	❑ Yes	❑ No
Race track stable	❑ Yes	❑ No
Marine terminal, pier, or wharf	❑ Yes	❑ No
Airport terminal	❑ Yes	❑ No
Aircraft engine test facility	❑ Yes	❑ No
Power plant	❑ Yes	❑ No
Water-cooling tower	❑ Yes	❑ No

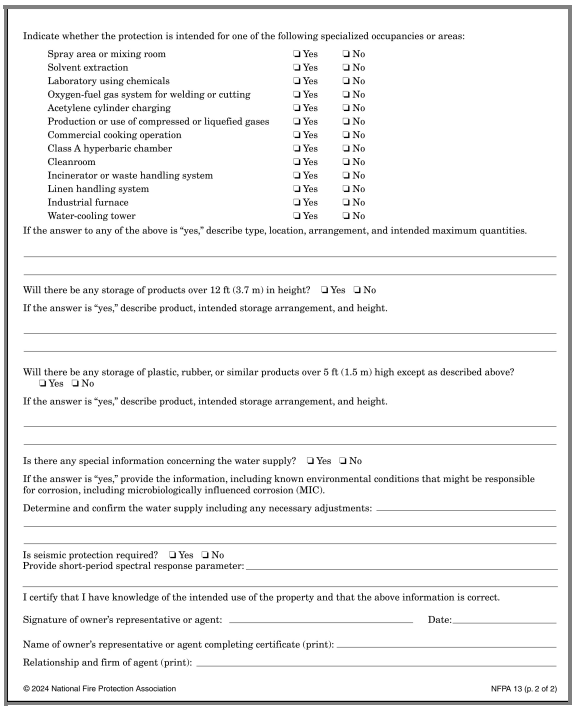
If the answer to any of the above is "yes," the appropriate NFPA standard should be referenced for sprinkler density/area criteria.

Indicate whether any of the following special materials are intended to be present:

Flammable or combustible liquids	❑ Yes	❑ No
Aerosol products	❑ Yes	❑ No
Nitrate film	❑ Yes	❑ No
Pyroxylin plastic	❑ Yes	❑ No
Compressed or liquefied gas cylinders	❑ Yes	❑ No
Liquid or solid oxidizers	❑ Yes	❑ No
Organic peroxide formulations	❑ Yes	❑ No
Idle pallets	❑ Yes	❑ No

If the answer to any of the above is "yes," describe type, location, arrangement, and intended maximum quantities.

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Indicate whether the protection is intended for one of the following specialized occupancies or areas:

Spray area or mixing room	❑ Yes	❑ No
Solvent extraction	❑ Yes	❑ No
Laboratory using chemicals	❑ Yes	❑ No
Oxygen-fuel gas system for welding or cutting	❑ Yes	❑ No
Acetylene cylinder charging	❑ Yes	❑ No
Production or use of compressed or liquefied gases	❑ Yes	❑ No
Commercial cooking operation	❑ Yes	❑ No
Class A hyperbaric chamber	❑ Yes	❑ No
Cleanroom	❑ Yes	❑ No
Incinerator or waste handling system	❑ Yes	❑ No
Linen handling system	❑ Yes	❑ No
Industrial furnace	❑ Yes	❑ No
Water-cooling tower	❑ Yes	❑ No

If the answer to any of the above is "yes," describe type, location, arrangement, and intended maximum quantities.

Will there be any storage of products over 12 ft (3.7 m) in height? ❑ Yes ❑ No

If the answer is "yes," describe product, intended storage arrangement, and height.

Will there be any storage of plastic, rubber, or similar products over 5 ft (1.5 m) high except as described above? ❑ Yes ❑ No

If the answer is "yes," describe product, intended storage arrangement, and height.

Is there any special information concerning the water supply? ❑ Yes ❑ No

If the answer is "yes," provide the information, including known environmental conditions that might be responsible for corrosion, including microbiologically influenced corrosion (MIC).

Determine and confirm the water supply including any necessary adjustments:

Is seismic protection required? ❑ Yes ❑ No
Provide short-period spectral response parameter:

I certify that I have knowledge of the intended use of the property and that the above information is correct.

Signature of owner's representative or agent: Date:

Name of owner's representative or agent completing certificate (print):

Relationship and firm of agent (print):

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Statement of Problem and Substantiation for Public Comment

FR 1170 added the need to determine any necessary adjustments to the waterflow test data to the Owners Certificate. In a previous cycle, the language for seismic protection and the applicable short period response parameter was added to the Owners Certificate. It is unreasonable to expect that a building owner will be able to provide this information. Some Committee members argued that the Owners Certificate information is provided by the owner or their designated representative. If the information is to be provided by the owner's designated representative, it should be on the preliminary plans (as outlined in A.28.1).

Admittedly this comment changes the information from being a mandatory requirements as compared to being included on preliminary plans which are discussed in Annex A. However, it would be considered new information to add provisions that the preliminary plans become a mandatory requirement. In the absence of preliminary plans, one would expect the information to be contained on the working plans.

Related Item

• FR 1170

Submitter Information Verification

Submitter Full Name: William Koffel
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Submittal Date: Fri May 12 14:58:55 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-1106-NFPA 13-2023
Statement:	The seismic requirements were added as required in the owner's certificate. The water supply adjustments were added to indicate any required adjustments to align with what is required in the body of the standard.

Public Comment No. 204-NFPA 13-2023 [New Section after A.28.3.4.7.3]

A.28.3.4.7.4.3(A)

If there is a single line of sprinklers installed under the obstruction, then 4 sprinklers on the same branch line should be included in the hydraulic calculations. If, however, there is more than one line of sprinklers installed under the obstruction, then the hydraulic calculations should account for 2 sprinklers on 2 lines.

Statement of Problem and Substantiation for Public Comment

Annex language is being added to help explain which sprinklers to include in the hydraulic design when there is more than one line of sprinklers being installed under an obstruction.

Related Item

• FR-1268

Submitter Information Verification

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Submittal Date: Wed May 31 08:03:31 EDT 2023
Committee: AUT-SSD

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1093-NFPA 13-2023
Statement: Annex language is being added to help explain which sprinklers to include in the hydraulic design when there is more than one line of sprinklers being installed under an obstruction.