Technical Committee on
Sprinkler System Installation Criteria

M E M O R A N D U M

DATE: June 26, 2013

TO: Principal and Alternate Members of the Technical Committee on Sprinkler System Installation Criteria

FROM: Matt Klaus, Principal Fire Protection Engineer/NFPA Staff Liaison

SUBJECT: **AUT-SSI AGENDA PACKAGE – A2015 Pre-First Draft Meeting**

Enclosed is the agenda for the Pre-First Draft meeting for NFPA 13, *Standard for the Installation of Sprinkler Systems*. NFPA 13 has entered the Annual 2015 revision cycle and will produce a 2016 Edition. It is imperative that you review the attached public input in advance, with your ideas and substantiations for your views. If you have alternate suggestions for text changes, please come prepared with the words and respective substantiation.

For administrative questions, please feel free to contact Elena Carroll at (617) 984-7952.
For technical questions, please feel free to contact Matt Klaus at (617) 984-7448. You can also reach either of us via e-mail at ECarroll@nfpa.org or MKlaus@nfpa.org. We look forward to meeting everyone in St, Louis, MO at the St. Louis Union Station - a DoubleTree by Hilton Hotel

Table of Contents

Technical Committee on Sprinkler System Installation Criteria

Pre-First Draft Meeting
July 9-10, 2013
St. Louis Union Station - a DoubleTree by Hilton Hotel
1820 Market St. One Union Station
St Louis, Missouri, 63103

AGENDA

Tuesday July 9, 2013

1. Call to Order – 8:00 AM
2. Introductions of Members and Staff
3. Review and Approval of A2012 ROC Meeting Minutes
4. Review of A2015 Revision Cycle and Meeting Schedule
5. Review of Distributed Material and Workload
    a. Overview of Public Input
    b. Overview of Potential Committee First Revisions
6. Establish Task Groups
7. Recess for Task Group Meetings (TBD)

Wednesday, July 10, 2013

8. Reconvene for Task Group Reports – 8:00AM
9. Joint Meeting with SSD - 10:00 AM
10. Adjourn 12:00 PM
11. Lunch 12:00 PM – 1:00 PM
12. New Process Training and Mock Meeting 1:00 PM – 4:00 PM

PART 2 –

COMMITTEE ADDRESS LIST

Address List No Phone

06/19/2013
Matthew J. Klaus

Sprinkler System Installation Criteria

AUT-SSI

Automatic Sprinkler Systems

Joe W. Noble E 10/10/1997
Chair AUT-SSI
Noble Consulting Services, LLC
6325 South Jones Blvd., #400
Las Vegas, NV 89130
International Fire Marshals Association

Hamid R. Bahadori SE 4/17/1998
Principal AUT-SSI
Hughes Associates, Inc.
725 Primera Boulevard, Suite 215
Lake Mary, FL 32746
Alternate: Mark Hopkins

Weston C. Baker, Jr. I 9/30/2004
Principal AUT-SSI
FM Global
1151 Boston Providence Turnpike
PO Box 9102
Norwood, MA 02062-9102
Alternate: David B. Fuller

Cecil Bilbo, Jr. SE 7/26/2007
Principal AUT-SSI
Academy of Fire Sprinkler Technology, Inc.
301 North Neil Street, Suite 426
Champaign, IL 61820

Pat D. Brock SE 8/5/2009
Principal AUT-SSI
Oklahoma State University
Fire Protection & Safety Technology
1424 West Liberty Avenue
Stillwater, OK 74075
Alternate: Floyd Luinstra

Phillip A. Brown IM 10/10/1997
Principal AUT-SSI
American Fire Sprinkler Association, Inc.
12750 Merit Drive, Suite 350
Dallas, TX 75251
American Fire Sprinkler Association
Installer/Maintainer
Alternate: Jim Johnston

Robert G. Caputo SE 1/16/1998
Principal AUT-SSI
Fire & Life Safety America
Consolidated Fireprotection, Inc.
657 Cantara Lane
Vista, CA 92081
Alternate: Steven J. Scandaliato

Ralph D. Gerdes SE 10/10/1997
Principal AUT-SSI
Ralph Gerdes Consultants, LLC
5510 South East Street, Suite E
Indianapolis, IN 46227
American Institute of Architects

Donald G. Goosman SE 11/2/2006
Principal AUT-SSI
The RJA Group, Inc.
Rolf Jensen & Associates, Inc.
600 West Fulton Street, Suite 500
Chicago, IL 60661-1241
Alternate: Belynda Miranda

Luke Hilton I 1/18/2001
Principal AUT-SSI
Liberty Mutual Property
13830 Ballantyne Corporate Place, Suite 525
Charlotte, NC 20277-2711
Property Casualty Insurers Association of America
Alternate: Glenn E. Thompson

Brian Hoening M 10/18/2011
Principal AUT-SSI
Globe Fire Sprinkler Corporation
4077 Air Park Drive
Standish, MI 48658
National Fire Sprinkler Association
Manufacturer
Alternate: Scott T. Franson

Elwin G. Joyce, II U 10/10/1997
Principal AUT-SSI
Eastern Kentucky University
2148 Alexandria Drive
Lexington, KY 40504
NFPA Industrial Fire Protection Section

Larry Keeping **SE** 10/10/1997
Principal **AUT-SSI**
Professional Loss Control
3413 Wolfedale Road, Suite 6
Mississauga, ON L5C 1V8 Canada

John Kelly **E** 08/09/2012
Principal **AUT-SSI**
Washington DC Fire & EMS Department
Office of the Fire Marshal
719 Opus Avenue
Capitol Heights, MD 20743

Charles W. Ketner **L** 1/10/2008
Principal **AUT-SSI**
National Automatic Sprinkler Fitters LU 669
Joint Apprenticeship & Training Committee
7050 Oakland Mills Road
Columbia, MD 20732
United Assn. of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry
Alternate: Michael A. Rothmier

George E. Laverick **RT** 10/10/1997
Principal **AUT-SSI**
UL LLC
333 Pfingsten Road
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Alternate: Kerry M. Bell

Kenneth W. Linder **I** 1/1/1984
Principal **AUT-SSI**
Swiss Re
2 Waterside Crossing, Suite 200
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Alternate: Todd A. Dillon

David O. Lowrey **E** 08/09/2012
Principal **AUT-SSI**
City of Boulder Fire Rescue
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Ausmus S. Marburger **IM** 10/10/1997
Principal **AUT-SSI**
Fire Protection Industries, Inc.
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Contractor
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Michael F. Meehan **IM** 1/16/1998
Principal **AUT-SSI**
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1417 Miller Store Road, Suite C
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Alternate: Russell B. Leavitt

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Thomas A. Noble **E** 8/5/2009
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Zeljko Sucevic **IM** 08/09/2012
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Alternate: Adam Seghi

Terry L. Victor **M** 10/3/2002
Principal **AUT-SSI**
Tyco/SimplexGrinnell
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Alternate: James E. Golinveaux

Daniel P. Wake **M** 08/09/2012
Principal **AUT-SSI**
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4901 Kesslersville Road
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Voting Alternate **AUT-SSI**
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241 Hughes Lane
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Design Technician

Kerry M. Bell **RT** 4/15/2004
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UL LLC
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Principal: George E. Laverick

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2043 Woodland Parkway, Suite 300
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Principal: William B. Smith

James A. Charrette **IM** 7/26/2007
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Contractor
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Address List No Phone

Sprinkler System Installation Criteria

Automatic Sprinkler Systems

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XL Global Asset Protection Services
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210 North Industrial Park Road
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Manufacturer
Principal: Brian Hoening

David B. Fuller **I** 7/26/2007
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Principal: Weston C. Baker, Jr.

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Principal: David S. Mowrer

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Principal: Daniel P. Wake

Glenn E. Thompson I 10/27/2005
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Design Technician

Barry M. Lee M 10/10/1997
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Tyco International
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Matthew J. Klaus 12/16/2010
Staff Liaison **AUT-SSI**
National Fire Protection Association
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Quincy, MA 02169-7471

PART 3 –

NEW PROCESS WORKSHEETS

TERMS

New Terms	Old Terms
Input Stage – Stage where Public Input is sought to develop the First Draft.	**Report on Proposals (ROP) Stage**
Public Input (PI) – A recommended change submitted for consideration by the Technical Committee. Each Public Input (PI) shall include new, modified or deleted text as appropriate and technical substantiation to support the recommended change. *Download a Public Input Form for documents in Fall 2013 and subsequent cycles*	**Proposal**
First Draft Meeting	**ROP Meeting**
First Revision (FR) – Proposed changes to the text of an NFPA Standard developed by the responsible Committee(s) in the Input Stage. Each First Revision shall contain the new, modified or deleted text as appropriate. A First Revision shall be established through a Meeting Vote and shall only require a simple majority to proceed to ballot. Only First Revisions that pass ballot will show in the First Draft. Each First Revision shall contain a Committee Statement that substantiates the proposed change to the document.	**Committee Proposal or Accepted Public Proposal**
Committee Input (CI) – A CI can be established during the First Draft Technical Committee meeting (without balloting) in order to highlight the concept to obtain public comment; often used for newer ideas, topics that aren't fully fleshed out or controversial topics. A Committee Input (CI) can also be a First Revision (FR) that fails to receive support of the technical committee through letter ballot. Committee Inputs shall maintain the original FR Committee Statement and shall contain a notification to the reviewer documenting that the CI represents a failed FR.	**"Trial Balloon" or an Accepted Proposal (or Committee Proposal) that Failed Ballot**
Committee Statement (CS) – A Committee Statement is the committee's response to a Public Input (PI), Public Comment (PC) or the committee's technical substantiation for a proposed First Revision. A committee statement shall be established through a Meeting Vote and shall only require a simple majority to proceed.	**Committee Statement**
First Draft Report – The First Draft Report documents the Input Stage; it shall contain the First Draft, Public Input, Committee Input, Committee and Correlating Committee Statements, Correlating Input, Correlating Notes and Ballot Statements.	**ROP**
First Draft – The draft of the proposed new or revised standard showing in legislative text all First Revisions and First Correlating Revisions that have passed ballot.	**ROP Draft**
Correlating Committee (CC)	**Technical Correlating Committee**
Correlating Committee Statement – The Correlating Committee's response to a Public Input (PI), Committee Input (CI), Public Comment (PC) or the Correlating Committee's technical substantiation for a correlating change to proposed Revision or a correlative CCFR. It shall be established through a Meeting Vote and shall only require a simple majority to proceed.	**TCC Note**
Correlating Committee First Revision (CCFR) – Correlating Committee First Revisions are proposed revisions to the Technical Committee's First Revisions that are required to correlate the proposed document. Each CCFR shall contain a Correlating Committee Statement that substantiates the Revision. A CCFR shall be established through a Meeting Vote and shall only require a simple majority to proceed to letter ballot. CCFRs that fail to receive CC support through letter ballot shall not be published as part of the First Draft.	**TCC Note**

Comment Stage	Report on Comments (ROC) Stage
Public Comment – Changes submitted by the public during public Comment Stage.	**Public Comment**
Second Draft Meeting	**ROC Meeting**
Second Revision (SR) – Similar to First Revision, but in the Comment Stage. Proposed changes to the text by the TC that have passed ballot.	**Committee Comment or Accepted Public Comment**
Committee Comment – A Committee Comment shall be a Second Revision (SR) that fails to receive support of the TC through ballot. Committee Comments shall maintain the original Committee Statement and shall contain a notification to the reviewer documenting that the Committee Comment represents a failed SR.	**Committee Comment that failed ballot**
Committee Action – An action by a TC to accept or reject a Comment. This occurs only in the Comment Stage and the action itself is not balloted.	**Committee Action**
Second Draft Report – The Second Draft Report documents the Comment Stage; it shall contain the Second Draft, Public Comments with corresponding Committee Actions and Committee Statements, Committee Comments, Correlating Revisions and Ballot Statements.	**ROC**
Second Draft – The draft of the proposed new or revised standard showing in legislative text all Second Revisions and Second Correlating Revisions that have passed ballot.	**ROC Draft**

NEW PROCESS ACTIONS AND MOTIONS

Possible Action 1: Resolve PIs, (no change to Section)		
	Action Required	**Sample Motions**
Step One:	Committee generates a statement to respond to (resolve) each PI #	I make a motion (move) to resolve PI#___ with the following committee statement: *Approval by a meeting vote (simple majority) and not subject to ballot (Regs 4.3.7.3 & 4.3.7.3.2)*
Possible Action 2: Create First Revision - Change to a Section		
	Action Required	**Sample Motions**
Step One: (1st option)	Committee generates a First Revision	I make a motion (move) to revise Section ___ as follows:……….. *Approval by a meeting vote (simply majority) and final approval through ballot (Regs 4.3.9.2.3)*
Step Two: (1st option)	Committee generates a statement substantiating the change.	*Approval by a meeting vote (simply majority) (Regs 4.3.7.3)*
Step One: (2nd option)	Committee generates a First Revision using one or more PIs as the starting point.	I make a motion to revise Section __ using PI#__ as the basis for change. *Approval by a meeting vote (simply majority) and final approval through ballot (Regs 4.3.9.2.3)*
Step Two: (2nd option)	If the revision is associated with one or more PIs the committee generates a statement to respond to (resolve) each PI	I make a motion (move) to resolve PIs # through ## with the following statement: *Approval by a meeting vote (simply majority) and not subject to ballot (Regs 4.3.7.3 & 4.3.7.3.1)*
Possible Action 3: Create Committee Input – (Trial Balloon/Placeholder)		
	Action Required	**Sample Motions**
Step One:	Committee generates a Committee Input (proposed revision) for public consideration and solicitation of Public Comments	I make a motion (move) to create a CI with a proposed revision to X.X.X as follows: *Approval by a meeting vote (simply majority) and not subject to ballot (Regs 4.3.8)*
Step Two:	Committee generates a statement to explain the intent and why it is seeking public consideration and soliciting Public Comments	*Approval by a meeting vote (simply majority) (Regs 4.3.7.1)*

New Process Actions and Motions- Final- 2/13/2012

PART 4 –

A2012 ROC MEETING MINUTES

NFPA Technical Committee on
Sprinkler System Installation Criteria

ROC Meeting

Newport Beach Marriott
Newport Beach, California
September 19-20, 2011

MEETING MINUTES

1. **Call to Order**. TC Chair Joe Noble called the meeting to order at 8:00 (9/19/11).

2. **Self-Introductions of members and guests.** Members of the committee introduced themselves and reviewed the contact information. The meeting attendance list is attached to these minutes.

3. **Review of Distributed Meeting Materials.** Staff Liaison Matt Klaus provided an overview of the agenda materials that were sent to the committee and posted on the committee web page.

4. **Approval of A12-ROP Draft Meeting Minutes.** The minutes of the A12-ROP Meeting were reviewed and approved without modification.

5. **Review of Meeting Procedures and Revision Process.** Matt Klaus gave a presentation on the overall meeting guidelines and the NFPA Regulations Governing TC operations.

6. **Guest Presentation**. Jeff Kochelek, fpsCMI

7. **Work Load .** TC Chair Joe Noble discussed the logistics for the meeting and the process to complete the ROC meeting.

8. **Public and Committee Comments**. The committee then processed the comments. See the ROC for the official actions on the proposals.

9. **New Business:**

    a. The TC discussed a formal interpretation (FI) submitted to NFPA regarding 8.15.1.2.10. The TC will be balloted on this FI following the TC meeting.

b. Aus Marburger addressed the TC regarding a request that the Standards Council allow NFPA 13 to use an alternate definition of the term “listed”. The TC decided not to move forward in making the request.

10. **Adjournment.** Meeting adjourned at 7:30 pm (9/20/11).

Sign-In Sheet
Sprinkler System Installation Criteria

NFPA 13 AUT-SSI
Report on Comments Meeting (ROC) September 19-20, 2011
Newport Beach Marriott Hotel, Newport Beach, CA

Name	Office	Organization	Signature	Staying at hotel	Days 1	2	3	4	5
Noble, Joe	Chair	International Fire Marshals Association	[illegible]	Yes	✓	✓			
Bahadori, Hamid	Principal	Hughes Associates, Inc.	[illegible]	Yes	✓	✓			
Baker, Weston	Principal	FM Global	[illegible]	Yes	✓	✓	✓	✓	✓
Brock, Pat	Principal	Oklahoma State University	Pat D. Brock	Yes	✓	✓	✓	✓	
Brown, Phillip	Principal	American Fire Sprinkler Association	[illegible]	YES	✓	✓	✓	✓	
Caputo, Robert	Principal	Fire & Life Safety America	[illegible]	YES	✓	✓			✓
Dornbos, Del	Principal	National Fire Sprinkler Association	Del Dornbos	Yes	✓	✓			
Gerdes, Ralph	Principal	American Institute of Architects							
Goosman, Donald	Principal	The RJA Group, Inc.	[illegible]	Yes	X	X			
Hilton, Luke	Principal	Property Casualty Insurers Association of	[illegible]	YES	X				
Joyce, Elwin	Principal	NFPA Industrial Fire Protection Section							
Keeping, Larry	Principal	Canadian Automatic Sprinkler Association	L Keeping	YES	✓	✓			
Ketner, Charles	Principal	United Assn. of Journeymen & Apprentices	C Ketner	YES	✓	✓			
Kirn, Michael	Principal	Code Consultants, Inc.	[illegible]	YES	✓	✓	✓		
Lake, James	Principal	National Fire Sprinkler Association	James Lake						
Laverick, George	Principal	Underwriters Laboratories Inc.	[illegible]	YES	✓				
Linder, Kenneth	Principal	Swiss Re	[illegible]	Yes	✓	✓	✓	✓	✓
Marburger, Ausmus	Principal	National Fire Sprinkler Association	[illegible]	Yes	✓	✓			
McPhee, Rodney	Principal	Canadian Wood Council	[illegible]	No	✓				
Meehan, Michael	Principal	American Fire Sprinkler Association	[illegible]	Yes	✓	✓			
[redacted]	Principal	[redacted]							

NP completed
10/19/2011 CD

Sign-In Sheet
Sprinkler System Installation Criteria

NFPA 13 AUT-SSI
Report on Comments Meeting (ROC) September 19-20, 2011
Newport Beach Marriott Hotel, Newport Beach, CA

Name	Office	Organization	Signature	Staying at hotel	Days 1	2	3	4	5	
Mowrer, David	Principal	Babcock & Wilcox Technical Services, LLC	[illegible]	Yes	✓	✓	✓			
Noble, Thomas	Principal	City of Henderson, Building & Fire Safety	Thomas S Noble	YES	X	X	X			
Patel, Janak	Principal	Savannah River Nuclear Solutions								✓
Schwab, Peter	Principal	Wayne Automatic Fire Sprinklers, Inc.	[illegible]	YES	13 nights					
Slocum, LeJay	Principal	Aon Fire Protection Engineering	[illegible]	Yes	✓	✓				
Statt, Paul	Principal	Eastman Kodak Company								✓
Swantek, Leonard	Principal	Victaulic Company of America								✓
Underwood, Lynn	Principal	Axis US Property								✓
Victor, Terry	Principal	Tyco Fire FSuppression & Building	Terry L Victor	YES	✓	✓	✓			
Bell, Kerry	Alternate	Underwriters Laboratories Inc.								✓
Bilbo, Cecil	Alternate	American Fire Sprinkler Association	[illegible]	✓	✓	✓	✓			
Carbone, John	Alternate	Victaulic Company	[illegible]	Yes	✓	✓	✓	✓	✓	
Charrette, James	Alternate	National Fire Sprinkler Association	Jim Charrette	Yes	✓	✓				
Dillon, Todd	Alternate	XL Global Asset Protection Services								✓
Fuller, David	Alternate	FM Global	David B. Fuller	Yes	✓	✓				
Golinveaux, James	Alternate	Tyco Fire FSuppression & Building	[illegible]	YES	✓	✓	✓	✓	✓	
Hopkins, Mark	Alternate	Hughes Associates, Inc.								✓
Leavitt, Russell	Alternate	American Fire Sprinkler Association	[illegible]	YES	✓	✓	✓			
Miranda, Belynda	Alternate	The RJA Group, Inc.								✓
Osburn, Matthew	Alternate	Canadian Automatic Sprinkler Association								✓
Rothmier, Michael	Alternate	United Assn. of Journeymen & Apprentices								✓

Sign-In Sheet
Sprinkler System Installation Criteria

NFPA 13 AUT-SSI
Report on Comments Meeting (ROC) September 19-20, 2011
Newport Beach Marriott Hotel, Newport Beach, CA

Name	Office	Organization	Signature	Staying at hotel	Days 1	2	3	4	5	
Smith, Austin	Alternate	Babcock & Wilcox Y-12, LLC								✓
Smith, William	Alternate	Code Consultants, Inc.	[illegible]		X	X				
Thompson, Glenn	Alternate	Property Casualty Insurers Association of								✓
Tomlin, Steven	Alternate	Aon Fire Protection Engineering								✓
Vincent, Robert	Alternate	National Fire Sprinkler Association	Robert Vincent	Yes	✓	✓				
Lee, Barry	Nonvoting Member	Tyco Fire FSuppression & Building								✓
Klaus, Matthew	Staff Liaison	National Fire Protection Association	[illegible]	✓	✓	✓				

Sign-In Sheet
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NFPA 13 AUT-SSI
Report on Comments Meeting (ROC) September 19-20, 2011
Newport Beach Marriott Hotel, Newport Beach, CA

Name	Office	Organization	Signature	Staying at hotel	Days 1	2	3	4	5

Guests:

Name	Office	Organization	Signature	Staying at hotel	Days 1	2	3	4	5
Barry Chase	Guest	NFPA	[illegible]	Y	X	X			
BARRY BLACKABY	GUEST / OTIS	OTIS ELEVATOR COMPANY	[illegible]	Y	X	X			
Wayne D. Moore	"	Hughes Associates Inc.	[illegible]	Y	X	X			
Karl Wiegand	Guest	NFSA	[illegible]	Y	X	X			
GEORGE W. STANLEY	GUEST	WIGINTON FIRE SYSTEMS	[illegible]	Y	X	X	X	X	X
Jeffrey Kochelek	Guest	fpsCMI	[illegible]	N					
ADAM HILTON	GUEST	fpsCMI	[illegible]	N					
John Denhardt	Guest (13 SDD)	Strickland Fire Protection	[illegible]	Y		X			

PART 5 –

A2015 KEY DATES

2015 ANNUAL REVISION CYCLE

*Public Input Dates may vary according to standards and schedules for Revision Cycles may change. Please check the NFPA Website for the most up-to-date information on Public Input Closing Dates and schedules at www.nfpa.org/document # (i.e. www.nfpa.org/101) and click on the Next Edition tab.

Process Stage	Process Step	Dates for TC	Dates for TC with CC
Public Input Stage (First Draft)	Public Input Closing Date*	7/8/2013	7/8/2013
	Final Date for TC First Draft Meeting	12/13/2013	9/13/2013
	Posting of First Draft and TC Ballot	1/31/2014	10/25/2013
	Final date for Receipt of TC First Draft ballot	7/21/2014	11/15/2013
	Final date for Receipt of TC First Draft ballot - recirc	2/28/2014	11/22/2013
	Posting of First Draft for CC Meeting		11/29/2013
	Final date for CC First Draft Meeting		1/10/2014
	Posting of First Draft and CC Ballot		1/31/2014
	Final date for Receipt of CC First Draft ballot		2/21/2014
	Final date for Receipt of CC First Draft ballot - recirc		2/28/2014
	Post First Draft Report for Public Comment	3/7/2014	3/7/2014

Comment Stage (Second Draft)	Public Comment Closing Date for Paper Submittal*	4/11/2014	4/11/2014
	Public Comment Closing Date for Online Submittal (e-PC)*	5/16/2014	5/16/2014
	Final Date to Publish Notice of Consent Documents (Standards that received no Comments)	5/30/2014	5/30/2014
	Appeal Closing Date for Consent Standards (Standards that received no Comments)	6/13/2014	6/13/2014
	Final date for TC Second Draft Meeting	10/31/2014	7/25/2014
	Posting of Second Draft and TC Ballot	12/12/2014	9/5/2014
	Final date for Receipt of TC Second Draft ballot	1/2/2015	9/26/2014
	Final date for receipt of TC Second Draft ballot - recirc	1/9/2015	10/3/2014
	Posting of Second Draft for CC Meeting		10/10/2014
	Final date for CC Second Draft Meeting		11/21/2014
	Posting of Second Draft for CC Ballot		12/12/2014
	Final date for Receipt of CC Second Draft ballot		1/2/2015
	Final date for Receipt of CC Second Draft ballot - recirc		1/9/2015
	Post Second Draft Report for NITMAM Review	1/16/2015	1/16/2015

Tech Session Preparation (& Issuance)	**Notice of Intent to Make a Motion (NITMAM) Closing Date**	3/6/2015	3/6/2015
	Posting of Certified Amending Motions (CAMs) and Consent Standards	5/1/2015	5/1/2015
	Appeal Closing Date for Consent Standards	5/16/2015	5/16/2015
	SC Issuance Date for Consent Standards	5/26/2015	5/26/2015

Tech Session	Association Meeting for Standards with CAMs	6/22-25/2016	6/22-25/2016

Appeals and Issuance	Appeal Closing Date for Standards with CAMs	7/15/2015	7/15/2015
	SC Issuance Date for Standards with CAMs	8/20/2015	8/20/2015

Approved ___October 18, 2011___ Revised ___March 7, 2013___

Public Input No. 71-NFPA 13-2013 [Section No. 1.2.2]

Original Hide Markup

1.2.2

Sprinkler systems and private fire service mains are specialized fire protection systems and shall require design and installation by knowledgeable and experienced ~~design and installation~~ personnel .

Statement of Problem and Substantiation for Public Input

grammatically incorrect

Submitter Information Verification

Submitter Full Name: Roland Huggins

Organization: American Fire Sprinkler Associ

Submittal Date: Tue Feb 26 17:16:51 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361917011610.xml

Public Input No. 431-NFPA 13-2013 [Section No. 2.3.2]

Original Hide Markup

2.3.2 ASCE Publications.

American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191-4400.

SEI/ASCE 7, Minimum Design Loads of Buildings and Other Structures,- ~~2005~~ _ 2010 .

Statement of Problem and Substantiation for Public Input

Updated to reference the current edition of ASCE 7(2010).

Submitter Information Verification

Submitter Full Name: Roland Asp

Organization: National Fire Sprinkler Association

Affilliation: NFSA E&S Committee

Submittal Date: Tue May 28 12:11:20 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369757480358.xml

Public Input No. 432-NFPA 13-2013 [Section No. 2.3.4]

Original | Hide Markup

2.3.4 ASTM Publications.

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

ANSI/ASTM A 53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless, 2001.

ASTM A 106, Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service, 2008.

ASTM A 135, Standard Specification for Electric-Resistance-Welded Steel Pipe, 2001.

ASTM A 153A/153M, Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware, 2004.

ASTM A 234, Standard Specification for Piping Fittings of Wrought-Carbon Steel and Alloy Steel for Moderate and High Temperature Service, 2001.

ASTM A 795, Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use, 2000.

ASTM B 16.15, Cast Bronze Threaded Fittings, 1985.

ASTM B 32, Standard Specification for Solder Metal, 2000.

ASTM B 43, Specification for Seamless Red Brass Pipe, 2009.

ASTM B 75, Standard Specification for Seamless Copper Tube, 1999.

ASTM B 88, Standard Specification for Seamless Copper Water Tube, 1999.

ASTM B 251, Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube, 1997.

ASTM B 446, Standard Specification for Nickel-Chromium-Molybdenum-Columbium Alloy (UNSN 06625) and Nickel-Chromium-Molybdenum-Silicon Alloy (UNSN 06219) Rod and Bar, 2000.

ASTM B 813, Standard Specification for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper-Alloy Tube, 2000.

ASTM B 828, Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings, 2000.

ASTM C 635, Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings, ~~2004~~ <u>2012</u> .

ASTM C 636, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels, ~~2004~~ <u>2008</u> .

ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, 2010.

ASTM E 119, Standard Test Methods for Fire Tests of Building Construction and Materials, 2010.

ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C, 1999.

ASTM F 437, Standard Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80, 1999.

ASTM F 438, Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40, 2001.

ASTM F 439, Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80, 2001.

ASTM F 442, Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR), 2009.

ASTM F 1121, Standard Specification for International Shore Connections for Marine Fire Applications, 1998.

ASTM SI 10, Standard for Use of the International System of Units (SI): The Modern Metric System, 1997.

Statement of Problem and Substantiation for Public Input

Updated to reference the current edition of ASTM C635 (2012) and ASTM C636 (2008)

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Tue May 28 12:15:17 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369757717268.xml

Public Input No. 250-NFPA 13-2013 [Section No. 3.3.4]

Original Hide Markup

3.3.4 * Ceiling Pocket.
An architectural ceiling feature that consists of a bounded area of ceiling located at a higher elevation than the attached lower ceiling, and where the depth of the pocket is greater than the allowable distance a sprinkler deflector may be located from the higher ceiling elevation .

Statement of Problem and Substantiation for Public Input

clarifies that where a sprinkler can be located in the lower ceiling and still meet the deflector distance rule, the upper ceiling should not be considered a ceiling pocket.

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Fri May 03 12:20:07 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367598007202.xml

Public Input No. 569-NFPA 13-2013 [Section No. 3.3.5.4]

Original Hide Markup

3.3.5.4 Smooth Ceiling.
A continuous ceiling free from significant irregularities, lumps, or indentations 4 inches (101 .6 mm) or greater in depth.

Additional Proposed Changes

File Name	Description	Approved
13_Dias.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

"Significant irregularities, lumps, or indentations" are ambiguous and open to interpretation. A maximum 4 inch depth would seem reasonable since the new and revised definitions of obstructed and unobstructed construction include top chord members of wood truss or bar joists limited to 4 inches for unobstructed and over 4 inches for obstructed (See A.3.7.1(9) and (10) and A.3.7.2(5). It would appear that the committee has determined with these new definitions that if over 4 inches, significant obstruction to heat flow will occur. This definition should not be confused with "Smooth Ceilign Construction" as these are two separate conditions. Some special lsited sprinklers; and piping (CPVC Exposed), are only listed for use under "smooth ceilings" and not all types of smooth ceiling construction. Detectors have different spacing requirements when under "Smooth Ceilings" (See 7.9.2.8.2) than non "smooth ceilings". This comment is being submitted by the Tyco Codes and Standards Sprinkler Task Group.

Submitter Information Verification

Submitter Full Name: KENNETH DIAS
Organization: Tyco Fire Protection Products
Submittal Date: Mon Jun 03 13:37:56 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370281076667.xml

Public Input No. 136-NFPA 13-2013 [New Section after 3.3.6]

3.3.7 Concealed Space

That portion (s) of a building behind walls, over suspended ceilings, in pipe chases, attics, and whose size might normally range from 1 in. (44.45 mm) stud spaces to 8 ft (2.44 m) interstitial truss spaces and that might contain combustible materials such as building structural members, thermal and/or electrical insulation, and ducting.

Statement of Problem and Substantiation for Public Input

This term is used extensively throughout the document. Many AHJ's do not consider an attic a concealed space because there may be scuttle holes which allow access. The document needs to define the term. This definition comes from NFPA 96.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 09:15:37 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364303737336.xml

Public Input No. 182-NFPA 13-2013 [Section No. 3.3.21]

Original Hide Markup

~~3.3.21 – Small Room.~~

~~A compartment of light hazard occupancy classification having unobstructed construction and a floor area not exceeding 800 ft² (74.3 m²).~~

Statement of Problem and Substantiation for Public Input

The definition contains requirements by stating that small room has to be light hazard and have unobstructed construction. These are not characteristics of a small room, they are requirements that apply to doing something special when installing sprinklers in a small room. The term small room is also use in chapters 8,11, 12, and 23 in that context the room was never intended to be limited to light hazard or unobstructed construction and was never allowed to be as large as 800 square feet. In further proposals we will suggest to put the requirement for these special requirements in chapter 8 where they belong.

The term "small room" is creating a great deal of confusion in the sprinkler industry. The term is used many times in NFPA 13, but in those locations, it is not intended to be limited to light hazard, nor is it intended to be used with rooms up to 800 sq ft in area (see 23.4.4.6.2 as an example). Since the definition of "small room" was intended only to be used with section 8.6.2.1.2 and section 8.6.3.2.4, the cleanest way to fix the problem is to move the light hazard and 800 sq ft requirements into these sections and eliminate the definition of "small room" Otherwise, the committee needs to go change all of the other uses of the term "small room" to something else like "little room" or "small compartment" so that the light hazard and 800 sq ft limitations do not apply in those cases where they were not intended to apply.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 183-NFPA 13-2013 [Section No. 8.6.2.1.2 [Excluding any Sub-Sections]]	Same issue
Open	Public Input No. 185-NFPA 13-2013 [Section No. 8.6.3.2.4 [Excluding any Sub-Sections]]	Same issue

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 18 11:29:39 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366298979117.xml

Public Input No. 487-NFPA 13-2013 [Section No. 3.3.22]

Original Hide Markup

3.3.22 * Sprinkler System.

A system that consists of an integrated network of piping designed in accordance with fire protection engineering standards that includes a water supply source, a water control valve, a waterflow alarm, and a drain ~~and is commonly activated by heat from a fire, discharging water over the fire area~~ . The portion of the sprinkler system above ground is a network of specifically sized or hydraulically designed piping installed in a building, structure, or area, generally overhead, and to which sprinklers are attached in a systematic pattern. The system is commonly activated by heat from a fire and discharges water over the fire area.

Statement of Problem and Substantiation for Public Input

The deleted text is redundant to the last sentance in the definition.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Fri May 31 07:01:58 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369998118968.xml

Public Input No. 29-NFPA 13-2013 [Section No. 3.4.1.1]

Original | Hide Markup

3.4.1.1 Premixed Antifreeze Solution.

A mixture of an antifreeze material with water that is prepared and factory-mixed by the manufacturer with a quality control procedure in place that ensures that the antifreeze solution remains homogeneous and that the concentration is as specified.

See uploaded file

Additional Proposed Changes

	File Name	Description	Approved
Open	13_P_29_Rec_from_TIA.pdf	Rec from TIA (balloted)	

Statement of Problem and Substantiation for Public Input

Note: This Proposal originates from Tentative Interim Amendment 13-13-1 (TIA 1066) issued by the Standards Council on August 9, 2012.

The information provided in the Fire Protection Research Foundation report "Antifreeze Solutions Supplied through Spray Sprinklers: Interim Report" illustrates that under certain conditions (pressure, fire size, k-factor, ceiling height, deflector design…etc) a 50% glycerine solution is capable of igniting and causing a dramatic increase in heat release rate. As noted in the FPRF report, these results highlight the "complicated interaction between sprinkler spray and the ignition source."As a result of this additional testing, there are more questions that need to be answered, and the testing shows that concentrations of anti-freeze that previous testing indicated were acceptable and would not support combustion actually do with a stronger ignition source. In addition, sprinklers with larger orifices that require lower pressure than typical residential sprinklers and potentially a lager droplet distribution also ignited. It is clear that further testing is need to fully understand under what conditions an anti-freeze solutions are safe, anti-freeze solutions can not be allowed in sprinkler systems.

This TIA calls for the use of Listed Antifreeze Solutions. Using listed antifreeze solutions will ensure that the solution discharged from a sprinkler system will not ignite or cause a dramatic increase in heat release rate of a fire. The process for developing listed products will also allow for a continued improvement in fire and life safety in environments meeting the NFPA Codes and Standards.

This TIA also calls for the continued acceptance of currently listed ESFR Antifreeze Systems. The listing process has already shown that, in some cases, it is possible to use current antifreeze solutions to provide the level of protection prescribed by NFPA 13. For this reason, it is proposed to allow the continued use of propylene-glycol solutions in systems and in protection scenarios that have been thoroughly tested to demonstrate such results. There are ESFR systems currently available that have been specifically tested and listed with a specific model of sprinkler and solution delivery method that provide an appropriate level of protection as to be considered "Early Suppression".

Emergency Nature: The latest testing from The Fire Protection Research Foundation titled Antifreeze Solutions Supplied through Spray Sprinklers Interim Report (dated February 2012) shows that anti-freeze concentrations currently allowed in new NFPA 13 sprinkler systems may support combustion and increase the size of the fire. This is a safety issue that requires changes in the standard.

The following are two items which make this TIA of emergency nature. Only one is required for substantiation of an emergency nature.

(d) The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation During the latest revision cycle the committee evaluated the test data that was present at the time of the cycle. The committee could not anticipate that additional data would change our justifications during the process. The new data demonstrates that variables utilized in the development of the 2013 edition may lead to changes in the fire involvement.

Propylene glycol and glycerin antifreeze solutions discharged from sprinklers have the potential to ignite under certain conditions. Research testing has indicated that several variables may influence the potential for large scale ignition of the antifreeze solution discharged from a sprinkler. These variables include, but are not limited to, the concentration of antifreeze solution, sprinkler discharge characteristics, inlet pressure at the sprinkler, location of fire relative to the sprinkler, and size of fire at the time of sprinkler discharge.

(f) The proposed TIA intends to correct a circumstance in which the revised document has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process, or was without adequate technical (safety) justification for the action. Antifreeze solutions have been subject to recent testing and the new data shows that the installations found within the standard do not account for the complete safety of the occupant. The data appears to provide additional questions and challenges the parameters of installation found in the standard.

The use of propylene glycol and glycerin antifreeze solutions should only be considered when other sprinkler system design alternatives are not available or practical. If these solutions are used, all relevant data and information should be carefully reviewed and considered in the sprinkler system.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu Jan 24 13:14:26 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359051266070.xml

Public Input No. 544-NFPA 13-2013 [Section No. 3.5.8]

Original Hide Markup

3.5.8 Riser Nipple.
Vertical ~~piece of~~ pipe between the cross main and branch line.

Statement of Problem and Substantiation for Public Input

Change language to maintain consistency with related definitions 3.5.5 Cross Mains and the use of pipe or pipes rather than "piece of pipe."

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:18:19 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370031499461.xml

Public Input No. 561-NFPA 13-2013 [Section No. 3.5.12]

Original Hide Markup

3.5.12 System Riser.
The aboveground horizontal or vertical pipe between the water supply and the mains (cross or feed) that contains a control valve (either directly or within its supply pipe), pressure gauge, main drain, and a waterflow alarm device.

Additional Proposed Changes

	File Name	Description	Approved
Open	24_13_Brown.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The term "main" is needed to clarify that this is not an auxiliary drain.

Submitter Information Verification

Submitter Full Name: Phillip Brown
Organization: American Fire Sprinkler Association
Submittal Date: Mon Jun 03 11:35:50 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370273750501.xml

Public Input No. 149-NFPA 13-2013 [New Section after 3.5.13]

3.5.14 Sprinkler Extension Nipple. A nipple with one male and one female end with a diameter less than 1" used to adjust the length of a sprinkler drop, sprig or arm over for proper fit to a wall or ceiling.

Statement of Problem and Substantiation for Public Input

New definition would be added in support of new language proposed in PI #148 NFPA 13-2013 which would require designers to inlcude the friction loss for such fittings in the hydraulic calculations and limit installations to a single extension nipple

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 148-NFPA 13-2013 [New Section after 6.4.7.4]	

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Tue Mar 26 20:50:45 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364345445157.xml

Public Input No. 457-NFPA 13-2013 [New Section after 3.6.4.1]

3.6.4.1 Control Mode Density/Area (CMDA) Sprinkler

A type of spray sprinkler that is capable of producing characteristic large water droplets and that is listed to provide fire control in storage applications using the design density/area criteria described in this standard.

Statement of Problem and Substantiation for Public Input

The system would not allow this to be inserted above current 3.6.4.1, but that is where this belongs alphabetically.

The types of sprinklers are defined here, however "control mode density/area sprinkler" is used throughout the standard and yet does not have a definition. Therefore, a definition should be added.

This public input was developed by the UL/FM/NFSA Standards Review Committee.

Submitter Information Verification

Submitter Full Name: Victoria Valentine
Organization: National Fire Sprinkler Association
Affilliation: NFSA
Submittal Date: Wed May 29 17:13:38 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369862018770.xml

Public Input No. 566-NFPA 13-2013 [New Section after 3.6.4.4]

3.6.4.4 Fast Response Sprinkler. A sprinkler with an operating element which has a Response Time Index (RTI) of 50 m-$s^{1/2}$ or less, as determined through standardized testing at a Listing laboratory. These sprinklers may include Listed Quick Response sprinklers or other sprinklers with operating elements having RTI's of 50 m-$s^{1/2}$ or less.

Renumber subsequent sections accordingly.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Maughan.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The committee needs to identify that all sprinklers with operating elements having RTI's less than 50 are not necessarily Listed Quick Response sprinklers in accordance with the definitions of 3.6.4.7 and 3.6.4.7.2. Due to testign procedures at UL, the exact same sprinkler may be listed as "Quick Response" for one coverage area but "Standard Response" for a larger coverage area. This has lead to AHJ's not allowing the "mixing" of standard response and quick response sprinklers (per section 8.3.3.2) in areas where different spacings are being utilized by the exact same sprinkler. I do not believe this was the intent of section 8.3.3.2. This confusion has also lead to the use of the QR area reduction allowance to be utilized by some designers for special listed sprinklers with RTI's less than 50 where it was never intended (i.e., combustible concealed space sprinkelrs minimum 1000 sq ft design area). Additionally, NFPA 25, 2011 edition refers specifically to "Sprinklers defined as fast response..." in A.5.3.1.1.1.3. This comment is being submitted by the Tyco Codes and Standards Sprinkler Task Group.

Submitter Information Verification

Submitter Full Name: Kevin Maughan
Organization: Tyco Fire Protection Products
Submittal Date: Mon Jun 03 13:03:11 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370278991420.xml

Public Input No. 462-NFPA 13-2013 [Section No. 3.7.2]

Original | Hide Markup

3.7.2* Unobstructed Construction.

Construction where beams, trusses, or other members do not impede heat flow or water distribution in a manner that materially affects the ability of sprinklers to control or suppress a fire. Unobstructed construction has horizontal structural members that are not solid, where the openings are at least 70 percent of the cross-section area and the depth of the member does not exceed the least dimension of the openings, or all construction types, except panel construction, where the spacing of structural members exceeds 7 ½ ft (2.3 m) on center.

Statement of Problem and Substantiation for Public Input

A.3.7.1 (4) Panel Construction states "Beams spaced more than 7 1/2 ft (2.3 m) apart and framed into girders qualify as panel construction, provided the 300 ft^2 (27.9 m^2) area limitation is met". Panel construction is considered an obstructed construction, therefore, paragraph A.3.7.1 (4) conflicts with paragraph 3.7.2 which states "...ALL CONSTRUCTION TYPES where the spacing of structural members exceeds 7 1/2 ft (2.3 m) on center". These two sections would no longer conflict if the words "except panel construction" were added as they appear in this proposed change.

Submitter Information Verification

Submitter Full Name: Joshua Eckert
Organization: Code Consultants Inc
Submittal Date: Thu May 30 11:45:06 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369928706263.xml

Public Input No. 233-NFPA 13-2013 [Section No. 6.1.1.2]

Original | Hide Markup

6.1.1.2

Unless the requirements of 6.1.1.3 , 6.1.1.4 , or 6.1.1.5 are met, all materials and devices essential to successful system operation shall be listed for the purpose for which they are used .

6.1.1.2.1

Valve components (including valve trim, internal parts, gaskets, and the like) shall not be required to be individually listed.

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPA_Public_Input_Form_13_2013_6.1.1.2.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Clarification, as currently written a product does not have to be listed for fire sprinkler systems or as an extinguishing system attachment or whatever category the product may fall into, it just has to be listed. There are many categories to list a product to. The mere fact that a product is listed does not means it is listed for the purpose for which it is being used, specifically a life safety system. NFPA 72, 2013, 10.3.1 has had such a statement for years. This can prevent the use of a relay with a general UL electrical safety listing from being used on a life safety system or a boiler flow switch from being used as a waterflow alarm.

Submitter Information Verification

Submitter Full Name: Michael Henke
Organization: Potter Electric Signal Company
Submittal Date: Mon Apr 29 09:11:14 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367241074004.xml

Public Input No. 43-NFPA 13-2013 [Section No. 6.1.1.4]

Original | Hide Markup

6.1.1.4

Materials meeting the requirements of 9.1.1.2, 9.1.1.5.2, 9.1.1.5.3, and 9.1.1.5.~~3~~4 shall not be required to be listed.

Statement of Problem and Substantiation for Public Input

1) Section 9.1.1.5.2 is editorially clarified to indicate the rod material is mild steel.
2) A new Section 9.1.1.5.3 is being proposed since hanger rods were not specifically mentioned as a device that does not require Listing.
3) A new Section 9.1.1.6.3 was added since there are no requirements in the standard for the hanger rod. The hanger rod is a critical component in maintaining the integrity of the sprinkler system and minimum requirements for the rod need to be specified. The hanger rod is assumed by designers and contractors to have characteristics that will provide the anticipated performance after installation. The addition of the requirements in this section should provide the guidance for the anticipated performance.
4) Section 6.1.1.4 needs to be revised to reference the new 9.1.1.6.3.

Submitter Information Verification

Submitter Full Name: George Laverick
Organization: UL LLC
Submittal Date: Tue Jan 29 08:47:54 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359467274839.xml

Public Input No. 441-NFPA 13-2013 [Section No. 6.1.1.6]

Original Hide Markup

6.1.1.6

~~The new materials or devices listing instructions shall identify and specify the existing system components, including the fluids conveyed, with which the new listed materials, devices, or components are compatible.~~

~~6.1.1.6.1 This listing requirement shall also apply to chemical or material modifications made to components listed in Table 6.3.1.1 and Table 6.4.1 .~~

Materials and components shall be installed in accordance with material compatibility information that is available as a part of a listing or manufacturer's published information.

Statement of Problem and Substantiation for Public Input

The requirement as written is confusing since it does not indicate what constitutes a new material or devices. In addition, many of the products included in the referenced tables are not listed. It also places a burden on the manufacturer to continually monitor new materials and devices that could be used in a system, which is an impractical requirement. Test methods to determine material compatibility for certain products are being developed as part of a project to develop a new ANSI standard for this application. Therefore, using the compatibility information that is available at the time of system design is more meaningful.

This public input was developed by the UL/FM/NFSA Standards Review Committee.

Submitter Information Verification

Submitter Full Name: Victoria Valentine

Organization: National Fire Sprinkler Association

Affilliation: NFSA

Submittal Date: Wed May 29 15:44:56 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369856696623.xml

Public Input No. 8-NFPA 13-2013 [New Section after 6.1.3]

6.1.3.1

The fire department connection shall not be considered when determing rated system working pressure.

Statement of Problem and Substantiation for Public Input

Clarifies that the fire department connection does not need to be considered when determing the required rated pressure of system components. Many AHJ's require that C-900 be SDR 14 vs SDR-18 when an FDC is connected to the underground. Also the handbook commentary needs to be corrected.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Submittal Date: Tue Jan 15 12:15:26 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358270126377.xml

Public Input No. 147-NFPA 13-2013 [New Section after 6.2.1]

6.2.1.2 Nothing shall be hung from sprinklers.

Statement of Problem and Substantiation for Public Input

This is common sense but is not specifically addressed in the standard. Section 9.1.1.8.1 infers this but it is not clear as it only refers to piping and hangers.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 15:37:19 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364326639613.xml

Public Input No. 229-NFPA 13-2013 [New Section after 6.2.1.1]

A sprinkler shall be considered as having been removed from a system even where it is still attached to piping such as sprigs, drops, armovers or branchlines.

Statement of Problem and Substantiation for Public Input

There is industry wide confusion related to this section (added in the 2013 edition) in that it is interpreted that a sprinkler could be reused when removed from a system while still attached to the piping such as a pendent drop. The requirement was added over concerns for potential damage to the sprinkler when removed, handled and re-installed - none of these concerns are reduced by removing the sprinkler attached to piping.

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Fri Apr 26 10:21:16 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366986076162.xml

Public Input No. 422-NFPA 13-2013 [Section No. 6.2.1.1]

Original Hide Markup

6.2.1.1

When a sprinkler has been removed for any reason either by directly removing the sprinkler from a fitting or indirectly removing a sprinkler by removing pipe or fitting(s) to which a sprinkler is attached to , it shall not be reinstalled.

-

6.2.1.1 When a sprinkler has been removed from a fitting for any reason for any reason, it shall not be reinstalled.

Statement of Problem and Substantiation for Public Input

The standard is not address the method of sprinkler removal and the technical committee should clarify. It is my intent that the technical committee will "accept in part" one of these two contradicting versions.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH
Organization: VFS FIRE AND SECURITY
Submittal Date: Sat May 25 12:38:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369499928684.xml

Public Input No. 218-NFPA 13-2013 [New Section after 6.2.4.1]

6.2.4.1.1

When replacing residential sprinklers that were installed when density requirements were less than the minimum 0.05 gpm/ft² (204 mm/min), a sprinkler with an equivalent K-factor (±.3) shall be permitted to be used without regards to the current listed flow and pressure requirements.

Statement of Problem and Substantiation for Public Input

Many times a building will have painted sprinklers or many of the sprinklers will need to be replaced based on NFPA 25 testing requirements. Also, with the new requirements to replace any sprinkler removed, this can create issues as the residential K Factors have never been standardized. Many K factors from the .03 density days of the late 90's have long since been discontinued. Allowing replacement with a similar K-factor is reasonable in these situations.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Wed Apr 24 09:19:29 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366809569494.xml

Public Input No. 412-NFPA 13-2013 [Section No. 6.2.5.1]

Original | Hide Markup

6.2.5.1

Automatic sprinklers shall have their frame arms, deflector, coating material, or liquid bulb colored in accordance with the requirements of Table 6.2.5.1 or the requirements of 6.2.5.2 , 6.2.5.3 , 6.2.5.4 , or 6.2.5.5 .

[split first row of table into two rows with the first for 135 degree sprinklers and the second for 155/165 degree sprinklers as shown in the attached graphic]

Table 6.2.5.1 Temperature Ratings, Classifications, and Color Codings

Maximum Ceiling Temperature		Temperature Rating				
°F	°C	°F	°C	Temperature Classification	Color Code	Glass Bulb Colors
100	38	135–170	57–77	Ordinary	Uncolored or black	Orange or red
150	66	175–225	79–107	Intermediate	White	Yellow or green
225	107	250–300	121–149	High	Blue	Blue
300	149	325–375	163–191	Extra high	Red	Purple
375	191	400–475	204–246	Very extra high	Green	Black
475	246	500–575	260–302	Ultra high	Orange	Black
625	329	650	343	Ultra high	Orange	Black

Additional Proposed Changes

File Name	Description	Approved
Open Table_6-2-5-1.tiff	This is the new table that we are proposing with two rows for ordinary	

Statement of Problem and Substantiation for Public Input

Preliminary tests have shown the glass bulb sprinklers may be able to withstand higher ambient temperatures. The same may be true for solder links as well. If this is true, it needs to be recognized by the standard.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 411-NFPA 13-2013 [Section No. 8.3.2.2]	The change should be made to both of these sections or neither to be consistent

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri May 24 10:54:47 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369407287822.xml

Maximum Ceiling Temperature		Temperature Rating		Temperature Classification	Color Code	Glass Bulb Colors
°F	°C	°F	°C			
100	38	135	57	Ordinary	Uncolored or Black	Orange or Red
120	49	155 - 170	68 - 77	Ordinary	Uncolored or Black	Orange or Red
150	66	175-225	79-107	Intermediate	White	Yellow or Green
225	107	250 – 300	121 – 149	High	Blue	Blue
300	149	325 – 375	163 – 191	Extra High	Red	Purple
375	191	400 – 475	204 – 246	Very Extra High	Green	Black
475	246	500 – 575	260 – 302	Ultra High	Orange	Black
625	329	650	343	Ultra High	Orange	Black

Public Input No. 568-NFPA 13-2013 [New Section after 6.2.7.2]

6.2.7.2.1 The listed sprinkler assembly referenced in 6.2.7.2 shall be listed by the manufacturer of the sprinkler.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Palmeri.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Third party manufacturers do not have document control and procedures in place to account for design changes of manufacturers' sprinklers. Manufacturers' listed adjustments and tolerances can be as precise as 1/8 inch to maintain listings. This can result in situations where the manufacturers sprinkler is not positioned in accordance wtih its listing when utilized with these third party escutcheons. This comment is being submitted by the Tyco Codes and Standards Sprinkler Task Group.

Submitter Information Verification

Submitter Full Name: DARREN PALMIERI
Organization: TYCO FIRE PROTECTION PRODUCTS
Submittal Date: Mon Jun 03 13:21:51 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370280111851.xml

Public Input No. 14-NFPA 13-2013 [New Section after 6.2.9.1]

6.2.9.1.1

A minimum of two sprinklers of each type and temperature rating shall be provided.Type your content here.

Statement of Problem and Substantiation for Public Input

This requirement is currently located in the annex. This is a minimum standard and this requirement needs to be located in the body of the standard.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Jan 15 15:34:06 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358282046644.xml

Public Input No. 342-NFPA 13-2013 [Section No. 6.2.9.3]

Original | Hide Markup

6.2.9.3

The sprinklers shall be kept in a cabinet located where the temperature to which they are subjected will at no time exceed ~~100°F (38°C).~~ the maximum ceiling temperatures specified in Table 6.2.5.1 for each of the sprinklers within the cabinet.

Statement of Problem and Substantiation for Public Input

Facilities that only include intermediate or high temperature sprinklers (or higher), including those maintained within the spare head box need not have a space conditioned to maintain temperatures at 100F or less. A reference back to Table 6.2.5.1 will allow such an arrangment.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 15:24:06 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369250646446.xml

Public Input No. 137-NFPA 13-2013 [New Section after 6.2.9.7.1]

6.2.9.8

On a single property with multiple buildings under the same ownership, it shall be acceptable to provide the required spare sprinklers in a single location.

A.6.2.9.8

It is not the intent to provide a spare sprinkler box for each building in the one location. A sufficient-sized cabinet(s) capable of meeting the requirements for a single building is adequate. The box should contain all the various types found on the property in the quantities prescribed by chapter 6. A prime example is an apartment complex.

Statement of Problem and Substantiation for Public Input

Correlates with NFPA 13R.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 09:35:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364304941554.xml

Public Input No. 455-NFPA 13-2013 [Section No. 6.3.1.1 [Excluding any Sub-Sections]]

Original | Hide Markup

Pipe or tube shall meet or exceed one of the standards in Table 6.3.1.1 or be in accordance with 6.3.7.8.

Table 6.3.1.1 Pipe or Tube Materials and Dimensions

Materials and Dimensions	Standard
Ferrous Piping (Welded and Seamless)	
Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use	ASTM A 795
Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless	ANSI/ASTM A 53
Wrought Steel Pipe	ANSI/ASME B36.10M
Specification for Electric-Resistance-Welded Steel Pipe	ASTM A 135
Copper Tube (Drawn, Seamless)	
Specification for Seamless Copper Tube	ASTM B 75
Specification for Seamless Copper Water Tube	ASTM B 88
Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube	ASTM B 251
Specification for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper-Alloy Tube	ASTM B 813
Brazing Filler Metal (Classification BCuP-3 or BCuP-4)	AWS A5.8
Solder Metal, Section 1: Solder Alloys Containing Less Than 0.2% Lead and Having Solidus Temperatures Greater than 400°F	ASTM B 32
Alloy Materials	ASTM B 446
CPVC	
Nonmetallic Piping Specification for Special Listed Chlorinated Polyvinyl chloride (CPVC) Pipe	ASTM F 442
Brass Pipe	
Specification for Seamless Red Brass Pipe	ASTM B 43
Stainless Steel	
Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes	ASTM A312/312M

Statement of Problem and Substantiation for Public Input

Added stainless steel as a common used material.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Wed May 29 16:42:32 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369860152434.xml

Public Input No. 267-NFPA 13-2013 [New Section after 6.3.1.2]

6.3.1.2

Piping shall be permitted to be reused when modifications are made on existing systems.

Statement of Problem and Substantiation for Public Input

Many times when tennant work or modifications are being perfomed on existing systems, it is common practice to reuse the piping. The standard does not specifically allow or prohibit this currently so guidance is needed.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Thu May 09 09:52:09 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368107529492.xml

Public Input No. 458-NFPA 13-2013 [New Section after 6.3.1.5]

TITLE OF NEW CONTENT

6.3.1.6

Stainless steel pipe shall be in accordance with 6.3.8.

Statement of Problem and Substantiation for Public Input

Adding stainless steel as a common pipe material.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Wed May 29 17:14:49 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369862089493.xml

Public Input No. 343-NFPA 13-2013 [Section No. 6.3.1.5]

Original Hide Markup

6.3.1.5
Brass pipe shall be in accordance with 6.3. ~~7~~ 6 .

Statement of Problem and Substantiation for Public Input

Incorrect reference.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 15:29:27 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369250967343.xml

Public Input No. 439-NFPA 13-2013 [Section No. 6.3.1.5]

Original Hide Markup

6.3.1.5
Brass pipe shall be in accordance with 6.3.~~7~~6 .

Statement of Problem and Substantiation for Public Input

Reference should be 6.3.6 not 6.3.7

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Wed May 29 14:56:46 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369853806503.xml

Public Input No. 556-NFPA 13-2013 [Sections 6.3.2, 6.3.3]

Original Hide Markup

Sections 6.3.2, 6.3.3

6.3.2 * Steel Pipe — Welded or Roll-Grooved.

When steel pipe referenced in Table 6.3.1.1 is used and joined by welding as referenced in 6.5.2 or by roll-grooved pipe and fittings as referenced in 6.5.3, the minimum nominal wall thickness for pressures up to 300 psi (20.7 bar) shall be in accordance with Schedule 10 for pipe sizes up to 5 in. (125 mm), 0.134 in. (3.40 mm) for 6 in. (150 mm) pipe, 0.188 in. (4.78 mm) for 8 in. and 10 in. (200 mm and 250 mm) pipe, and 0.330 in. (8.38 mm) for 12 in. (300 mm) pipe.

(NEW) 6.3. 2 Electric resistance welding. Horizontal pipe that is joined by welds with electric resistance methods shall be installed with the seam at the top of the pipe.

6. 3 .3 Steel Pipe — Threaded.

When steel pipe referenced in Table 6.3.1.1 is joined by threaded fittings referenced in 6.5.1 or by fittings used with pipe having cut grooves, the minimum wall thickness shall be in accordance with Schedule 30 pipe [in sizes 8 in. (200 mm) and larger] or Schedule 40 pipe [in sizes less than 8 in. (200 mm)] for pressures up to 300 psi (20.7 bar).

Additional Proposed Changes

	File Name	Description	Approved
Open	ASCC_13-30_UM_NFPA_13_Public_Input_Worksheet_for_reducing_MIC_with_better_welds.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This installation method may reduce the likelihood of MIC build up originating at these seams.

Submitter Information Verification

Submitter Full Name: David King
Organization: University of Michigan
Affilliation: University of Michigan Plant Extension
Submittal Date: Mon Jun 03 10:50:14 EDT 2013

Origin (from sources other than the submitter)

MIchael A. Anthony, University of Michigan

/TerraView/Content/13-2013.ditamap/2/C1370271014948.xml

Public Input No. 240-NFPA 13-2013 [Section No. 6.3.5]

Original | Hide Markup

6.3.5 * Copper Tube.
Copper tube as specified in the standards listed in Table 6.3.1.1 shall have a wall thickness of Type K, ~~Type~~ or Type L ~~, or Type M~~ where used in sprinkler systems.

Statement of Problem and Substantiation for Public Input

Type M copper is very soft and easy to bend or damage. When "sweating" joints with 50/50 solder was permitted, lower heat was required to make up the connections. However, with braizing joints using 95/5 solder, Type M copper pipe is not desirable and should not be used in sprinkler systems. The type K and L copper piping is more ridgid and more appropriate for use in construction systems.

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Tue Apr 30 14:35:27 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367346927062.xml

Public Input No. 442-NFPA 13-2013 [Section No. 6.3.7.2]

Original | Hide Markup

6.3.7.2*
When nonmetallic pipe is used in ~~combination~~ systems utilizing steel piping internally coated with corrosion inhibitors ~~and nonmetallic piping~~ , the steel pipe coating shall be ~~investigated for compatibility~~ compatible with the nonmetallic ~~piping by a testing laboratory~~ pipe materials .

Statement of Problem and Substantiation for Public Input

First, the revision uses parallel wording as used in 6.3.7.4. Second, requiring an investigation without specifying that the material needs to be compatible is not the intent of this section. Third, requiring tests to be conducted by a testing laboratory without specifications for the laboratory, is vague.

This public input was developed by the UL/FM/NFSA Standards Review Committee.

Submitter Information Verification

Submitter Full Name: Victoria Valentine
Organization: National Fire Sprinkler Association
Affilliation: NFSA
Submittal Date: Wed May 29 15:52:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369857168253.xml

Public Input No. 486-NFPA 13-2013 [New Section after 6.3.7.8]

6.3.8 Stainless Steel Pipe

Stainless steel pipe as referenced in the standards listed in Table 6.3.1.1 shall be in accordance with Schedules 10S or 40S pipe.

Statement of Problem and Substantiation for Public Input

Adding stainless steel as a common sprinkler pipe material.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Thu May 30 16:44:58 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369946698089.xml

Public Input No. 565-NFPA 13-2013 [Section No. 6.3.7.8.2]

Original Hide Markup

6.3.7.8.2
Pipe or tube listed for light hazard occupancies shall be permitted to be installed exposed in ordinary hazard rooms of otherwise light hazard occupancies where the room does not exceed 400 ft^2 (37 m^2).

Additional Proposed Changes

	File Name	Description	Approved
Open	24_13_Brown.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The term "exposed" is needed to clarify that the pipe is not required to be ran concealed.

Submitter Information Verification

Submitter Full Name: Phillip Brown
Organization: American Fire Sprinkler Association
Submittal Date: Mon Jun 03 12:31:18 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370277078631.xml

Public Input No. 244-NFPA 13-2013 [Section No. 6.3.7.9]

Original Hide Markup

The overall heading for section 6.3.7 refers to Non-metallic piping . The subsection 6.3.7. 9 refers to metallic piping only. 6.3.7.9 appears to be incorrectly located under the 6.3.7 Non-metallic piping section. Recommend relocating 6.3.7.9 to a section concerning metallic piping or to a general section.

6.3.7.9 Pipe and Tube Bending.

6.3.7.9.1

Bending of Schedule 10 steel pipe, or any steel pipe of wall thickness equal to or greater than Schedule 10 and Types K and L copper tube, shall be permitted when bends are made with no kinks, ripples, distortions, or reductions in diameter or any noticeable deviations from round.

6.3.7.9.2

For Schedule 40 and copper tubing, the minimum radius of a bend shall be six pipe diameters for pipe sizes 2 in. (50 mm) and smaller and five pipe diameters for pipe sizes 2 $^{1}/_{2}$ in. (65 mm) and larger.

6.3.7.9.3

For all other steel pipe, the minimum radius of a bend shall be 12 pipe diameters for all sizes.

6.3.7.9.4

Bending of listed pipe and tubing shall be permitted as allowed by the listing.

Statement of Problem and Substantiation for Public Input

Confusion could result if the section concerning the bending of steel pipe is located in the non-metallic piping section.

Submitter Information Verification

Submitter Full Name: RYAN NAGEL
Organization: USACE (United States Army Corps of Engineers)
Affilliation: Department of Defense
Submittal Date: Fri May 03 08:12:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367583161956.xml

Public Input No. 245-NFPA 13-2013 [Section No. 6.3.7.10]

Original Hide Markup

Is it the intent that this section applies all piping, or just non-metallic piping. It appears the preceding section 6.3.7. 9 was misplaced as well.

6.3.7. 10 Pipe and Tube Identification.

6.3.7.10.1 *

All pipe, including specially listed pipe allowed by 6.3.7.8 , shall be marked along its length by the manufacturer in such a way as to properly identify the type of pipe.

6.3.7.10.2

The marking shall be visible on every piece of pipe over 2 ft (610 mm) long.

6.3.7.10.3

Pipe identification shall include the manufacturer's name, model designation, or schedule.

Statement of Problem and Substantiation for Public Input

Confusion could result if the section on marking of pipe is buried in the Non-metallic piping section, if is the intent that this section applies to all piping.

Submitter Information Verification

Submitter Full Name: RYAN NAGEL

Organization: [USACE (United States Army Corps of Engineer)

Affilliation: Department of Defense

Submittal Date: Fri May 03 08:19:56 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367583596685.xml

Public Input No. 447-NFPA 13-2013 [Section No. 6.4.1]

Original | Hide Markup

6.4.1

Fittings used in sprinkler systems shall meet or exceed the standards in Table 6.4.1 or be in accordance with 6.4.2 or 6.4.4.

Table 6.4.1 Fittings Materials and Dimensions

Materials and Dimensions	Standard
Cast Iron	
Cast Iron Threaded Fittings, Class 125 and 250	ASME B16.4
Cast Iron Pipe Flanges and Flanged Fittings	ASME B16.1
Malleable Iron	
Malleable Iron Threaded Fittings, Class 150 and 300	ASME B16.3
Steel	
Factory-Made Wrought Steel Buttweld Fittings	ASME B16.9
Buttwelding Ends for Pipe, Valves, Flanges, and Fittings	ASME B16.25
Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures	ASTM A 234
Steel Pipe Flanges and Flanged Fittings	ASME B16.5
Forged Steel Fittings, Socket Welded and Threaded	ASME B16.11
Copper	
Wrought Copper and Copper Alloy Solder Joint Pressure Fittings	ASME B16.22
Cast Copper Alloy Solder Joint Pressure Fittings	ASME B16.18
CPVC	
Chlorinated Polyvinyl Chloride (CPVC) Specification for Schedule 80 CPVC Threaded Fittings	ASTM F 437
Specification for Schedule 40 CPVC Socket Type Fittings	ASTM F 438
Specification for Schedule 80 CPVC Socket Type Fittings	ASTM F 439
Bronze Fittings	
Cast Bronze Threaded Fittings	ASTM B16.15
Stainless Steel	
Specification for Wrought Austenitic Stainless Steel Pipe Fittings	ASTM A403/A403M

Statement of Problem and Substantiation for Public Input

Added Stainless Steel to the list of commonly used fitting material.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Wed May 29 16:01:16 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369857676455.xml

Public Input No. 445-NFPA 13-2013 [Section No. 6.4.3.1]

Original Hide Markup

6.4.3.1*

When nonmetallic fittings are used in ~~combination~~ systems utilizing internally coated steel piping and nonmetallic fittings, the steel pipe shall be ~~investigated for compatibility~~ compatible with the nonmetallic ~~fittings by a testing laboratory~~ pipe materials . Cutting oils and lubricants used for fabrication of the steel piping shall be compatible with the nonmetallic fitting materials.

Statement of Problem and Substantiation for Public Input

First, the revision uses parallel wording as used in 6.3.7.4. Second, requiring an investigation without specifying that the material needs to be compatible is not the intent of this section. Third, requiring tests to be conducted by a testing laboratory without specifications for the laboratory is vague.

This public input was developed by the UL/FM/NFSA Standards Review Committee.

Submitter Information Verification

Submitter Full Name:	Victoria Valentine
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA
Submittal Date:	Wed May 29 15:57:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369857455473.xml

Public Input No. 148-NFPA 13-2013 [New Section after 6.4.7.4]

6.4.8 Sprinkler Extension Nipple

6.4.8.1 Unless specifically listed for use with a specific sprinkler, the use of sprinkler extension nipples of the same (npt) size as the sprinkler being installed shall not be permitted unless the extenension nipple has been included and additional friction loss has been included in the system hydraulic calculations.

6.4.8.2* Under no circumstances shall multiple sprinkler extension nipples be permitted for a single sprinkler or nozzle.

A.6.4.8.2 Where multiple sprinkler extension nipples would be needed, the sprinkler drop or sprig up piping should be re-cut to the appropriate length without the use of the sprinkler extension nipple.

Statement of Problem and Substantiation for Public Input

The use of sprinkler extension (cheater) nipples has become commonplace without regard for friction loss or concern for the number of nipples used. During inspections and re-model work, I have witnessed as many as five extension nipples stacked at a single sprinkler. Installers should be re-cutting the drop nipple rather than stacking these un-listed sprinkler head extenders.

Submitter Information Verification

Submitter Full Name:	Robert Caputo
Organization:	Fire & Life Safety America
Submittal Date:	Tue Mar 26 20:33:23 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364344403281.xml

Public Input No. 470-NFPA 13-2013 [New Section after 6.5.1.3]

Pipe joint compounds used to join threaded pipe and fittings shall not harden to the point where threaded joints cannot be taken apart as needed for system renovations and system maintenance.

Statement of Problem and Substantiation for Public Input

Some installations found in recent years were done with anaerobic pipe joint compounds that hardened to the point where the joints could not be backed out for repairs or renovations. Those joints had to be cut out and pipes threaded in the air to facilitate an otherwise minor piping change. Threaded joints should be able to be unscrewed and reinstalled without having to cut them out.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu May 30 14:37:21 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369939041270.xml

Public Input No. 62-NFPA 13-2013 [Section No. 6.5.1.3]

Original | Hide Markup

6.5.1.3
Joint ~~compound or tape~~ sealants shall be applied only to male threads.

Statement of Problem and Substantiation for Public Input

The word "or" could be viewed as limiting the use of only one of the materials listed. There are manufactures that allow the use of both compound and tape in constructing a joint.

Submitter Information Verification

Submitter Full Name: JONATHAN HARTSELL
Organization: RODGERS
Submittal Date: Tue Feb 19 12:33:30 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361295210798.xml

Public Input No. 204-NFPA 13-2013 [Section No. 6.5.2.4.8]

Original Hide Markup

6.5.2.4.8

When welding is performed, the following shall apply:

(1) Holes in piping for welded grooved outlets ~~shall~~ and automatic sprinklers shall be cut to the full inside diameter of fittings prior to welding in place of the fittings.

(2) Holes in piping for welded threaded outlets shall be cut to the full internal diameter of the pipe that threads into the threaded welded outlet.

(3) Discs shall be retrieved.

(4) Openings cut into piping shall be smooth bore, and all internal slag and welding residue shall be removed.

(5) Fittings shall not penetrate the internal diameter of the piping.

(6) Steel plates shall not be welded to the ends of piping or fittings.

(7) Fittings shall not be modified.

(8) Nuts, clips, eye rods, angle brackets, or other fasteners shall not be welded to pipe or fittings, except as permitted in 6.5.2.2.3 and 6.5.2.4.7.

(9) Completed welds shall be free from cracks, incomplete fusion, surface porosity greater than 1⁄16 in. (1.6 mm) diameter, and undercut deeper than 25 percent of the wall thickness or 1⁄32 in. (0.8 mm), whichever is less.

(10) Completed circumferential butt weld reinforcement shall not exceed 3⁄32 in. (2.4 mm).

Statement of Problem and Substantiation for Public Input

For welded grooved outlets, the hole needs to be cut to the full inside diameter of the fitting to make sure that flow is not impeded.

Likewise, outlets for sprinklers need to be cut to the full inside diameter of the fitting so that the k-factor of the sprinkler is not reduced.

But for welded thread outlets, the outlet does not need to be as large as the fitting. The oulet only needs to be as large as the pipe being threaded into the outlet. No restriction of flow will occur since the water only sees the internal diameter of the treaded pipe.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri Apr 19 14:55:06 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366397706963.xml

Public Input No. 440-NFPA 13-2013 [Section No. 6.5.3.1.2]

Original Hide Markup

6.5.3.1.2

Other groove dimensions and grooving methods shall be acceptable when Listed and installed in accordance with ~~6.5.5.1~~ . the Listing including installation instructions.

Statement of Problem and Substantiation for Public Input

Changed this sentence so you do not have to go to another section for the requirement.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Wed May 29 15:27:03 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369855623004.xml

Public Input No. 20-NFPA 13-2013 [New Section after 6.5.6]

6.5.7 Dissimilar Materials

6.5.7.1 Unless the requirements of 6.5.7.1.2 through 6.5.7.1.4 are met, a dielectric fitting shall be installed in the junction where dissimilar materials are joined.

6.5.7.1.2 Dielectric fittings shall not be required where sprinklers connect to the system piping.

6.5.7.1.3 Dielectric fittings shall not be required where black steel piping connects to galvanized steel pipe.

6.5.7.1.4 Dielectric fittings shall not be required where steel piping connects to brass materials (e.g. fittings, valves, etc.).

Statement of Problem and Substantiation for Public Input

Currently there is language in regards to dissimilar materials located in the Non-Fire Protection Connections chapter. Guidance is needed in the materials chapter to address the joining of dissimilar materials.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Thu Jan 17 08:58:02 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358431082175.xml

Public Input No. 499-NFPA 13-2013 [Section No. 6.6]

Original Hide Markup

~~6.6 * - – Hangers.~~

~~Hangers shall be in accordance with the requirements of Section~~ 9.1 ~~.~~

Statement of Problem and Substantiation for Public Input

NFPA 13 chapters have been in the current format since the 2002 edition. It is necessary to have section 6.6 Hangers in chapter 6 and refer the user to chapter 9. if this is needed, then the section should be revised to include bracing and restraint.

Submitter Information Verification

Submitter Full Name: Russell Leavitt

Organization: Telgian Corporation

Submittal Date: Fri May 31 12:53:19 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370019199502.xml

Public Input No. 241-NFPA 13-2013 [Section No. 6.7.3]

Original Hide Markup

6.7.3 Drain Valves, Test Valves and ~~Test~~ Vent Valves.

Drain valves ~~and test valves shall~~ , test valves and vent valves shall be approved.

Add new section

6.7.3.1 Automatic Air Vents shall be Listed

Additional Proposed Changes

	File Name	Description	Approved
Open	Cycling_flowswitch.pdf	Attached is the memorandum Potter developed years ago to explain the issues caused by trapped air in sprinkler systems. We send this out to customers who have these issues and can't figure out the cause or solution.	

Statement of Problem and Substantiation for Public Input

With the ever increasing use of manual air venting valves and automatic air vents installed on wet pipe sprinkler systems, some guidance as to the products used should be clarified. While manually operated valves used for venting do not need to be any different than valves used for drains and test outlets, the standard should provide some guidance to that effect. On the other hand, automatic air vents should be subject to the standards of a nationally recognized testing labratory so that they meet the necessary pressure and safety requirements for use on fire sprinklert systems. Vents used for fire pumps are only tested down to 20 psi and may leak at lower pressures possibly causing damage to the property or the building contents, Some other vents can't withstand the 4 times rated pressure test required by the standard.

Trapped air leads to internal pipe corrosion, cycling flowswitch operation, false waterflow alarms, delayed waterflow alarms and can even delay sprinker operation. As a manufacturer of flowswitches we frequently receive calls about cycling flowswitches, delayed waterflow alarms and false alarms. After we convince them that the problem is trapped air, they vent the air and the problem is solved. We actually receive so many calls related to trapped air that we have created a memorandum to send out to the people who call.

Submitter Information Verification

Submitter Full Name: Michael Henke

Organization: Potter Electric Signal Company

Submittal Date: Tue Apr 30 16:12:58 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367352778475.xml

Potter Electric Signal Company/2081 Craig Road/St. Louis, Missouri 63146-4161/800-325-3936/314-878-4321/FAX: 314-878-7264

Vane type waterflow switches should be tested using the inspectors test valve to indicate water flow equivalent to that of a single sprinkler.

In some instances the waterflow switch will "cycle" on and off during this test. This is usually an indication of excessive air trapped in the sprinkler system.

This phenomenon has increased with the use of backflow preventors and inspector test valves in close proximity to the flowswitch instead of at hydraulically remote locations.

Without a valve at the far end of the sprinkler system being open when the system is being filled, the air in the piping cannot vent as the water enters. All of this air compresses and can result in sprinkler pipes being partially filled with water.

In addition to excessive amounts of oxygen leading to increased corrosion, it can also cause the waterfliow switch to cycle on and off, delayed operation of the flowswitch or false alarms. When the inspectors test valve is opened, the trapped compressed air expands pushing system water out of the test valve. When the system pressure drops enough, the backflow or check valve opens allowing fresh supply water to enter the system. The supply water flows past the waterflow switch, moves the paddle and starts the retard action. The incoming supply water also compresses the air in the system causing pressure to build up. When the system pressure equals the supply pressure the backflow will close and the flowswitch resets. Then the entire cycling process starts all over. While there may be a steady stream of water flowing out of the test valve, there is not a steady stream of water flowing past the flowswitch.

The delayed flowswitch operation occurs because the cycling keeps going until eventually it takes long enough for the backflow to close that the flowswitch finally goes into alarm or in the event of a real fire, another sprinkler opens and now it flows enough water that the backflow stays open.

False alarms can occur because when you open the ITV you bleed of any pressure that may have built up in the system. Now when the city turns on their pumps late at night to build up pressure for the morning water demand of the city, this water flows into the system and trips the flowswitch because the pipes are only partially full and the system pressure is lower than the supply pressure because the system pressure was vented through the ITV the day before.

Potter makes an automatic air vent, model PAAR-B or PAV, that can be used to automatically vent air from the system or remote valves can be installed for venting the system as it is being filled.

Regards,

Mike Henke CET
Sprinkler Product Manager

Public Input No. 498-NFPA 13-2013 [Section No. 6.8.1.2]

Original Hide Markup

6.8.1.2
The use of threadless couplings shall be permitted where required by the authority having jurisdiction ~~and where listed for such use~~ .

Statement of Problem and Substantiation for Public Input

Fire department connections are for the use by the fire department. The type of coupling should be whatever type is required for fire department operational use whether it is listed or not. Section 6.8.3 confirms this by stating that fire department connections shall be of an "approved" type.

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Submittal Date: Fri May 31 12:38:58 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370018338031.xml

Public Input No. 232-NFPA 13-2013 [New Section after 6.8.2]

6.8.2.1

The use of lockable inlet caps shall be permitted where required by the authority having jurisdiction and where listed for such use.

Statement of Problem and Substantiation for Public Input

Everyone has dealt with the issue of missing or stolen FDC caps and the resultant trash and foreign objects in the FDC. Many jurisdictions now require FDC locking caps to help prevent this situation for Siamese as well as Storz inlets.

Submitter Information Verification

Submitter Full Name: Bob Morgan
Organization: Fort Worth Fire Department
Affilliation: Fire Advisory Board to the North Central Texas Council of Governments
Submittal Date: Fri Apr 26 22:19:26 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367029166414.xml

Public Input No. 108-NFPA 13-2013 [New Section after 6.8.3]

6.8.4 Fire department connections shall have an approved method to deter unauthorized removal of the FDC.

Statement of Problem and Substantiation for Public Input

There is a serious problem with theft of fire department connections for scrap metal. A misisng FDC provided an impairment to the system.

Submitter Information Verification

Submitter Full Name: Bill Galloway
Organization: Southern Regional Fire Code De
Submittal Date: Tue Mar 12 13:07:01 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1363108021905.xml

Public Input No. 548-NFPA 13-2013 [Section No. 6.9.1]

Original | Hide Markup

6.9.1 General.
Waterflow alarm devices shall be listed for the service and so constructed and installed that any flow of water from a sprinkler system equal to or greater than that from a single automatic sprinkler of the smallest K-factor installed on the system will result in an audible alarm on the premises ~~within 5 minutes after~~ within 90 seconds after such flow begins and until such flow stops.

Statement of Problem and Substantiation for Public Input

5 minutes of flow is too long and unnecessarily liberal. It creates confusion because of the difference in time allowed if system is connected to a alarm system installed per NFPA 72. An alarm check valve and gong should be able to operate within 90 seconds after flow commences.

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:24:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370031888033.xml

Public Input No. 27-NFPA 13-2013 [New Section after 6.10]

Note: The following proposal 13-67 and comment 13-57 were returned to Committee at the 2012 Association Technical Meeting and/or subsequent Standards Council Meeting. In accordance with 4.7.1(d) and 4.7.2(c) of the Regulations Governing Committee Projects, it is now being processed as a Proposal for this revision cycle.

See uploaded files

Additional Proposed Changes

	File Name	Description	Approved
Open	13_PI_27_cover_sheet.pdf	Cover sheet	
Open	13_PI_27_2nd_part_of_Rec_from_Amend.docx	Include for Recommendation text	

Statement of Problem and Substantiation for Public Input

This proposal 13-67 and comment 13-57 were returned to Committee at the A2012 Association Technical Meeting and/or subsequent Standards Council Meeting. In accordance with 4.7.1(d) and 4.7.2(c) of the Regulations Governing Committee Projects, it is now being processed as a Proposal for this revision cycle.

This comment text was submitted on behalf of Terry L. Victor, Syco/Simplex Grinnell.

Submitter Information Verification

Submitter Full Name: TC on AUT-SSI
Organization: TC on Sprinkler System Installation Criteria
Submittal Date: Thu Jan 24 12:57:54 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359050274582.xml

ROP Text Recommendation:

Revise text to read as follows:

6.1.1.3 Equipment, other than non metallic pipe and fittings, as permitted in table 6.3.1.1 and table 6.4.1 shall not be required to be listed.

6.1.1.6 The new materials or devices listing instructions shall identify and specify the existing system components, including the fluids conveyed, with which the new listed materials, devices or components are compatible.

6.1.1.6.1 This listing requirement shall also apply to chemical or material modifications made to components listed in Table 6.3.1.1 and Table 6.4.1.

6.3 Aboveground Pipe and Tube.

6.3.1 General.

6.3.1.1 Pipe or tube shall meet or exceed one of the standards in Table 6.3.1.1 or be in accordance with 6.3.6.

Table 6.3.1.1 Pipe or Tube Materials and Dimensions

Materials and Dimensions	Standard
Ferrous Piping (Welded and Seamless)	
Specification for black and hot-dipped zinc-coated (galvanized) welded and seamless steel pipe for fire protection use	ASTM A 795
Specification for welded and seamless steel pipe	ANSI/ASTM A 53
Wrought steel pipe	ANSI/ASME B36.10M
Specification for electric-resistance-welded steel pipe	ASTM A 135
Copper Tube (Drawn, Seamless)	
Specification for seamless copper tube	ASTM B 75
Specification for seamless copper water tube	ASTM B 88
Specification for general requirements for wrought seamless copper and copper-alloy tube	ASTM B 251
Fluxes for soldering applications of copper and copper-alloy tube	ASTM B 813
Brazing filler metal (classification BCuP-3 or BCuP-4)	AWS A5.8
Solder metal, Section 1: Solder alloys containing less than 0.2% lead and having solidus temperatures greater than 400°F	ASTM B 32
Alloy materials	ASTM B 446
CPVC Plastic Piping	
Nonmetallic piping specification for special listed chlorinated polyvinyl chloride (CPVC) pipe	ASTM F 442

6.3.1.2 Steel pipe shall be in accordance with 6.3.2, 6.3.3, or 6.3.4.

6.3.1.3 Copper tube shall be in accordance with 6.3.5.

6.3.1.4 Chlorinated polyvinyl chloride (CPVC) shall be in accordance with 6.3.6 and with the portions of the ASTM standards specified in Table 6.3.6.1 that apply to fire protection service.

6.3.2* Steel Pipe—Welded or Roll-Grooved. When steel pipe referenced in Table 6.3.1.1 is used and joined by welding as referenced in 6.5.2 or by roll-grooved pipe and fittings as referenced in 6.5.3, the minimum nominal wall thickness for pressures up to 300 psi (20.7 bar) shall be in accordance with Schedule 10 for pipe sizes up to 5 in. (125 mm), 0.134 in. (3.40 mm) for 6 in. (150 mm) pipe, 0.188 in. (4.78 mm) for 8 in. and 10 in. (200 mm and 250 mm) pipe, and 0.330 in. (8.38 mm) for 12 in. (300 mm) pipe.

6.3.3 Steel Pipe — Threaded. When steel pipe referenced in Table 6.3.1.1 is joined by threaded fittings referenced in 6.5.1 or by fittings used with pipe having cut grooves, the minimum wall thickness shall be in accordance with Schedule 30 pipe [in sizes 8 in. (200mm)and larger] or Schedule 40 pipe [in sizes less than 8 in. (200 mm)] for pressures up to 300 psi (20.7 bar).

6.3.4 Specially Listed Steel Pipe. Pressure limitations and wall thickness for steel pipe specially listed in accordance with 6.3.6 shall be permitted to be in accordance with the pipe listing requirements.

6.3.5* Copper Tube. Copper tube as specified in the standards listed in Table 6.3.1.1 shall have a wall thickness of Type K, Type L, or Type M where used in sprinkler systems.

6.3.6* CPVC Plastic Pipe. CPVC pipe in accordance with Table 6.3.1.1 shall be investigated for suitability in automatic sprinkler installations and listed for this service. Listed CPVC shall be installed in accordance with it's listing limitations, including installation instructions.

6.3.6.1* When CPVC pipe is used in combination systems utilizing internally coated steel piping and CPVC piping, the steel pipe shall be investigated for compatibility with CPVC by a testing laboratory. Cutting oils and Lubricants used for fabrication of the steel piping shall be compatible with CPVC materials.

6.3.6.2* When CPVC pipe is used in combination systems utilizing steel pipe that is not internally coated and CPVC piping, no additional evaluations are required. Cutting oils and Lubricants used for fabrication of the steel piping shall be compatible with CPVC materials.

6.3.6.3 Fire stopping materials intended for use on CPVC piping penetrations shall be investigated for compatibility with CPVC materials.

6.3.6.4 Other construction materials such as paint, electrical and communication wiring, thread sealants, gasket lubriacant shall not come in contact with CPVC unless they have been evaluated as compatible with CPVC materials by a testing laboratory.

6.3.6.5 CPVC listed for light hazard occupancies shall be permitted to be installed in ordinary hazard rooms of otherwise light hazard occupancies where the room does not exceed 400 ft2 (37 m2).

6.3.6.6 CPVC shall not be listed for portions of an occupancy classification.

6.3.6.7* Listed Pipe and Tubing.

6.3.6.7.1 Other types of pipe or tube investigated for suitability in automatic sprinkler installations and listed for this service, including but not limited to CPVC and steel, and differing from that provided in Table 6.3.1.1 or Table 6.3.6.1 shall be permitted where installed in accordance with their listing limitations, including installation instructions.

Delete Table 6.3.6.1

6.3.6.7.2 Pipe or tube listed for light hazard occupancies shall be permitted to be installed in ordinary hazard rooms of otherwise light hazard occupancies where the room does not exceed 400 ft2 (37 m2).

6.3.6.7.3 Pipe or tube shall not be listed for portions of an occupancy classification.

6.3.6.7.4 Bending of listed pipe and tubing shall be permitted as allowed by the listing.

6.3.7.8 Pipe and Tube Bending.

6.3.7.8.1 Bending of Schedule 10 steel pipe, or any steel pipe of wall thickness equal to or greater than Schedule 10 and Types K and Lcopper tube, shall be permitted when bends are made with no kinks, ripples, distortions, or reductions in diameter or any noticeable deviations from round.

6.3.7.8.2 For Schedule 40 and copper tubing, the minimum radius of a bend shall be six pipe diameters for pipe sizes 2 in. (50mm)and smaller and five pipe diameters for pipe sizes 2 1⁄2 in. (65 mm) and larger.

6.3.7.8.3 For all other steel pipe, the minimum radius of a bend shall be 12 pipe diameters for all sizes.

6.3.8.9 Pipe and Tube Identification.

6.3.8.9.1* All pipe, including specially listed pipe allowed by 6.3.6, shall be marked along its length by the manufacturer in such a way as to properly identify the type of pipe.

6.3.8.9.2 The marking shall be visible on every piece of pipe over 2 ft (610 mm) long.

6.3.8.9.3 Pipe identification shall include the manufacturer’s name, model designation, or schedule.

6.4 Fittings.

6.4.1 Fittings used in sprinkler systems shall meet or exceed the standards in Table 6.4.1 or be in accordance with 6.4.2 or 6.4.3.

Table 6.4.1 Fittings Materials and Dimensions

Materials and Dimensions	Standard
Cast Iron	
Cast iron threaded fittings, Class 125 and 250	ASME B16.4
Cast iron pipe flanges and flanged fittings	ASME B16.1
Malleable Iron	
Malleable iron threaded fittings, Class 150 and 300 steel	ASME B16.3
Factory-made wrought steel buttweld fittings	ASME B16.9
Buttwelding ends for pipe, valves, flanges, and fittings	ASME B16.25
Specification for piping fittings of wrought carbon steel and alloy steel for moderate and elevated temperatures	ASTM A 234
Steel pipe flanges and flanged fittings	ASME B16.5
Forged steel fittings, socket welded and threaded copper	ASME B16.11
Wrought copper and copper alloy solder joint pressure fittings	ASME B16.22

Cast copper alloy solder joint pressure fittings	ASME B16.18
CPVC	
Chlorinated polyvinyl chloride (CPVC) specification for Schedule 80 CPVC threaded fittings	ASTM F 437
Specification for Schedule 40 CPVC socket-type fittings	ASTM F 438
Specification for Schedule 80 CPVC socket-type fittings	ASTM F 439

6.4.2 In addition to the standards in Table 6.4.1, CPVC fittings shall also be in accordance with 6.4.3 and with the portions of the ASTM standards specified in Table 6.4.3 that apply to fire protection service.

6.4.2* CPVC Plastic Fittings. CPVC fittings in accordance with Table 6.3.1.1 shall be investigated for suitabilityin automatic sprinkler installations and listed for this service. Listed CPVC shall be installed in accordance with it's listing limitations, including installation instructions.

6.4.2.1* When CPVC fittings are used in combination systems utilizing internally coated steel piping and CPVC fittings, the steel pipe shall be investigated for compatibility with CPVC by a testing laboratory. Cutting oils and Lubricants used for fabrication of the steel piping shall be compatible with CPVC materials.

6. 4.2.2* When CPVC fittings are used in combination systems utilizing non internally coated steel piping and CPVC fittings, no additional evaluations are required. Cutting oils and Lubricants used for fabrication of the steel piping shall be compatible with CPVC materials.

6. 4.2.3 Fire stopping materials intended for use on CPVC penetrations shall be investigated for compatibility with CPVC materials.

6. 4.2.4 Other construction materials such as paint, electrical and communication wiring, thread sealants, gasket lubriacant shall not come in contact with CPVC unless they have been evaluated as compatible with CPVC materials by a testing laboratory.

6.4.3* Other types of fittings investigated for suitability in automatic sprinkler installations and listed for this service including, but not limited to, CPVC, and steel differing from that provided in Table 6.4.3, shall be permitted when installed in accordance with their listing limitations, including installation instructions.

Add Appendix:

A.6.3.6 CPVC is a plastic material and consideration is necessary when other materials or chemicals come in contact with CPVC that may cause degradation of perfomance of the pipe due to interaction of materials. Compliance with Section 6.3.6 combined with following manufacturer's guidance on installation and compatible materials will help prevent premature performance degradation of CPVC piping. Excessive mechanical stress caused by hanging methods or excessive bending on CPVC piping beyond the recommended limitations can cause stress failure over time and should be avoided.

A.6.3.6.1 When fabricating steel pipe for a combination (cpvc – steel) system, the cutting oil and lubricants can cause performance degradation of the cpvc piping. Cutting oils and lubricants found to be compatible are available and should be used.

A.6.3.6.4 Other construction materials include but are not limited to materials used in fabrication of the sprinkler system, additives to water supplies, cable and wiring and certain insecticides and fungicides.

A.6.4.2.1 CPVC is a plastic material and consideration is necessary when other materials or chemicals come in contact with CPVC that may cause degradation of perfomance of the fitting due to interaction of materials. Compliance with Section 6.3.4 combined with following manufacturer's guidance on installation and compatible materials will help prevent premature performance degradation of CPVC fittings. Excessive mechanical stress caused by hanging methods or excessive bending on CPVC piping beyond the recommended limitations can cause stress failure over time and should be avoided.

A.6.4.2.2 When fabricating steel pipe for a combination (cpvc – steel) system, the cutting oil and lubricants can cause performance degradation of the cpvc fitting. Compatibe cutting oils and lubricants are available and should be used.

A.6.4.3 Other construction materials include but are not limited to materials used in fabrication of the sprinkler system, additives to water supplies, cable and wiring and certain insecticides and fungicides.

Public Input No. 28-NFPA 13-2013 [New Section after 6.10]

Note: This Proposal originates from Tentative Interim Amendment 13-13-2 (TIA 1054) issued by the Standards Council on August 9, 2012.
See uploaded file

Additional Proposed Changes

	File Name	Description	Approved
Open	13_PI_28_Rec.docx	Recommendation text from TIA (balloted)	

Statement of Problem and Substantiation for Public Input

Revise Chapter 6 of NFPA 13 by changing the references to “CPVC” pipe and fittings to “nonmetallic” pipe and fittings. The exact words that need to be changed will depend on the section in order to be grammatically correct. The following is a list of the proposed changes, which will be followed by a draft of the affected sections:

1. 6.3.1.4, change “Chlorinated polyvinyl chloride (CPVC)” to “Nonmetallic pipe”.
2. 6.3.7, change the title from “CPVC Plastic Pipe” to “Nonmetallic Pipe” and change the beginning of the section from “CPVC pipe” to “Nonmetallic pipe”.
3. 6.3.7.1, change “Listed CPVC” to “Listed nonmetallic pipe”.
4. 6.3.7.2, the first two times “CPVC” is used, replace it with “nonmetallic”. The third time “CPVC” is used, replace it with “the nonmetallic piping”.
5. 6.3.7.3, replace “CPVC” with “nonmetallic”.
6. 6.3.7.4, the first time that “CPVC” is used, replace it with “nonmetallic”. The second time that “CPVC” is used, replace it with “the nonmetallic pipe”.
7. 6.3.7.5, the first time that “CPVC” is used, replace it with “nonmetallic”. The second time that “CPVC” is used, replace it with “the nonmetallic pipe”.
8. 6.3.7.6 the first time that “CPVC” is used, replace it with “nonmetallic pipe materials”. The second time that “CPVC” is used, replace it with “the nonmetallic pipe”.
9. 6.3.7.7, replace “CPVC” with “nonmetallic pipe”.
10. 6.3.7.8, , replace “CPVC” with “nonmetallic pipe”.
11. 6.4.2, change “CPVC to “nonmetallic”.
12. 6.4.3, change “CPVC Plastic” to “Nonmetallic” in the title. Then, the first time that “CPVC” appears in the section, change it to “Nonmetallic” and the second time that “CPVC” appears, change it to “nonmetallic fittings”
13. 6.4.3.1, change “CPVC” to “nonmetallic” the first two times it appears in the section. The third time that “CPVC” appears, change it to “the nonmetallic fittings”. The fourth time that “CPVC” appears, change it to “the nonmetallic fitting”.
14. 6.4.3.2, change “CPVC” to “nonmetallic” the first two times it appears in the section. The third time that “CPVC” appears in the section, change it to “the nonmetallic fitting”.
15. 6.4.3.3, change the first “CPVC” to “nonmetallic fitting” and the second “CPVC” to “the nonmetallic fitting”
16. 6.4.3.4, change the first “CPVC” to “nonmetallic fitting material ” and the second “CPVC” to “the nonmetallic fitting”

The language, as drafted by the committee in the ROP and ROC has the potential to create an adverse impact on the manufacturers of a single nonmetallic pipe and fitting product when the situation intended to be addressed by the changes (compatibility of the product with other items in the system) needs to be addressed for all nonmetallic materials.

The compatibility of nonmetallic pipe with elements that could reasonably be expected to be in the water as well as external elements that the pipe could reasonably be expected to come into contact with needs to be evaluated for all nonmetallic pipe and fitting products that get used in fire sprinkler systems, not just a single material.

Unfortunately, due to the grammar of the sections, the acronym “CPVC” could not easily be substituted with the single word “nonmetallic” is all cases. But in each case where a substitution was made, the broader term of “nonmetallic pipe” or “nonmetallic fitting” was used in singular or plural form in order to make the section grammatically correct.
In sections 6.3.7.9.1 and 6.4.4, “CPVC” has been intentionally left in the standard because it is a specific example of a type of pipe that is allowed under this section. In the annex sections, “CPVC” has been intentionally left in the text because these are statements of fact about a specific product.

Emergency Nature: Due to the potential adverse impact on a particular product, we believe that this TIA meets the definition of an “Emergency” under section 5.2(f) of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Thu Jan 24 13:09:29 EST 2013

Public Input No. 318-NFPA 13-2013 [New Section after 7.2]

7.1.5 Air Venting.
7.1.5.1* Wet pipe sprinkler systems shall have a means for venting trapped air.
7.1.5.1.1* Air venting means shall be one of the following:
(1) Manual air venting valve
(2) Automatic air venting valve
(3) Other means approved by the AHJ
7.1.5.2* The air venting outlet shall be located at a high point of the system that is remote from the riser where the venting of air is most effective.
7.1.5.3* A manual air venting valve shall be accessible.
7.1.5.4* Systems with a manual air venting valve shall have signage at the system control valve indicating the location of the air venting valve.
A.7.1.5.1 Air venting on a wet fire sprinkler system expels trapped air during the filling of the sprinkler system. Trapped air causes multiple issues in wet sprinkler systems including increased water delivery times, alarm ring delay, cyclic ringing of water flow alarms and accelerated pipe corrosion.
A.7.1.5.1.1 A test valve located at the most remote point from the riser that is fed from a high point can satisfy 7.1.5.1.1 as a manual air venting valve.
A.7.1.5.2 When designing a system the placement of the air venting valve should be selected by the designer using the system pipe layout. For effective venting, the air venting outlet should be located where the greatest volume of trapped air can be vented during every drain and fill event. It is neither the intent nor practical to exhaust all trapped air from a single location on a wet pipe sprinkler system. The vent connection to the system should be located off the top of the piping at the high point.
A7.1.5.3 The manual air venting valve should be located at an accessible point and preferably not over 7 ft above the floor.
A7.1.5.4 The manual air venting valve should be fully opened prior to the partial opening of the system control valve. Partially opening the system control valve allows more of the trapped air to be vented as the sprinkler system is filled. The manual air venting valves should be closed once the air is exhausted.

Statement of Problem and Substantiation for Public Input

A variety of circumstances contribute to significant levels of trapped air in wet fire sprinkler systems. Locating the test and drain port adjacent to the riser rather than at a remote location has increased the likelihood that systems will have a large quantity of air trapped within them. In some cases wet sprinkler systems can have up to 70% entrapped air by volume. Venting trapped air in a wet system can help manage problems in four areas: water delivery time, alarm ring delay, water flow alarm cyclic ringing, and corrosion activity.
Ring delay can create issues during testing, forcing technicians to drain the system and assess the problem. In some cases, it can cause a delayed alarm in a fire, increasing response time. Cyclic ringing of water flow alarms can cause false alarms, resulting in sending emergency personnel, and increased costs for owners. Trapped air in wet systems drastically increases corrosion by increasing the oxygen concentration in the water. When air gets trapped with water under pressure, the concentration of dissolved oxygen can rise upwards to 35 – 40ppm (6-8ppm is common tap water). Corrosion rates respond linearly to dissolved oxygen concentrations. In wet sprinkler systems visual evidence of trapped air corrosion is seen along the air-water interface line. This creates opportunities for the formation of tubercles and other corrosion deposits that can affect water design flow, cause blockages, and even lead to leaks. Another issue that trapped oxygen can cause is contributing to the growth of aerobic bacteria, increasing the likelihood of MIC corrosion.
A single vent location that is properly placed can accomplish the removal of the majority of the air in a sprinkler system. The result will be a system that offers enhanced performance and increased longevity.

Submitter Information Verification

Submitter Full Name: David Royse
Organization: Potter Electric Signal Company
Submittal Date: Tue May 21 14:44:46 EDT 2013

Public Input No. 320-NFPA 13-2013 [Sections 7.2.3.3, 7.2.3.4]

Original | Hide Markup

Sections 7.2.3.3, 7.2.3.4

7.2.3.3

A system size of not more than 500 gal (1893 L) shall be permitted without a quick-opening device and shall ~~not be required to meet any specific water delivery requirement to the~~ be sized such that initial water is discharged from the system test connection in not more than 12 0 seconds, starting at the normal air pressure on the system and at the time of fully opened inspection test connection .

7.2.3.4

A system size of not more than 750 gal (2839 L) shall be permitted with a quick-opening device and ~~shall not be required to meet any specific water delivery requirement to the~~ shall be sized such that initial water is discharged from the system test connection in not more than 12 0 seconds, starting at the normal air pressure on the system and at the time of fully opened inspection test connection .

Statement of Problem and Substantiation for Public Input

This has been a controversial issue for many years and is a regular argument between contractors and AHJ's. Personally, I see no reason why a dry pipe system should not be able to achieve 120 second test. Actually, in my opinion, they should all meet the 60 second requirement, but the 120 seconds is submitted as a compromise to give at least some guidance where there is none currently. This should not be left open-ended in my opinion - water must reach the activated sprinkler within a reasonable amount of time to avoid excessive uncontrolled fire growth. If nothing else, please provide commentary in the Appendix to give an AHJ some guidance on this issue.

Submitter Information Verification

Submitter Full Name: Bob Morgan
Organization: Fort Worth Fire Department
Affilliation: Chair of the Fire Advisory Board to the North Central Texas Council of Governments
Submittal Date: Tue May 21 16:05:22 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369166722768.xml

Public Input No. 37-NFPA 13-2013 [Section No. 7.2.3.6]

Original | Hide Markup

7.2.3.6 Dry Pipe System Calculated Water Delivery.

7.2.3.6.1

Calculations for dry pipe system water delivery shall be based on the hazard shown in Table 7.2.3.6.1.

Table 7.2.3.6.1 Dry Pipe System Water Delivery

Hazard	Number of Most Remote Sprinklers Initially Open	Maximum Time of Water Delivery (seconds)
Light	1	60
Ordinary I	2	50
Ordinary II	2	50
Extra I	4	45
Extra II	4	45
High piled	4	40

7.2.3.6.2

The calculation program and method shall be listed by a nationally recognized testing laboratory.

7.2.3.6.3

For dry pipe systems protecting dwelling unit portions of any occupancy, the sprinklers in the dwelling unit shall have a maximum water delivery time of 15 seconds to the single most remote sprinkler.

7.2.3.6.4

Residential sprinklers shall be listed for dry pipe applications.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Hartel.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

It is not clear if a calculated water delivery time (using a listed computer software program) is an acceptable alternative to the 60 second rule. In other words, if you can "prove" through computer modeling that water delivery times meet the requirements specified in Table 7.2.3.6.1, ...does the 60 second rule no longer apply for an actual trip test, even if water delivery time exceeds 60 seconds?

Submitter Information Verification

Submitter Full Name: DANIEL HARTEL
Organization: LIBERTY FIRE PROTECTION
Submittal Date: Thu Jan 24 13:42:04 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359052924527.xml

Public Input No. 234-NFPA 13-2013 [Section No. 7.2.5.4.1]

Original Hide Markup

7.2.5.4.1

Where it is possible to ~~reseat~~ reset the dry valve after actuation without first draining the system, protection against the occurrence of water above the clapper shall be ~~permitted~~ required in accordance with 7.2.5.4.3.

Additional Proposed Changes

	File Name	Description Approved
Open	NFPA_Public_Input_Form_13_2013_7_2_5_4_1.pdf	Cover Sheet

Statement of Problem and Substantiation for Public Input

Clarification, the word permitted is confusing in this context. Is it really necessary to have to be specifically permitted to monitor for water columns above a dry valve? Was this not allowed before this section was written to grant permission? If this proposal fails, the section should at least be changed to state: SHOULD BE REQUIRED. The handbook for NFPA 13 lists three very good reasons for protection against the accumulation of water; 1) The potential for freeze ups. 2) The possibility the column of water may produce enough pressure to prevent the dry valve from opening. 3) The potential damage to riser and base mounted air compressors. However, 7.2.5.4.1 as currently written and the referenced section 7.2.5.4.3 simply grant permission for the protection if someone wants to include it, they don't even suggest that it is a good idea. All manufacturers of externally resettable dry valves include instructions to try to prevent the accumulation of water and some offer automatic drains fro this very reason. The trained technician and the people familiar with draining and resetting dry systems are not the concern. The concern is the untrained person who may work on the system. A non-supervised local dry system could be reset by an untrained building maintenance person.The water column can also be caused by condensation or a leaky clapper on the dry valve. In instances like this, a visual indicator, automatic drain or even written instructions with warnings and a check list posted on the dry valve would help ensure that the system will work when necessary.

Submitter Information Verification

Submitter Full Name: Michael Henke
Organization: Potter Electric Signal Company
Submittal Date: Mon Apr 29 09:15:00 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367241300439.xml

Public Input No. 433-NFPA 13-2013 [Section No. 7.2.5.4.2]

Original Hide Markup

~~7.2.5.4.2 – Low Differential Dry Pipe Valve.~~

~~Protection against accumulation of water above the clapper shall be provided for low differential dry pipe valves in accordance with 7.2.5.4.3 .~~

Statement of Problem and Substantiation for Public Input

A water column should be prevented for any type of dry valve. Paragraph 7.2.5.4.1 adequately covers the intent.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Tue May 28 14:53:44 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369767224535.xml

Public Input No. 235-NFPA 13-2013 [Section No. 7.2.5.4.3]

Original | Hide Markup

7.2.5.4.3 High Water Level Device.

An automatic high water level signaling device, automatic drain or ~~an automatic drain~~ other approved method of protecting against an accumulation of water above the clapper shall be ~~permitted~~ required .

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPA_Public_Input_Form_13_2013_7_2_5_4_3.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This section as currently written isn't very clear. What does the committee mean by; An automatic high water level signaling device or an automatic drain shall be permitted? Since these are the only methods mentioned as being permitted, does that mean they are the only methods allowed for detecting or preventing the accumulation of water? Some sort of protection is necessary to prevent the accumulated of water above the clapper, especially for the low differential valves in 7.2.5.4.2 that can be externally reset and the protection should be required, not just permitted. Section 7.2.5.4.1 as currently written simply permits people to protect against water accumulation, as if people would be opposed to making sure there wasn't a column of water that might prevent the dry valve from opening. This change would at least require some sort of protection that is acceptable to the AHJ and the annex material would describe some methods that might be acceptable.

Submitter Information Verification

Submitter Full Name: Michael Henke
Organization: Potter Electric Signal Company
Submittal Date: Mon Apr 29 09:21:33 EDT 2013

Public Input No. 186-NFPA 13-2013 [New Section after 7.2.6.4.2]

7.2.6.4.3

Where an air maintainance device is installed, a bypass line with a normally open control valve and check valve shall be installed around the devices required by section 7.2.6.4.2.

Statement of Problem and Substantiation for Public Input

NFPA 13 currently does not have a provision for the automatic fill line. If an air maintaince device is present, but the air fill line required by section 7.2.6.4.2 is closed, the air maintaince device will not be able to be used to maintain air pressure automatically within the system.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 18 14:41:11 EDT 2013

Public Input No. 167-NFPA 13-2013 [Section No. 7.2.6.6.3]

Original | Hide Markup

7.2.6.6.3

~~The~~ When the automatic air supply ~~to~~ supplies more than one dry pipe ~~system shall be connected to enable individual maintenance of air pressure in each system~~ valve each valve shall have its own air maintenance device .

Statement of Problem and Substantiation for Public Input

Clears up confusion that having more than one dry valve on a single air maintenance device is not permitted.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Apr 02 19:06:36 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364943996683.xml

Public Input No. 438-NFPA 13-2013 [Section No. 7.2.6.6.3]

Original | Hide Markup

7.2.6.6.3

The automatic air supply to more than one dry pipe system shall be connected to enable individual maintenance of air pressure in each system. Each dry pipe system shall have an air maintenance device.

Statement of Problem and Substantiation for Public Input

The sentence of this paragraph is not really clear as to intent. The second sentence is to add clarity to the requirement.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Wed May 29 13:51:15 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369849875810.xml

Public Input No. 111-NFPA 13-2013 [New Section after 7.2.6.8.3]

7.2.7 Galvanized Pipe

7.2.7.1 Internally galvanized steel pipe shall not be used.

Statement of Problem and Substantiation for Public Input

When steel pipe is not uniformly covered with zinc, the small areas that are not covered experience localized accelerated corrosion. The hot dip process does not ensure uniform or adequate coverage on the interior of the pipe. Additionally, the zinc will crack and flake-off at rolled grooves. The are many cases where dry-pipe systems with galvanized pipe have been replaced in no more than 5 years due to significant leakage from localized corrosion. Even if galvanized pipe was required to be listed, the current test protocols cannot ensure an adequate or uniform zinc coating on the interior of the pipe.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Wed Mar 13 13:03:02 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1363194182926.xml

Public Input No. 112-NFPA 13-2013 [New Section after 7.3.2.6]

7.3.2.7 Galvanized Pipe

7.3.2.7.1 Internally galvanized steel pipe shall not be used.

Statement of Problem and Substantiation for Public Input

When steel pipe is not uniformly covered with zinc, the small areas that are not covered experience localized accelerated corrosion. The hot dip process does not ensure uniform or adequate coverage on the interior of the pipe. Additionally, the zinc will crack and flake-off at rolled grooves. The are many cases where dry-pipe systems with galvanized pipe have been replaced in no more than 5 years due to significant leakage from localized corrosion. Even if galvanized pipe was required to be listed, the current test protocols cannot ensure an adequate or uniform zinc coating on the interior of the pipe.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 111-NFPA 13-2013 [New Section after 7.2.6.8.3]	

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Wed Mar 13 13:10:21 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1363194621177.xml

Public Input No. 540-NFPA 13-2013 [Section No. 7.6]

Original Hide Markup

7. ~~6 * — Antifreeze Systems.~~

~~7.6.1 * - – General.~~

~~7.6.1.1 –~~

~~The use of antifreeze solutions shall be in conformity with state and local health regulations.~~

~~7.6.1.2 –~~

~~Antifreeze shall not be used in ESFR systems unless the ESFR sprinkler is listed for use with the antifreeze solution.~~

~~7.6.1.3 –~~

~~Where pendent sprinklers are utilized, the water shall be drained from the entire system after hydrostatic testing with water.~~

~~7.6.1.3.1 –~~

~~The requirements of~~ 7.6.1.3 ~~shall not apply where the system is hydrostatically tested with properly mixed antifreeze solution.~~

~~7.6.1.4 –~~

~~Where antifreeze systems are remote from the system riser, a placard shall be mounted on the system riser that indicates the number and location of all remote antifreeze systems supplied by that riser.~~

~~7.6.1.5 –~~

~~A placard shall be placed on the antifreeze system main valve that indicates the manufacture type and brand of the antifreeze solution, the concentration by volume of the antifreeze solution used, and the volume of the antifreeze solution used in the system.~~

~~7.6.2 * - – Antifreeze Solutions.~~

~~7.6.2.1 * - –~~

~~Except as permitted in~~ 7.6.2.2 ~~, antifreeze solutions shall be listed for use in sprinkler systems.~~

~~7.6.2.2 –~~

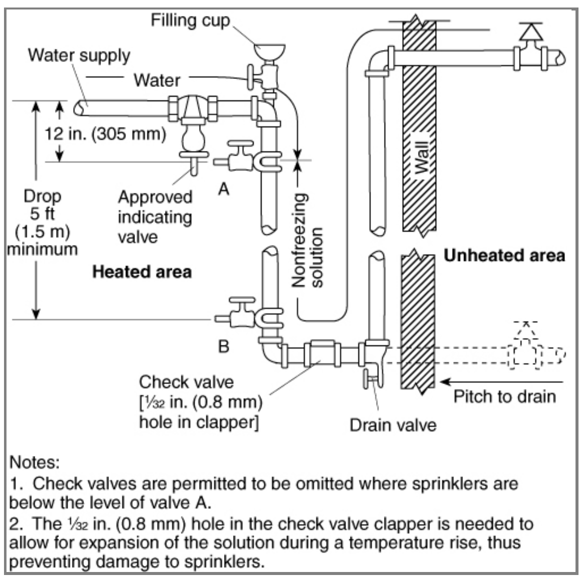
~~Premixed antifreeze solutions of propylene glycol shall be permitted to be used with ESFR sprinklers where the ESFR sprinklers are listed for such use in a specific application.~~

~~7.6.3 – Arrangement of Supply Piping and Valves.~~

~~7.6.3.1 –~~

~~Where the connection between the antifreeze system and the wet pipe system does not incorporate a backflow prevention device, and the conditions of~~ 7.6.3.5 ~~are not met, piping and valves shall be installed as illustrated in~~ Figure 7.6.3.1 ~~.~~

~~Figure 7.6.3.1 Arrangement of Supply Piping and Valves.~~



~~7.6.3.2 * - –~~

~~Where the connection between the antifreeze system and the wet pipe system incorporates a backflow prevention device, and the conditions of~~ 7.6.3.5 ~~are not met, piping and valves shall be installed as illustrated in~~ Figure 7.6.3.3 ~~or~~ Figure 7.6.3.4 ~~.~~

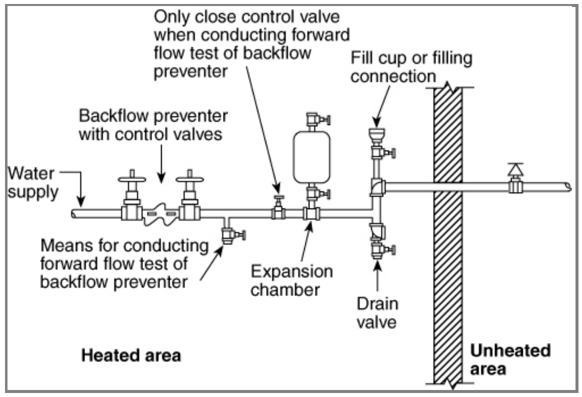
~~7.6.3.2.1 –~~

~~A means shall be provided to perform a full forward flow test in accordance with~~ 8.17.4.6 ~~.~~

~~7.6.3.3 * - –~~

~~Where the connection between the antifreeze system and the wet pipe system incorporates a backflow prevention device, and the conditions of 7.6.3.5 are not met, a listed expansion chamber shall be provided to compensate for thermal expansion of the antifreeze solution as illustrated in Figure 7.6.3.3 .~~

~~Figure 7.6.3.3 Arrangement of Supply Piping with Backflow Device.~~



~~7.6.3.3.1~~ –

~~When determining the size of the expansion chamber, the precharge air temperature and precharge air pressure shall be included.~~

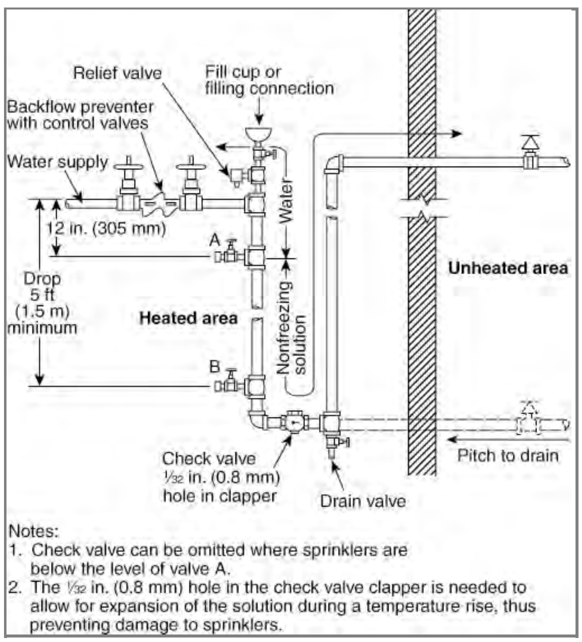
~~7.6.3.3.2~~ –

~~The size of the expansion chamber shall be such that the maximum system pressure does not exceed the rated pressure for any components of the antifreeze system.~~

~~7.6.3.4~~ –

~~A listed ½ in. (12 mm) relief valve shall be permitted in lieu of the expansion chamber required in 7.6.3.3 , provided the antifreeze system volume does not exceed 40 gal (151 L) as illustrated in Figure 7.6.3.4 .~~

~~Figure 7.6.3.4 Arrangement of Supply Piping with Relief Valve and Backflow Device.~~



~~7.6.3.5~~ –

~~The requirements of paragraphs 7.6.3.1 , 7.6.3.2 , and 7.6.3.3 shall not apply where the following three conditions are met:~~

(1) ~~The antifreeze system is provided with an automatic pressure pump or other device or apparatus to automatically maintain a higher pressure on the system side than on the supply side of the water supply check valve separating the antifreeze system from the water supply.~~

(2) ~~Provision is made to automatically release solution to prevent overpressurization due to thermal expansion of the solution.~~

(3) ~~Provision is made to automatically supply premixed solution as needed to restore system pressure due to thermal contraction.~~

~~7.6.3.6~~ * - –

~~A drain/test connection shall be installed at the most remote portion of the system.~~

~~7.6.3.7~~ –

~~For systems with a capacity larger than 150 gal (567.8 L), an additional test connection shall be provided for every 100 gal (378.5 L).~~

6 _ Antifreeze Systems. (Reserved)

Statement of Problem and Substantiation for Public Input

Until a listed anti-freeze solution is available, this section should be removed so that AHJ's, Owners and Installers will fully understand the intent of the

Committee's recent TIA's

Submitter Information Verification

Submitter Full Name: Cecil Bilbo
Organization: Academy of Fire Sprinkler Technology
Submittal Date: Fri May 31 16:13:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370031204254.xml

Public Input No. 30-NFPA 13-2013 [Section No. 7.6.1.2]

Original | Hide Markup

7.6.1.2

Antifreeze shall not be used in ESFR systems unless the ESFR sprinkler is listed for use with the antifreeze solution.

See uploaded file

Additional Proposed Changes

	File Name	Description	Approved
Open	13_P_29_Rec_from_TIA.pdf	Rec from TIA (balloted)	

Statement of Problem and Substantiation for Public Input

Note: This Proposal originates from Tentative Interim Amendment 13-13-1 (TIA 1066) issued by the Standards Council on August 9, 2012.

The information provided in the Fire Protection Research Foundation report "Antifreeze Solutions Supplied through Spray Sprinklers: Interim Report" illustrates that under certain conditions (pressure, fire size, k-factor, ceiling height, deflector design…etc) a 50% glycerine solution is capable of igniting and causing a dramatic increase in heat release rate. As noted in the FPRF report, these results highlight the "complicated interaction between sprinkler spray and the ignition source."As a result of this additional testing, there are more questions that need to be answered, and the testing shows that concentrations of anti-freeze that previous testing indicated were acceptable and would not support combustion actually do with a stronger ignition source. In addition, sprinklers with larger orifices that require lower pressure than typical residential sprinklers and potentially a lager droplet distribution also ignited. It is clear that further testing is need to fully understand under what conditions an anti-freeze solutions are safe, anti-freeze solutions can not be allowed in sprinkler systems.

This TIA calls for the use of Listed Antifreeze Solutions. Using listed antifreeze solutions will ensure that the solution discharged from a sprinkler system will not ignite or cause a dramatic increase in heat release rate of a fire. The process for developing listed products will also allow for a continued improvement in fire and life safety in environments meeting the NFPA Codes and Standards.

This TIA also calls for the continued acceptance of currently listed ESFR Antifreeze Systems. The listing process has already shown that, in some cases, it is possible to use current antifreeze solutions to provide the level of protection prescribed by NFPA 13. For this reason, it is proposed to allow the continued use of propylene-glycol solutions in systems and in protection scenarios that have been thoroughly tested to demonstrate such results. There are ESFR systems currently available that have been specifically tested and listed with a specific model of sprinkler and solution delivery method that provide an appropriate level of protection as to be considered "Early Suppression".

Emergency Nature: The latest testing from The Fire Protection Research Foundation titled Antifreeze Solutions Supplied through Spray Sprinklers Interim Report (dated February 2012) shows that anti-freeze concentrations currently allowed in new NFPA 13 sprinkler systems may support combustion and increase the size of the fire. This is a safety issue that requires changes in the standard.

The following are two items which make this TIA of emergency nature. Only one is required for substantiation of an emergency nature.

(d) The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation During the latest revision cycle the committee evaluated the test data that was present at the time of the cycle. The committee could not anticipate that additional data would change our justifications during the process. The new data demonstrates that variables utilized in the development of the 2013 edition may lead to changes in the fire involvement.

Propylene glycol and glycerin antifreeze solutions discharged from sprinklers have the potential to ignite under certain conditions. Research testing has indicated that several variables may influence the potential for large scale ignition of the antifreeze solution discharged from a sprinkler. These variables include, but are not limited to, the concentration of antifreeze solution, sprinkler discharge characteristics, inlet pressure at the sprinkler, location of fire relative to the sprinkler, and size of fire at the time of sprinkler discharge.

(f) The proposed TIA intends to correct a circumstance in which the revised document has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process, or was without adequate technical (safety) justification for the action. Antifreeze solutions have been subject to recent testing and the new data shows that the installations found within the standard do not account for the complete safety of the occupant. The data appears to provide additional questions and challenges the parameters of installation found in the standard.

The use of propylene glycol and glycerin antifreeze solutions should only be considered when other sprinkler system design alternatives are not available or practical. If these solutions are used, all relevant data and information should be carefully reviewed and considered in the sprinkler system.

Submitter Information Verification

Submitter Full Name: Terry Victor

Organization: Tyco/SimplexGrinnell

Submittal Date: Thu Jan 24 13:18:48 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359051528047.xml

Public Input No. 31-NFPA 13-2013 [Section No. 7.6.2]

Original Hide Markup

7.6.2* Antifreeze Solutions.

7.6.2.1*

Except as permitted in 7.6.2.2, antifreeze solutions shall be listed for use in sprinkler systems.

7.6.2.2

Premixed antifreeze solutions of propylene glycol shall be permitted to be used with ESFR sprinklers where the ESFR sprinklers are listed for such use in a specific application.

See uploaded file.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_P_29_Rec_from_TIA.pdf	Rec text from TIA (balloted)	

Statement of Problem and Substantiation for Public Input

Note: This Proposal originates from Tentative Interim Amendment 13-13-1 (TIA 1066) issued by the Standards Council on August 9, 2012.

The information provided in the Fire Protection Research Foundation report "Antifreeze Solutions Supplied through Spray Sprinklers: Interim Report" illustrates that under certain conditions (pressure, fire size, k-factor, ceiling height, deflector design…etc) a 50% glycerine solution is capable of igniting and causing a dramatic increase in heat release rate. As noted in the FPRF report, these results highlight the "complicated interaction between sprinkler spray and the ignition source."As a result of this additional testing, there are more questions that need to be answered, and the testing shows that concentrations of anti-freeze that previous testing indicated were acceptable and would not support combustion actually do with a stronger ignition source. In addition, sprinklers with larger orifices that require lower pressure than typical residential sprinklers and potentially a lager droplet distribution also ignited. It is clear that further testing is need to fully understand under what conditions an anti-freeze solutions are safe, anti-freeze solutions can not be allowed in sprinkler systems.

This TIA calls for the use of Listed Antifreeze Solutions. Using listed antifreeze solutions will ensure that the solution discharged from a sprinkler system will not ignite or cause a dramatic increase in heat release rate of a fire. The process for developing listed products will also allow for a continued improvement in fire and life safety in environments meeting the NFPA Codes and Standards.

This TIA also calls for the continued acceptance of currently listed ESFR Antifreeze Systems. The listing process has already shown that, in some cases, it is possible to use current antifreeze solutions to provide the level of protection prescribed by NFPA 13. For this reason, it is proposed to allow the continued use of propylene-glycol solutions in systems and in protection scenarios that have been thoroughly tested to demonstrate such results. There are ESFR systems currently available that have been specifically tested and listed with a specific model of sprinkler and solution delivery method that provide an appropriate level of protection as to be considered "Early Suppression".

Emergency Nature: The latest testing from The Fire Protection Research Foundation titled Antifreeze Solutions Supplied through Spray Sprinklers Interim Report (dated February 2012) shows that anti-freeze concentrations currently allowed in new NFPA 13 sprinkler systems may support combustion and increase the size of the fire. This is a safety issue that requires changes in the standard.

The following are two items which make this TIA of emergency nature. Only one is required for substantiation of an emergency nature.

(d) The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation During the latest revision cycle the committee evaluated the test data that was present at the time of the cycle. The committee could not anticipate that additional data would change our justifications during the process. The new data demonstrates that variables utilized in the development of the 2013 edition may lead to changes in the fire involvement.

Propylene glycol and glycerin antifreeze solutions discharged from sprinklers have the potential to ignite under certain conditions. Research testing has indicated that several variables may influence the potential for large scale ignition of the antifreeze solution discharged from a sprinkler. These variables include, but are not limited to, the concentration of antifreeze solution, sprinkler discharge characteristics, inlet pressure at the sprinkler, location of fire relative to the sprinkler, and size of fire at the time of sprinkler discharge.

(f) The proposed TIA intends to correct a circumstance in which the revised document has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process, or was without adequate technical (safety) justification for the action. Antifreeze solutions have been subject to recent testing and the new data shows that the installations found within the standard do not account for the complete safety of the occupant. The data appears to provide additional questions and challenges the parameters of installation found in the standard.

The use of propylene glycol and glycerin antifreeze solutions should only be considered when other sprinkler system design alternatives are not available or practical. If these solutions are used, all relevant data and information should be carefully reviewed and considered in the sprinkler system.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu Jan 24 13:20:49 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359051649998.xml

Public Input No. 423-NFPA 13-2013 [Section No. 7.6.3.2.1]

Original Hide Markup

7.6.3.2.1
A means shall be provided to perform a full forward flow at system demand test in accordance with 8.17.4.6 .

Statement of Problem and Substantiation for Public Input

by adding "at system demand" to the term full flow, clarification is provided and matches language in 8.17.4.6 for backflows.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH
Organization: VFS FIRE AND SECURITY
Submittal Date: Sat May 25 12:44:37 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369500277567.xml

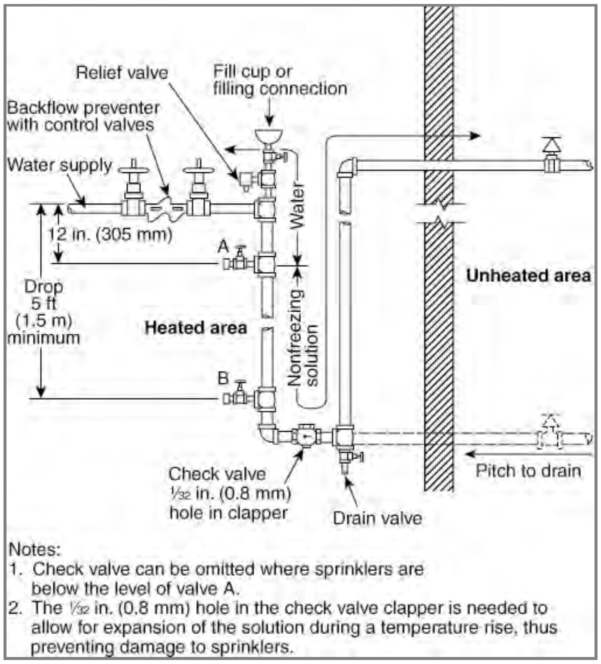
Public Input No. 140-NFPA 13-2013 [Section No. 7.6.3.4]

Original | Hide Markup

7.6.3.4

A listed ½ in. (12 mm) relief valve shall be permitted in lieu of the expansion chamber required in 7.6.3.3, provided the antifreeze system volume does not exceed 40 gal (151 L) as illustrated in Figure 7.6.3.4.

Figure 7.6.3.4 Arrangement of Supply Piping with Relief Valve and Backflow Device.



Statement of Problem and Substantiation for Public Input

Delete the check valve in Figure 7.6.3.4 and delete notes 1 & 2. Since there is a backflow preventer, the check valve is redundant.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 10:24:02 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364307842227.xml

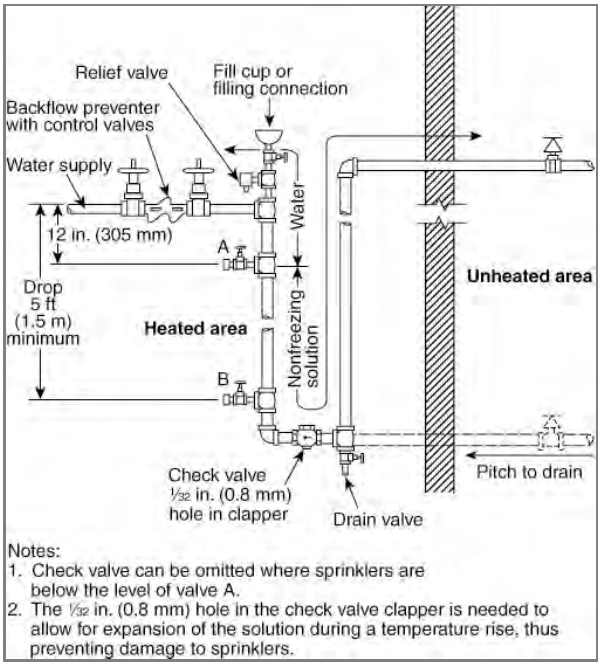
Public Input No. 52-NFPA 13-2013 [Section No. 7.6.3.4]

Original | Hide Markup

7.6.3.4

A listed ½ in. (12 mm) relief valve shall be permitted in lieu of the expansion chamber required in 7.6.3.3, provided the antifreeze system volume does not exceed 40 gal (151 L) as illustrated in Figure 7.6.3.4.

Figure 7.6.3.4 Arrangement of Supply Piping with Relief Valve and Backflow Device.



Additional Proposed Changes

File Name	Description	Approved
Open PROPOSED_CHANGES_TO_EXISTING_SECTION_OF_NFPA_13_2013_EDITION.docx	change to figure 7.6.3.4 to show piping arrangement for performing the required full forward flow test.	

Statement of Problem and Substantiation for Public Input

The proposed change to Figure 7.6.3.4 would eliminate having somone think that by adding the Relief Valve, the means for conducting the full forward flow test does not have to be piped in to the system, as shown in fugure 7.6.3.3.

Submitter Information Verification

Submitter Full Name: BRIAN DUVAL
Organization: WEST STOCKBRIDGE TOWN OF
Submittal Date: Tue Feb 05 10:36:47 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1360078607466.xml

Public Input No. 21-NFPA 13-2013 [Section No. 7.7]

Original | Hide Markup

7.7 Automatic Sprinkler Systems with Non–Fire Protection Connections.

7.7.

~~1 Circulating Closed-Loop Systems.~~

~~7.7.1.1 System Components.~~

~~7.7.1.1.1~~

~~A circulating closed-loop system is primarily a sprinkler system and shall comply with all provisions of this standard such as those for control valves, area limitations of a system, alarms, fire department connections, sprinkler spacing, and so forth, except as modified by Section 7.7 .~~

~~7.7.1.1.2~~

~~Piping, fittings, valves, and pipe hangers shall meet the requirements specified in Chapter 6 .~~

~~7.7.1.1.3~~

~~Unless the requirements of 7.7.1.1.4 are met, a dielectric fitting shall be installed in the junction where dissimilar piping materials are joined (e.g., copper to steel).~~

~~7.7.1.1.4~~

~~Dielectric fittings shall not be required in the junction where sprinklers are connected to piping.~~

~~7.7.1.1.5~~

~~Other auxiliary devices shall not be required to be listed for sprinkler service; however, these devices, such as pumps, circulating pumps, heat exchangers, radiators, and luminaires, shall be pressure rated at 175 psi or 300 psi (12.1 bar or 20.7 bar) (rupture pressure of five times rated water system working pressure) to match the required rating of sprinkler system components.~~

~~7.7.1.1.6~~

~~Auxiliary devices shall incorporate materials of construction and be so constructed that they will maintain their physical integrity under fire conditions to avoid impairment to the fire protection system.~~

~~7.7.1.1.7~~

~~Auxiliary devices, where hung from the building structure, shall be supported independently from the sprinkler portion of the system, following recognized engineering practices.~~

~~7.7.1.2 * Hydraulic Characteristics.~~

~~Piping systems for attached heating and cooling equipment shall have auxiliary pumps or an arrangement made to return water to the piping system in order to ensure the following:~~

(1) ~~Water for sprinklers shall not be required to pass through heating or cooling equipment.~~

(2) ~~At least one direct path shall exist for waterflow from the sprinkler water supply to every sprinkler.~~

(3) ~~Pipe sizing in the direct path shall be in accordance with the design requirements of this standard.~~

(4) ~~No portions of the sprinkler piping shall have less than the sprinkler system design pressure, regardless of the mode of operation of the attached heating or cooling equipment.~~

(5) ~~There shall be no loss or outflow of water from the system due to or resulting from the operation of heating or cooling equipment.~~

(6) ~~Shutoff valves and a means of drainage shall be provided on piping to heating or cooling equipment at all points of connection to sprinkler piping and shall be installed in such a manner as to make possible repair or removal of any auxiliary component without impairing the serviceability and response to the sprinkler system.~~

(7) ~~All auxiliary components, including the strainer, shall be installed on the auxiliary equipment side of the shutoff valves.~~

~~7.7.1.3 Water Temperature.~~

~~7.7.1.3.1 Maximum.~~

~~7.7.1.3.1.1~~

~~In no case shall maximum water temperature flowing through the sprinkler portion of the system exceed 120°F (49°C).~~

~~7.7.1.3.1.2~~

~~Protective control devices listed for this purpose shall be installed to shut down heating or cooling systems when the temperature of water flowing through the sprinkler portion of the system exceeds 120°F (49°C).~~

~~7.7.1.3.1.3~~

~~Where the water temperature exceeds 100°F (37.8°C), intermediate or higher temperature–rated sprinklers shall be used.~~

~~7.7.1.3.2 Minimum.~~

~~Precautions shall be taken to ensure that temperatures below 40°F (4°C) are not permitted.~~

~~7.7.1.4 Obstruction to Discharge.~~

~~Automatic sprinklers shall not be obstructed by auxiliary devices, piping, insulation, and so forth, from detecting fire or from proper distribution of water.~~

~~7.7.1.5 Signs.~~

~~7.7.1.5.1~~

~~Caution signs shall be attached to all valves controlling sprinklers.~~

~~7.7.1.5.2~~

~~The caution sign shall be worded as follows:~~

~~This valve controls fire protection equipment. Do not close until after fire has been extinguished. Use auxiliary valves when necessary to shut off supply to auxiliary equipment.~~

~~CAUTION: Automatic alarm can be sounded if this valve is closed.~~

~~7.7.1.6 Water Additives.~~

~~7.7.1.6.1~~

~~Materials added to water shall not adversely affect the fire-fighting properties of the water and shall be in conformity with any state or local health regulations.~~

~~7.7.1.6.2~~

~~Due care and caution shall be given to the use of additives that can remove or suspend scale from older piping systems.~~

~~7.7.1.6.3~~

~~Where additives are necessary for proper system operation, due care shall be taken to ensure that additives are replenished after alarm testing or whenever water is removed from the system.~~

~~7.7.1.7 Waterflow Detection.~~

~~7.7.1.7.1~~

~~The supply of water from sprinkler piping through auxiliary devices, circulatory piping, and pumps shall not under any condition or operation, transient or static, cause false sprinkler waterflow signals.~~

~~7.7.1.7.2~~

~~A sprinkler waterflow signal shall not be impaired when water is discharged through an opened sprinkler or through the system test connection while auxiliary equipment is in any mode of operation (on, off, transient, stable).~~

1

Sprinkler systems shall not have non-fire protection connections.

Statement of Problem and Substantiation for Public Input

It is time to retire this section. Sprinkler systems have become more and more specialized with multiple components being used. With the issues of compatibility rampant in our industry, connection to systems that could cause failure of individual components should be avoided.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Thu Jan 17 09:11:38 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358431898189.xml

PROPOSED CHANGES TO EXISTING SECTION OF NFPA 13 2013 EDITION

CHANGE: Figure 7.6.3.4 “Arrangement of Supply Piping with Relief Valve and Back Flow Device”

Figure does not show the means to perform the required Full Forward flow test that is shown in figure 7.6.3.3. Adding the Relief Valve would not eliminate this requirement.

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Public Input No. 32-NFPA 13-2013 [Section No. 7.8.3.4]

Original | Hide Markup

7.8.3.4

Automatic sprinklers in areas subject to freezing shall be on dry pipe systems conforming to Section 7.2 or antifreeze systems conforming to Section 7.6, or be dry sprinklers of an adequate length connected to wet pipe systems located in heated areas.

See uploaded file.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_P_29_Rec_from_TIA.pdf	Rec text from TIA (balloted)	

Statement of Problem and Substantiation for Public Input

Note: This Proposal originates from Tentative Interim Amendment 13-13-1 (TIA 1066) issued by the Standards Council on August 9, 2012.

The information provided in the Fire Protection Research Foundation report "Antifreeze Solutions Supplied through Spray Sprinklers: Interim Report" illustrates that under certain conditions (pressure, fire size, k-factor, ceiling height, deflector design…etc) a 50% glycerine solution is capable of igniting and causing a dramatic increase in heat release rate. As noted in the FPRF report, these results highlight the "complicated interaction between sprinkler spray and the ignition source."As a result of this additional testing, there are more questions that need to be answered, and the testing shows that concentrations of anti-freeze that previous testing indicated were acceptable and would not support combustion actually do with a stronger ignition source. In addition, sprinklers with larger orifices that require lower pressure than typical residential sprinklers and potentially a lager droplet distribution also ignited. It is clear that further testing is need to fully understand under what conditions an anti-freeze solutions are safe, anti-freeze solutions can not be allowed in sprinkler systems.

This TIA calls for the use of Listed Antifreeze Solutions. Using listed antifreeze solutions will ensure that the solution discharged from a sprinkler system will not ignite or cause a dramatic increase in heat release rate of a fire. The process for developing listed products will also allow for a continued improvement in fire and life safety in environments meeting the NFPA Codes and Standards.

This TIA also calls for the continued acceptance of currently listed ESFR Antifreeze Systems. The listing process has already shown that, in some cases, it is possible to use current antifreeze solutions to provide the level of protection prescribed by NFPA 13. For this reason, it is proposed to allow the continued use of propylene-glycol solutions in systems and in protection scenarios that have been thoroughly tested to demonstrate such results. There are ESFR systems currently available that have been specifically tested and listed with a specific model of sprinkler and solution delivery method that provide an appropriate level of protection as to be considered "Early Suppression".

Emergency Nature: The latest testing from The Fire Protection Research Foundation titled Antifreeze Solutions Supplied through Spray Sprinklers Interim Report (dated February 2012) shows that anti-freeze concentrations currently allowed in new NFPA 13 sprinkler systems may support combustion and increase the size of the fire. This is a safety issue that requires changes in the standard.

The following are two items which make this TIA of emergency nature. Only one is required for substantiation of an emergency nature.

(d) The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation During the latest revision cycle the committee evaluated the test data that was present at the time of the cycle. The committee could not anticipate that additional data would change our justifications during the process. The new data demonstrates that variables utilized in the development of the 2013 edition may lead to changes in the fire involvement.

Propylene glycol and glycerin antifreeze solutions discharged from sprinklers have the potential to ignite under certain conditions. Research testing has indicated that several variables may influence the potential for large scale ignition of the antifreeze solution discharged from a sprinkler. These variables include, but are not limited to, the concentration of antifreeze solution, sprinkler discharge characteristics, inlet pressure at the sprinkler, location of fire relative to the sprinkler, and size of fire at the time of sprinkler discharge.

(f) The proposed TIA intends to correct a circumstance in which the revised document has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process, or was without adequate technical (safety) justification for the action. Antifreeze solutions have been subject to recent testing and the new data shows that the installations found within the standard do not account for the complete safety of the occupant. The data appears to provide additional questions and challenges the parameters of installation found in the standard.

The use of propylene glycol and glycerin antifreeze solutions should only be considered when other sprinkler system design alternatives are not available or practical. If these solutions are used, all relevant data and information should be carefully reviewed and considered in the sprinkler system.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu Jan 24 13:22:12 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359051732930.xml

Public Input No. 411-NFPA 13-2013 [Section No. 8.3.2.2]

Original | Hide Markup

8.3.2.2
Where maximum ceiling temperatures exceed ~~100°F~~ 120°F (38°C), sprinklers with temperature ratings in accordance with the maximum ceiling temperatures of Table 6.2.5.1 shall be used.

Statement of Problem and Substantiation for Public Input

Preliminary data for glass bulb sprinklers shows that the 155 degree rated sprinklers can easily withstand ambient temperatures of 120 degrees. There is some evidence that solder link sprinklers rated at 165 degrees can withstand similar ambient temperatures. If the sprinklers can withstand these higher temperatures, it should be recognized with higher allowable ambient temperatures.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri May 24 10:32:44 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369405964156.xml

Public Input No. 203-NFPA 13-2013 [Section No. 8.3.2.5]

Original | Hide Markup

8.3.2.5*
The following practices shall be observed to provide sprinklers of other than ordinary-temperature classification unless other temperatures are determined or unless high-temperature sprinklers are used throughout, and temperature selection shall be in accordance with Table 8.3.2.5(a), Table 8.3.2.5(b), and Figure 8.3.2.5:

(1) Sprinklers in the high-temperature zone shall be of the high-temperature classification, and sprinklers in the intermediate-temperature zone shall be of the intermediate-temperature classification.

(2) Sprinklers located within 12 in. (305 mm) to one side or 30 in. (762 mm) above an uncovered steam main, heating coil, or radiator shall be of the intermediate-temperature classification.

(3) Sprinklers within 7 ft (2.1 m) of a low-pressure blowoff valve that discharges free in a large room shall be of the high-temperature classification.

(4) Sprinklers under glass or plastic skylights exposed to the direct rays of the sun shall be of the intermediate-temperature classification.

(5) Sprinklers in an unventilated, concealed space, under an uninsulated roof, or in an unventilated attic shall be of the intermediate-temperature classification.

(6) Sprinklers in unventilated show windows having high-powered electric lights near the ceiling shall be of the intermediate-temperature classification.

(7) Sprinklers protecting commercial-type cooking equipment and ventilation systems shall be of the high- or extra high–temperature classification as determined by use of a temperature-measuring device. (See 7.10.6.)

(8) Sprinklers protecting residential areas installed near specific heat sources identified in Table 8.3.2.5(c) shall be installed in accordance with Table 8.3.2.5(c).

(9) Ordinary-temperature sprinklers located adjacent to a heating duct that discharges air that is less than 100°F (38°C) are not required to be separated in accordance with Table 8.3.2.5(a).

(10) Sprinklers in walk-in type coolers and freezers with automatic defrosting shall be of the intermediate-temperature classification or higher.

(11) Sprinklers in Hot Yoga facilities shall be of the intermediate-temperature classification.

Table 8.3.2.5(a) Temperature Ratings of Sprinklers Based on Distance from Heat Sources

Type of Heat Condition	Ordinary-Temperature Rating	Intermediate-Temperature Rating	High-Temperature Rating
(1) Heating ducts			
(a) Above	More than 2 ft 6 in.	2 ft 6 in. or less	
(b) Side and below	More than 1 ft 0 in.	1 ft 0 in. or less	
(c) Diffuser	Any distance except as shown under Intermediate-Temperature Rating column	Downward discharge: Cylinder with 1 ft 0 in. radius from edge extending 1 ft 0 in. below and 2 ft 6 in. above	

		Horizontal discharge: Semicylinder or cylinder with 2 ft 6 in. radius in direction of flow extending 1 ft 0 in. below and 2 ft 6 in. above	
(2) Unit heater			
(a) Horizontal discharge		Discharge side: 7 ft 0 in. to 20 ft 0 in. radius pie-shaped cylinder (see Figure 8.3.2.5) extending 7 ft 0 in. above and 2 ft 0 in. below heater; also 7 ft 0 in. radius cylinder more than 7 ft 0 in. above unit heater	7 ft 0 in. radius cylinder extending 7 ft 0 in. above and 2 ft 0 in. below unit heater
(b) Vertical downward discharge (for sprinklers below unit heater, see Figure 8.3.2.5)		7 ft 0 in. radius cylinder extending upward from an elevation 7 ft 0 in. above unit heater	7 ft 0 in. radius cylinder extending from the top of the unit heater to an elevation 7 ft 0 in. above unit heater
(3) Steam mains (uncovered)			
(a) Above	More than 2 ft 6 in.	2 ft 6 in. or less	
(b) Side and below	More than 1 ft 0 in.	1 ft 0 in. or less	
(c) Blowoff valve	More than 7 ft 0 in.		7 ft 0 in. or less

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Table 8.3.2.5(b) Temperature Ratings of Sprinklers in Specified Locations

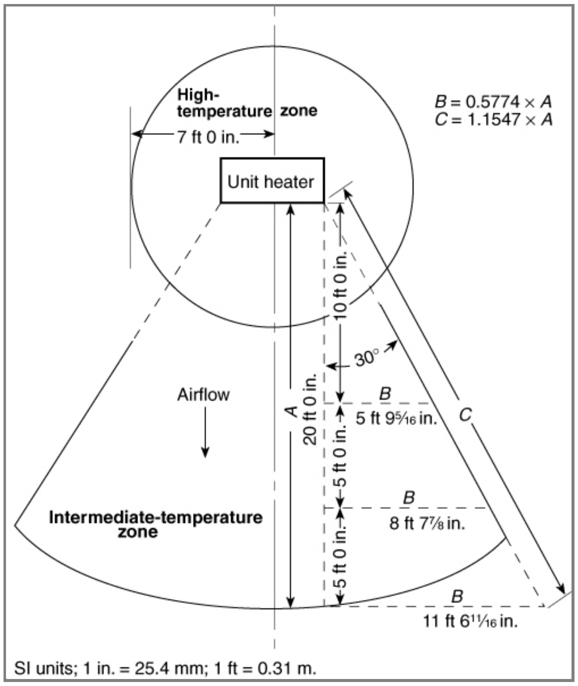
Location	Ordinary-Temperature Rating	Intermediate-Temperature Rating	High-Temperature Rating
Skylights		Glass or plastic	
Attics	Do not use	Ventilated or unventilated	
Peaked roof: metal or thin boards, concealed or not concealed, insulated or uninsulated	Ventilated	Unventilated	
Flat roof: metal, not concealed	Ventilated or unventilated	Note: For uninsulated roof, climate and insulated or uninsulated occupancy can necessitate intermediate sprinklers. Check on job.	
Flat roof: metal, concealed, insulated or uninsulated	Ventilated	Unventilated	
Show windows	Ventilated	Unventilated	

Note: A check of job condition by means of thermometers might be necessary.

Table 8.3.2.5(c) Temperature Ratings of Sprinklers in Specified Residential Areas

Heat Source	Minimum Distance from Edge of Source to Ordinary-Temperature Sprinkler		Minimum Distance from Edge of Source to Intermediate-Temperature Sprinkler	
	in.	mm	in.	mm
Side of open or recessed fireplace	36	914	12	305
Front of recessed fireplace	60	1524	36	914
Coal- or wood-burning stove	42	1067	12	305
Kitchen range	18	457	9	229
Wall oven	18	457	9	229
Hot air flues	18	457	9	229
Uninsulated heat ducts	18	457	9	229
Uninsulated hot water pipes	12	305	6	152
Side of ceiling- or wall-mounted hot air diffusers	24	607	12	305
Front of wall-mounted hot air diffusers	36	914	18	457
Hot water heater or furnace	6	152	3	76
Light fixture:				
0 W–250 W	6	152	3	76
250 W–499 W	12	305	6	152

Figure 8.3.2.5 High-Temperature and Intermediate-Temperature Zones at Unit Heaters.



Statement of Problem and Substantiation for Public Input

Hot Yoga facilities frequently have an ambient temperature at the ceiling in excess of 100 F.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri Apr 19 14:42:22 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366396942972.xml

Public Input No. 143-NFPA 13-2013 [Section No. 8.3.3.2]

Original | Hide Markup

8.3.3.2
Where quick-response sprinklers are installed, all sprinklers within a compartment shall ~~be quick-response~~ have the same thermal sensitivity unless otherwise permitted in 8.3.3.3 .

Statement of Problem and Substantiation for Public Input

There are situations in ordinary hazard occupancies where extended coverage sprinklers may be utilized. Some of these sprinklers are listed as QR in light hazard but SR in ordinary hazard. Since the thermal element (usually a 3 mm bulb) is the same, the thermal sensitivity of the sprinkler should be referenced. This will allow the use of standard spacing QR sprinklers in the same compartment.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 10:54:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364309681116.xml

Public Input No. 333-NFPA 13-2013 [Section No. 8.3.3.2]

Original | Hide Markup

8.3.3.2
~~Where quick-response sprinklers are installed, all sprinklers~~ All sprinklers within a compartment shall be ~~quick-response~~ of the same thermal sensitivity unless otherwise permitted in 8.3.3.3 or 8 . 3.3.4 .

Statement of Problem and Substantiation for Public Input

A number of extended coverage sprinklers are listed as having both a QR and SR designation depending on the spacing of the sprinkler even though the sprinklers all have a the same thermal senitivity (fast response operating element). As written the provisons of 8.3.3.2 would disallow the installation of these sprinklers in the same compartment where the spacing of the sprinklers were such that the listing would qualify the sprinkler as both a QR and SR within the same compartment.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 14:39:33 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369247973479.xml

Public Input No. 567-NFPA 13-2013 [Section No. 8.3.3.2]

Original Hide Markup

8.3.3.2

Where quick-response or fast response sprinklers are installed, all sprinklers within a compartment shall be quick-response unless otherwise permitted in 8.3.3.3 .

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Maughan.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The committee needs to identify that all sprinklers with operating elements having RTI's less than 50 are not necessarily Listed Quick Response sprinklers in accordance with the definitions of 3.6.4.7 and 3.6.4.7.2. Due to testign procedures at UL, the exact same sprinkler may be listed as "Quick Response" for one coverage area but "Standard Response" for a larger coverage area. This has lead to AHJ's not allowing the "mixing" of standard response and quick response sprinklers (per section 8.3.3.2) in areas where different spacings are being utilized by the exact same sprinkler. I do not believe this was the intent of section 8.3.3.2. This confusion has also lead to the use of the QR area reduction allowance to be utilized by some designers for special listed sprinklers with RTI's less than 50 where it was never intended (i.e., combustible concealed space sprinkelrs minimum 1000 sq ft design area). Additionally, NFPA 25, 2011 edition refers specifically to "Sprinklers defined as fast response..." in A.5.3.1.1.1.3. This comment is being submitted by the Tyco Codes and Standards Sprinkler Task Group.

Submitter Information Verification

Submitter Full Name: Kevin Maughan
Organization: Tyco Fire Protection Products
Submittal Date: Mon Jun 03 13:13:43 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370279623516.xml

Public Input No. 336-NFPA 13-2013 [Section No. 8.3.3.3]

Original | Hide Markup

8.3.3.3
Where there are no ~~listed quick-response sprinklers in~~ listed sprinklers with a fast response thermal sensitivity in the temperature range required, standard-response sprinklers shall be permitted to be used.

Statement of Problem and Substantiation for Public Input

A number of extended coverage sprinklers are listed as having both a QR and SR designation depending on the spacing of the sprinkler even though the sprinklers all have a the same thermal senitivity (fast response operating element). As written the provisons of 8.3.3.2 would disallow the installation of these sprinklers in the same compartment where the spacing of the sprinklers were such that the listing would qualify the sprinkler as both a QR and SR within the same compartment.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 333-NFPA 13-2013 [Section No. 8.3.3.2]	

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 14:59:15 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369249155261.xml

Public Input No. 334-NFPA 13-2013 [New Section after 8.3.3.4]

8.3.3.4 The provisions of 8.3.3.2 shall not apply to in-rack sprinklers.

Statement of Problem and Substantiation for Public Input

The provisions of 8.3.3.2 should not restrict the use of QR in-rack sprinklers in a space that includes SR sprinklers at the ceiling. In fact a number of design scenarios require such an installation.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 333-NFPA 13-2013 [Section No. 8.3.3.2]	New reference is provided in 8.3.3.2 to this new Section

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 14:46:47 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369248407166.xml

Public Input No. 285-NFPA 13-2013 [Section No. 8.3.4.4]

Original Hide Markup

8.3.4.4

Sprinklers with nominal K-factors of K-4.2 (57) shall be permitted to be installed on dry pipe and preaction systems protecting light hazard occupancies where piping is corrosion resistant ~~or internally galvanized~~ .

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_4_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This revision is proposed in light of the Committee Action and Statement for Comment 13-315 from the previous cycle. If as per the Committee's explanation that "The TC feels that the corrosion issue is pervasive …. Internal pipe inspections have revealed that dry galvanized systems have the same level of corrosion as black steel." If this is the case then corrosion products from galvanized pipe can impair small orifice sprinklers the same as black steel pipe can. Therefore to use K-4.2 sprinklers in a dry or preaction system, only corrosion resistant pipe, such as copper or stainless steel, should be allowed.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:19:27 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368551967705.xml

Public Input No. 316-NFPA 13-2013 [New Section after 8.4]

8.4.10 Old-style Sprinklers

8.4.10.1

Upright old-style sprinklers shall be permitted to be used for protection of combustible concealed spaces.

Statement of Problem and Substantiation for Public Input

Standard upright fire sprinklers direct water downward. Old-style sprinklers spray almost half of the water upward at the ceiling. This upward water spray is needed to aid in controlling fire spread in combustible contruction fires.

Submitter Information Verification

Submitter Full Name: Lynn Nielson
Organization: City of Henderson
Affilliation: Self
Submittal Date: Mon May 20 14:55:51 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369076151330.xml

Public Input No. 209-NFPA 13-2013 [Section No. 8.4.1.1]

Original Hide Markup

8.4.1.1

~~Upright~~ Unless the requirements of 8.15.1.6 are met, upright and pendent spray sprinklers shall be permitted in all occupancy hazard classifications and building construction types.

Statement of Problem and Substantiation for Public Input

This is editorial in that the existing statement is not true, since 8.15.1.6 does not permit the use of standard spray sprinklers in this construction type for any occupancy hazard classification

Submitter Information Verification

Submitter Full Name:	Robert Caputo
Organization:	Fire & Life Safety America
Submittal Date:	Wed Apr 24 00:10:22 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366776622965.xml

Public Input No. 286-NFPA 13-2013 [Section No. 8.4.3]

Original Hide Markup

8.4.3 Extended Coverage Sprinklers.

Extended coverage sprinklers shall only be installed as follows:

(1) Unobstructed construction consisting of flat, smooth ceilings with a slope not exceeding a pitch of 1 in 6 (a rise of 2 units in a run of 12 units, a roof slope of 16.7 percent)

(2) Unobstructed or noncombustible obstructed construction, where specifically listed for such use

(3) Within trusses or bar joists having web members not greater than 1 in. (25.4 mm) maximum dimension or where trusses are spaced greater than 7 ½ ft (2.3 m) on center and where the ceiling slope does not exceed a pitch of 1 in 6 (a rise of 2 units in a run of 12 units, a roof slope of 16.7 percent)

(4) Extended coverage upright and pendent sprinklers installed under smooth, flat ceilings that have slopes not exceeding a pitch of 1 in 3 (a rise of 4 units in a run of 12 units, a roof slope of 33.3 percent), where specifically listed for such use

(5) Extended coverage sidewall sprinklers installed in accordance with 8.9.4.2.2 in slopes exceeding a ceiling pitch of 2 in 12 ~~where listed for such use~~

(6) In each bay of obstructed construction consisting of solid structural members that extend below the deflector of the sprinkler

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_5_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This proposal is offered to better coordinate the requirements for installing sidewall sprinklers on a downwards sloping orientation. There is no similar requirement for standard sidewall sprinklers to be listed for downwards flow, so there is no need for an extended coverage sidewall sprinkler to be specially listed. Any sidewall sprinkler that can throw horizontally can most certainly also discharge downwards parallel to the slope.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:20:25 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368552025685.xml

Public Input No. 465-NFPA 13-2013 [Section No. 8.4.3]

Original | Hide Markup

8.4.3 Extended Coverage Sprinklers.

Extended coverage sprinklers shall only be installed as follows:

(1) Unobstructed construction consisting of flat, smooth ceilings with a slope not exceeding a pitch of 1 in 6 (a rise of 2 units in a run of 12 units, a roof slope of 16.7 percent)

(2) Unobstructed or noncombustible obstructed construction, where specifically listed for such use

(3) Within trusses or bar joists having web members not greater than 1 in. (25.4 mm) maximum dimension or where trusses are spaced greater than 7 ½ ft (2.3 m) on center and where the ceiling slope does not exceed a pitch of 1 in 6 (a rise of 2 units in a run of 12 units, a roof slope of 16.7 percent)

(4) Extended coverage upright and pendent sprinklers installed under smooth, flat ceilings that have slopes not exceeding a pitch of 1 in 3 (a rise of 4 units in a run of 12 units, a roof slope of 33.3 percent), where specifically listed for such use

(5) Extended coverage sidewall sprinklers installed in accordance with 8.9.4.2.2 in slopes exceeding a ceiling pitch of 2 in 12 where listed for such use

(6) In each bay of obstructed construction consisting of solid structural members that extend below the deflector of the sprinkler

(7) Extended coverage sidewall sprinklers installed to protect areas below overhead doors

Statement of Problem and Substantiation for Public Input

This will allow the use of extended coverage sidewalls to be used under overhead doors.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Thu May 30 14:25:02 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369938302506.xml

Public Input No. 570-NFPA 13-2013 [Section No. 8.4.3]

Original | Hide Markup

8.4.3 Extended Coverage Sprinklers.

Extended coverage sprinklers shall only be installed as follows:

(1) Unobstructed construction consisting of flat, smooth ceilings with a slope not exceeding a pitch of 1 in 6 (a rise of 2 units in a run of 12 units, a roof slope of 16.7 percent)

(2) Unobstructed or noncombustible obstructed construction, where specifically listed for such use

(3) Within trusses or bar joists having web members not greater than 1 in. (25.4 mm) maximum dimension or where trusses are spaced greater than 7 ½ ft (2.3 m) on center and where the ceiling slope does not exceed a pitch of 1 in 6 (a rise of 2 units in a run of 12 units, a roof slope of 16.7 percent)

(4) Extended coverage upright and pendent sprinklers installed under smooth, flat ceilings that have slopes not exceeding a pitch of 1 in 3 (a rise of 4 units in a run of 12 units, a roof slope of 33.3 percent), where specifically listed for such use

(5) Extended coverage sidewall sprinklers installed in accordance with 8.9.4.2.2 in slopes exceeding a ceiling pitch of 2 in 12 ~~where listed for such use~~

(6) In each bay of obstructed construction consisting of solid structural members that extend below the deflector of the sprinkler

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Dias.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The fact that the 2013 edit6ions of NFPA no longer require special "sloped ceiling" listings for Residential pendent or sidewall sprinklers with slopes up to 8 in 12; and that UL has removed the testing protocol standard for residential sidewalls in sloped ceilings should factor int he consideration of removing this "special listing" requirement as currently written. It is well agreed upon that sidewall sprinklers located at the high point are positioned at the optimum location for operational sensitivity. Also, since the maximum throw of the sprinkler must be measured along the slope, the horizontal distance to the opposing wall will always be less than the allowed maximum for horizontal ceiling conditions. It should also be noted that Residential sprinklers have a much higher wall wetting requirement than commercial extended coverage sprinklers. This comment is being submitted by the Tyco Codes and Standards Sprinkler Task Group.

Submitter Information Verification

Submitter Full Name: KENNETH DIAS
Organization: Tyco Fire Protection Products
Submittal Date: Mon Jun 03 13:47:40 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370281660976.xml

Public Input No. 113-NFPA 13-2013 [Section No. 8.4.7.2]

Original Hide Markup

~~8.4.7.2 * - – Galvanized Pipe.~~

~~8.4.7.2.1~~ –

~~Where steel pipe is used in preaction and dry pipe systems, piping materials shall be limited to internally galvanized steel.~~

~~8.4.7.2.2~~ –

~~Black steel pipe shall be permitted when the system is installed in freezers where the air temperature is below 32°F (0°C) and the air supply is either nitrogen or a listed regenerative air dryer.~~

~~8.4.7.2.3~~ –

~~Nongalvanized fittings shall be permitted.~~

Statement of Problem and Substantiation for Public Input

There is no reason for CMSA systems to be treated differently than CMDA systems when addressing the impact of pipe scale especially considering the CMSA have a minimum orifice size of k-11.2 verses the K-5.6 for CMDA.

Additionally, when steel pipe is not uniformly covered with zinc, the small areas that are not covered experience localized accelerated corrosion. The hot dip process does not ensure uniform or adequate coverage on the interior of the pipe. Additionally, the zinc will crack and flake-off at rolled grooves. The are many cases where dry-pipe systems with galvanized pipe have been replaced in no more than 5 years due to significant leakage from localized corrosion. Even if galvanized pipe was required to be listed, the current test protocols cannot ensure an adequate or uniform zinc coating on the interior of the pipe.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 111-NFPA 13-2013 [New Section after 7.2.6.8.3]	

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Wed Mar 13 13:13:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1363194821150.xml

Public Input No. 287-NFPA 13-2013 [Section No. 8.4.7.2]

Original | Hide Markup

~~8.4.7.2 * - – Galvanized Pipe.~~

~~8.4.7.2.1~~ –

~~Where steel pipe is used in preaction and dry pipe systems, piping materials shall be limited to internally galvanized steel.~~

~~8.4.7.2.2~~ –

~~Black steel pipe shall be permitted when the system is installed in freezers where the air temperature is below 32°F (0°C) and the air supply is either nitrogen or a listed regenerative air dryer.~~

~~8.4.7.2.3~~ –

~~Nongalvanized fittings shall be permitted.~~

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_6_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This revision is proposed in light of the Committee Action and Statement for Comment 13-315 from the previous cycle. If as per the Committee's explanation that "The TC feels that the corrosion issue is pervasive …. Internal pipe inspections have revealed that dry galvanized systems have the same level of corrosion as black steel." If this is the case then there is no reason to mandate the extra expense for galvanized pipe, since it will corrode just as badly as black steel pipe.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:22:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368552144752.xml

Public Input No. 142-NFPA 13-2013 [Section No. 8.4.8.2]

Original | Hide Markup

8.4.8.2

Special sprinklers shall maintain the following characteristics:

(1) K-factor size shall be in accordance with 6.2.3 .

(2) Temperature ratings shall be in accordance with Table 6.2.5.1 .

- ~~The protection area of coverage shall not exceed 400 ft ^{2} (36 m ^{2}) for light hazard and ordinary hazard occupancies.~~

(3) The protection area of coverage shall not exceed 196 ft ^{2} (17 m ^{2}) for extra hazard and high-piled storage occupancies.

Statement of Problem and Substantiation for Public Input

The 400 ft² line in the sand has been in the standard for some time. If a manufacturer can produce a product that effectively meets all the requirements as put forth by the listing laboratory, why should this standard restrict it? The laboratories will not test above this limitation until the requirement is removed from this standard. There is no need for this restriction.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 10:38:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364308728979.xml

Public Input No. 133-NFPA 13-2013 [New Section after 8.5.3.4.1]

8.5.3.4.1.1

Sprinklers shall be permitted to be spaced closer than the minimum spacing when the spray pattern of one sprinkler will not affect the adjacent sprinkler.

A.8.5.3.4.1.1

Many times an obstruction between sprinklers will prevent the cold soldering of the adjacent sprinkler. Another common scenario is when a sidewall is installed in a soffit and a pendent is located very close to the sidewall in the underside of the soffit.

Statement of Problem and Substantiation for Public Input

There are situations where sprinklers will be installed closer than the minimum distance allowed. These situations should be codified as many AHJ's will still require the sprinklers to meet the minimum spacing.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 08:22:39 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364300559069.xml

Public Input No. 473-NFPA 13-2013 [Section No. 8.5.5.3.1 [Excluding any Sub-Sections]]

Original | Hide Markup

Sprinklers shall be installed directly under fixed obstructions over 4 ft (1.2 m) wide.

Statement of Problem and Substantiation for Public Input

In some installations observed, the sprinklers were installed off to the side of the obstruction. The sprinklers were technically "under" the obstruction in elevation, by not positioned directly under it. Unless installed directly under the obstruction the sprinkler activation could be delayed by heat not reaching it, or from being cold-soldered by sprinklers activating at the roof.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu May 30 14:47:04 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369939624474.xml

Public Input No. 474-NFPA 13-2013 [New Section after 8.5.5.3.1.1]

Sprinklers shall not be required under obstructions over 4' wide when the obstruction is 12" or less above the floor or deck.

Statement of Problem and Substantiation for Public Input

At some point it becomes ineffective to install sprinklers under obstructions that are close to the floor. The spray pattern of the sprinkler can't develope and the fuel load is so small that supplemental sprinkler protection isn't necessary.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu May 30 14:53:19 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369939999688.xml

Public Input No. 528-NFPA 13-2013 [New Section after 8.5.5.3.2]

8.5.5.3.3 Sprinklers installed under obstructions shall be of the same type (spray, CMSA, ESFR, residential) as installed at the ceiling except as permitted by 8.5.5.3.3.1.

8.5.5.3.3.1 Quick-response spary sprinklers shall be permitted to be utilized under overhead doors.

Statement of Problem and Substantiation for Public Input

Specific guidance is needed to address the type of sprinklers that are to be installed beneath an obstruction.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 15:17:13 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370027833375.xml

Public Input No. 534-NFPA 13-2013 [Section No. 8.5.5.3.3]

Original | Hide Markup

~~8.5.5.3.3 * - –~~

~~Sprinklers installed under open gratings shall be of the intermediate level/rack storage type or otherwise shielded from the discharge of overhead sprinklers.~~

Statement of Problem and Substantiation for Public Input

The only reason sprinklers are placed under grated flooring is fear of something being placed on the grating that would block the overhead sprinklers from providing adequate protection. If something is placed on the grating, it will act as a "water shield". An intermediate sprinkler should not be required in this instance.

Submitter Information Verification

Submitter Full Name: Cecil Bilbo
Organization: Academy of Fire Sprinkler Technology
Submittal Date: Fri May 31 15:52:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370029955491.xml

Public Input No. 516-NFPA 13-2013 [New Section after 8.5.5.4]

8.5.5.5 Walk-in Freezers and Coolers Walk-in freezers and coolers that are not larger than 1000 ft^3 (28.3 m^3) in size, a single sprinkler at the highest ceiling space shall be sufficient without regard to obstructions or minimum distance to the wall.

Statement of Problem and Substantiation for Public Input

The new provisions of 8.5.5.4 recognize the installation of a single sprinkler within a closet or compartment that is relatively small and where there is reasonable assurance that the configuration will have a timely operation fro the installed sprinkler. Given that a closet has not specific enclosure requriement and compartment are allowed varying degrees of openings with and without lintels, a larger volumetric space is proposed for wholey enclosed walk-in freezer and coolers. The installation of lighting and condenser units within these units creates a very similar problem as that found wihtin the small mechanical equipment closets covered by 8.5.5.4.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 14:47:55 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370026075355.xml

Public Input No. 141-NFPA 13-2013 [Section No. 8.5.5.4]

Original | Hide Markup

8.5.5.4 Closets.

In all closets and compartments, including those closets housing mechanical equipment, that are not larger than 400 ft^3 (11.33 m^3) in size, a single sprinkler at the highest ~~ceiling space~~ ceiling level shall be sufficient without regard to obstructions or minimum distance to the wall.

Statement of Problem and Substantiation for Public Input

Level is a more appropriate term.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 10:31:36 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364308296606.xml

Public Input No. 560-NFPA 13-2013 [New Section after 8.5.7.2]

8.5.7.3 A sprinkler installed directly beneath a skylight not exceeding 32 ft^2 (3 m^2) shall measure the distance to the ceiling to the plane of the ceiling and not to the top of the skylight.

Additional Proposed Changes

	File Name	Description	Approved
Open	24_13_Brown.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This statement is needed to clarify that deflector distance of a sprinkler located under a skylight is not measured to the top of the skylight.

Submitter Information Verification

Submitter Full Name: Phillip Brown
Organization: American Fire Sprinkler Association
Submittal Date: Mon Jun 03 11:31:38 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370273498262.xml

Public Input No. 183-NFPA 13-2013 [Section No. 8.6.2.1.2 [Excluding any Sub-Sections]]

Original | Hide Markup

The requirements of 8.6.2.1.1 shall not apply in ~~a small room as defined in~~ ~~3.3.21~~ ~~.~~ compartments of light hazard classification having unobstructed construction and a floor area not exceeding 800 sq. ft.

Statement of Problem and Substantiation for Public Input

The term "small room" is creating a great deal of confusion in the sprinkler industry. The term is used many times in NFPA 13, but in those locations, it is not intended to be limited to light hazard, nor is it intended to be used with rooms up to 800 sq ft in area (see 23.4.4.6.2 as an example). Since the definition of "small room" was intended only to be used with this section and section 8.6.3.2.4, the cleanest way to fix the problem is to move the light hazard and 800 sq ft requirements into this section and 8.6.3.2.4 and eliminate the definition of "small room" Otherwise, the committee needs to go change all of the other uses of the term "small room" to something else like "little room" or "small compartment" so that the light hazard and 800 sq ft limitations do not apply in those cases where they were not intended to apply.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 18 11:39:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366299575160.xml

Public Input No. 184-NFPA 13-2013 [Section No. 8.6.2.1.2.1]

Original | Hide Markup

8.6.2.1.2.1

The protection area of coverage for each sprinkler in ~~the small room~~ compartments meeting the requirements of 8.6.2.1.2 shall be the area of the ~~room~~ compartment divided by the number of sprinklers in the room.

Statement of Problem and Substantiation for Public Input

Per previous proposals to remove the small room definition, a "small room" will no longer exist. Rooms previosly known as small rooms would now be defined by the requirements of 8.6.2.1.2.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Thu Apr 18 11:49:16 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366300156840.xml

Public Input No. 315-NFPA 13-2013 [Section No. 8.6.2.2.1]

Original | Hide Markup

8.6.2.2.1*

The maximum allowable protection area of coverage for a sprinkler (A_s) shall be in accordance with the value indicated in Table 8.6.2.2.1(a) through Table 8.6.2.2.1(d).

Table 8.6.2.2.1(a) Protection Areas and Maximum Spacing of Standard Pendent and Upright Spray Sprinklers for Light Hazard

Construction Type	System Type	Maximum Protection Area		Maximum Spacing	
		ft ^{2}	m ^{2}	ft	m
Noncombustible unobstructed	Hydraulically calculated	225	20.9	15	4.6
Noncombustible unobstructed	Pipe schedule	200	18.6	15	4.6
Noncombustible obstructed	Hydraulically calculated	225	20.9	15	4.6
Noncombustible obstructed	Pipe schedule	200	18.6	15	4.6
Combustible unobstructed with no exposed members	Hydraulically calculated	225	20.9	15	4.6
Combustible unobstructed with no exposed members	Pipe schedule	200	18.6	15	4.6
Combustible unobstructed with exposed members 3 ft (0.91 m) or more on center	Hydraulically calculated	225	20.9	15	4.6
Combustible unobstructed with exposed members 3 ft (0.91 m) or more on center	Pipe schedule	200	18.6	15	4.6
Combustible unobstructed with members less than 3 ft (0.91 m) on center	All	130	12.1	15	4.6
Combustible obstructed with exposed members 3 ft (0.91 m) or more on center	All	168	15.6	15	4.6
Combustible obstructed with members less than 3 ft (0.91 m) on center	All	130	12.1	15	4.6
Combustible concealed spaces in accordance with 8.6.4.1.4	All	120	11.1	15 parallel to the slope 10 perpendicular to the slope *	4.6 parallel to the slope 3.05 perpendicular to the slope *

*See 8.6.4.1.4.4.

Table 8.6.2.2.1(b) Protection Areas and Maximum Spacing of Standard Pendent and Upright Spray Sprinklers for Ordinary Hazard

Construction Type	System Type	Protection Area		Maximum Spacing	
		ft^2	m^2	ft	m
All	All	130	12.1	15	4.6

Table 8.6.2.2.1(c) Protection Areas and Maximum Spacing of Standard Pendent and Upright Spray Sprinklers for Extra Hazard

Construction Type	System Type	Protection Area		Maximum Spacing	
		ft^2	m^2	ft	m
All	Pipe schedule	90	8.4	12*	3.7*
All	Hydraulically calculated with density ≥0.25	100	9.3	12*	3.7*
All	Hydraulically calculated with density <0.25	130	12.1	15	4.6

*In buildings where solid structural members create bays up to 25 ft or 50 ft (7.6 m) wide, maximum spacing between sprinklers is permitted up to 12 ft 6 in. (3.8 m).

Table 8.6.2.2.1(d) Protection Areas and Maximum Spacing of Standard Pendent and Upright Spray Sprinklers for High-Piled Storage

Construction Type	System Type	Protection Area		Maximum Spacing	
		ft^2	m^2	ft	m
All	Hydraulically calculated with density ≥0.25	100	9.3	12*	3.7*
All	Hydraulically calculated with density <0.25	130	12.1	15	4.6

*In buildings where solid structural members create bays up to 25 ft or 50 ft (7.6 m) wide, maximum spacing between sprinklers is permitted up to 12 ft 6 in. (3.8 m).

Statement of Problem and Substantiation for Public Input

50 ft bays are becoming more common. Obstructions and or smoke vents can cause a spacing problem for the lines that could be addressed by allowing the same 12 ft 6 in spacing as 25 ft bays,
as the sq footage covered by the sprinkler is the same.

Submitter Information Verification

Submitter Full Name: PORTER BENTLEY
Organization: CUSTOM FIRE PROTECTION OF TX
Submittal Date: Mon May 20 14:44:06 EDT 2013

By checking this box I affirm that I am PORTER BENTLEY, and I agree to be legally bound by the above Copyright Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic signature that w ill, upon my submission of this form, have the same legal force and effect as a handw ritten signature

/TerraView/Content/13-2013.ditamap/2/C1369075446169.xml

Public Input No. 185-NFPA 13-2013 [Section No. 8.6.3.2.4 [Excluding any Sub-Sections]]

Original Hide Markup

The requirements of 8.6.3.2.1 shall not apply ~~within small rooms as defined in~~ ~~3.3.21~~ ~~.~~ to compartments of light hazard classification and unobstructed construction and do not exceed 800 Sq. Ft.

Statement of Problem and Substantiation for Public Input

The term "small room" is creating a great deal of confusion in the sprinkler industry. The term is used many times in NFPA 13, but in those locations, it is not intended to be limited to light hazard, nor is it intended to be used with rooms up to 800 sq ft in area (see 23.4.4.6.2 as an example). Since the definition of "small room" was intended only to be used with this section and section 8.6.2.1.2, the cleanest way to fix the problem is to move the light hazard and 800 sq ft requirements into this section and 8.6.3.2.4 and eliminate the definition of "small room" Otherwise, the committee needs to go change all of the other uses of the term "small room" to something else like "little room" or "small compartment" so that the light hazard and 800 sq ft limitations do not apply in those cases where they were not intended to apply.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 183-NFPA 13-2013 [Section No. 8.6.2.1.2 [Excluding any Sub-Sections]]	Same issue

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Thu Apr 18 11:56:09 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366300569648.xml

Public Input No. 157-NFPA 13-2013 [Section No. 8.6.4.1.1.3 [Excluding any Sub-Sections]]

Original | Hide Markup

The requirements of 8.6.4.1.1.1 shall not apply for light and ordinary hazard occupancies with ceilings of noncombustible or limited-combustible construction~~.~~ , where one of the following conditions apply:

Statement of Problem and Substantiation for Public Input

The addition of "where the following conditions exist:" clarifies that the exception granted by 8.6.4.1.1.3 is only applicable where the ceiling elevation changes. Currently, one could argue that the sentence of 8.6.4.1.1.3 could be taken stand-alone, thereby allowing SSU/SSP sprinklers to be installed an unspecified distance below a ceiling meeting the specified characteristics.

This also clarifies that the exception is really to the "throughout the area of coverage of the sprinkler" portion of 8.6.4.1.1.1, not the deflector distance limitations portion.

Submitter Information Verification

Submitter Full Name: BRANDON WILKERSON
Organization: POOLE FIRE PROTECTION
Submittal Date: Mon Apr 01 16:09:19 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364846959965.xml

Public Input No. 530-NFPA 13-2013 [Section No. 8.6.4.1.2]

Original | Hide Markup

8.6.4.1.2 Obstructed Construction.

Under obstructed construction, the sprinkler deflector shall be located in accordance with one of the following arrangements:

(1) Installed with the deflectors within the horizontal planes of 1 in. to 6 in. (25.4 mm to 152 mm) below the structural members and a maximum distance of 22 in. (559 mm) below the ceiling/roof deck

(2) Installed with the deflectors at or above the bottom of the structural member to a maximum of 22 in. (559 mm) below the ceiling/roof deck where the sprinkler is installed in conformance with 8.6.5.1.2

(3) Installed in each bay of obstructed construction, with the deflectors located a minimum of 1 in. (25.4 mm) and a maximum of 12 in. (305 mm) below the ceiling

(4) Installed with the deflectors within the horizontal planes 1 in. to 6 in. (25.4 mm to 152 mm) below composite wood joists to a maximum distance of 22 in. (559 mm) below the ceiling/roof deck only where joist channels are fire-stopped to the full depth of the joists with material equivalent to the web construction so that individual channel areas do not exceed 300 ft^2 (27.9 m^2)

(5) * Installed with deflectors of sprinklers under concrete tee construction with stems spaced less than 7 ½ ft (2.3 m) ~~but more than 3 ft (0.91 m)~~ on centers, regardless of the depth of the tee, located at or above a horizontal plane 1 in. (25.4 mm) below the bottom of the stems of the tees and complying with Table 8.6.5.1.2

Statement of Problem and Substantiation for Public Input

Concrete tees should be able to withstand the heat long enough for sprinklers to activate even when the tees are closer than 3 feet on centers.

Submitter Information Verification

Submitter Full Name: Cecil Bilbo
Organization: Academy of Fire Sprinkler Technology
Submittal Date: Fri May 31 15:29:08 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370028548262.xml

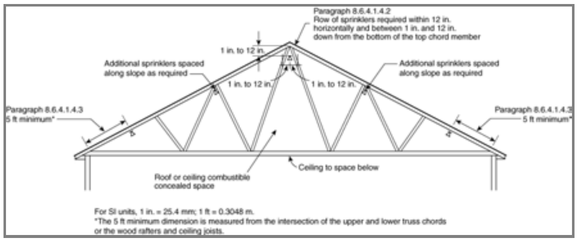
Public Input No. 16-NFPA 13-2013 [Section No. 8.6.4.1.4]

Original | Hide Markup

8.6.4.1.4 Sprinklers Under Roof or Ceiling in Combustible Concealed Spaces of Wood Joist or Wood Truss Construction with Members Less Than 3 ft (0.91 m) on Center and Slope Having Pitch of 4 in 12 or Greater.

Sprinklers shall be positioned in accordance with ~~Figure~~ Figures 8.6.4.1.4 ~~and~~ (a), 8.6.4.1.4 (b) or 8.6.4.1.4 (c) and the requirements of 8.6.4.1.4.1 through 8.6.4.1.4.5.

Figure 8.6.4.1.~~4 Sprinklers~~ 4 (a) Sprinklers Under Roof or Ceiling in Combustible Concealed Spaces of Wood Joist or Wood Truss Construction with Members Less Than 3 ft (0.91 m) on Center and Slope Having Pitch of 4 in 12 or Greater.



8.6.4.1.4.1

Sprinklers under a roof or ceiling in combustible concealed spaces of wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater shall be quick-response.

8.6.4.1.4.2

Sprinklers under a roof or ceiling in combustible concealed spaces of wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater shall be installed so that a row of sprinklers is installed within 12 in. (305 mm) horizontally of the peak and between 1 in. and 12 in. (25.4 mm and 305 mm) down from the bottom of the top chord member.

8.6.4.1.4.3

Sprinklers under a roof or ceiling ~~in~~ spanning more than 14 ft (4.3 m) in combustible concealed spaces of wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater shall be installed so that the sprinklers installed along the eave are located not less than 5 ft (1.52 m) from the intersection of the upper and lower truss chords or the wood rafters and ceiling joists.

8.6.4.1.4.4

Sprinklers under a roof or ceiling in combustible concealed spaces of combustible wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater, and using standard spray sprinklers, where the dimension perpendicular to the slope exceeds 8 ft (2.4 m), shall have a minimum pressure of 20 psi (1.4 bar).

8.6.4.1.4.5

The special requirements of 8.6.2.2.1 and 8.6.4.1.4 for sprinklers under a roof or ceiling in combustible concealed spaces of wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater shall not apply when the exposed combustible sheathing in the roof or ceiling space are constructed of pressure impregnated fire-retardant treated wood as defined by NFPA 703.

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPA_13_Sprinklers_Under_a_Roof_or_Ceiling_Figure_8.6.4.1.4_b_-Model.pdf	8.6.4.1.4 (b)	
Open	NFPA_13_Sprinklers_Under_a_Roof_or_Ceiling_Figure_8.6.4.1.4_c_.pdf	8.6.4.1.4 (c)	

Statement of Problem and Substantiation for Public Input

When the changes were made for what are essentially attic spaces, there were two distinct rules put in place. One was the requirement to be within 12" of the peak. The other was that sprinklers should be a minimum of 5' (originally 6') from where the truss chords meet. This second requirement can create spacing issues in short span attics. Many times sprinklers need to be staggered and baffles installed. This change would allow a single row of sprinklers installed at the peak. For such small spans, the sprinklers at the peak will operate quickly and will have no issue with water reaching the outer eave areas. There is no limitation on roof slope proposed.

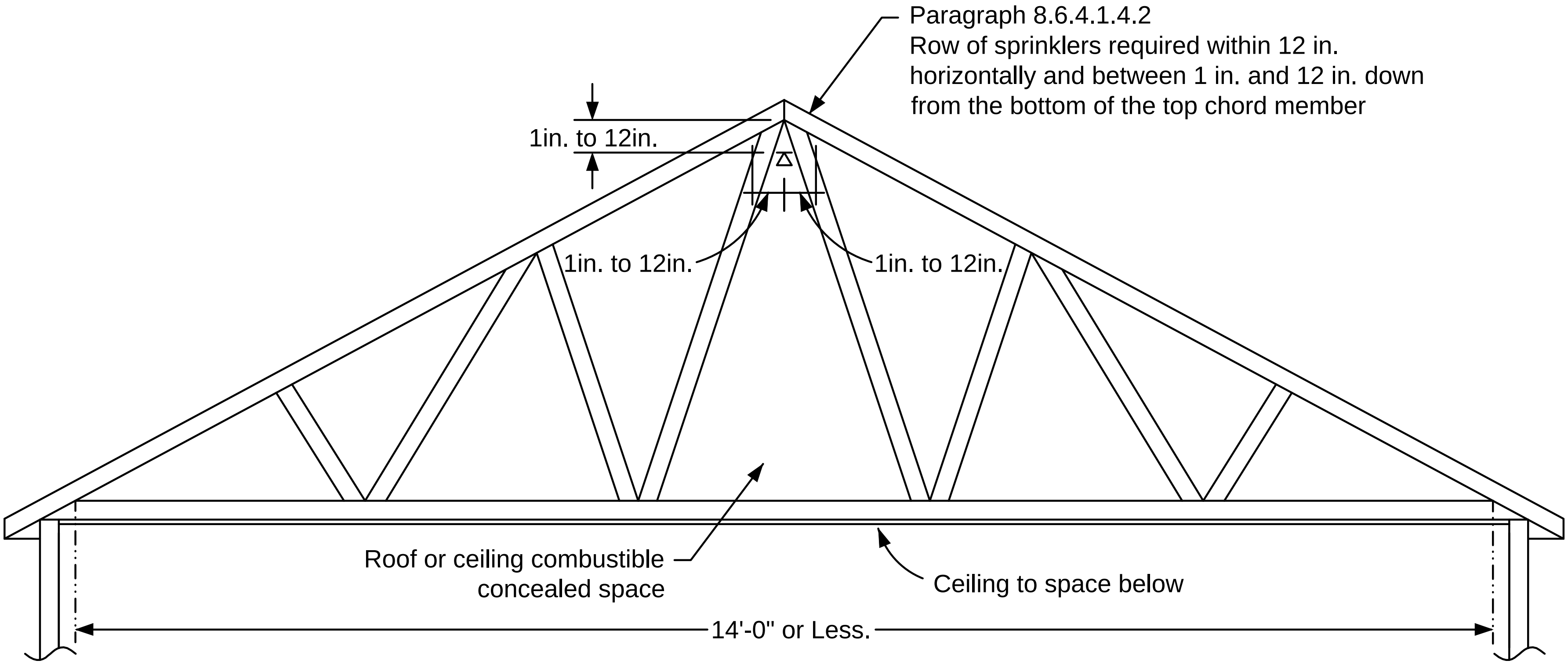
Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

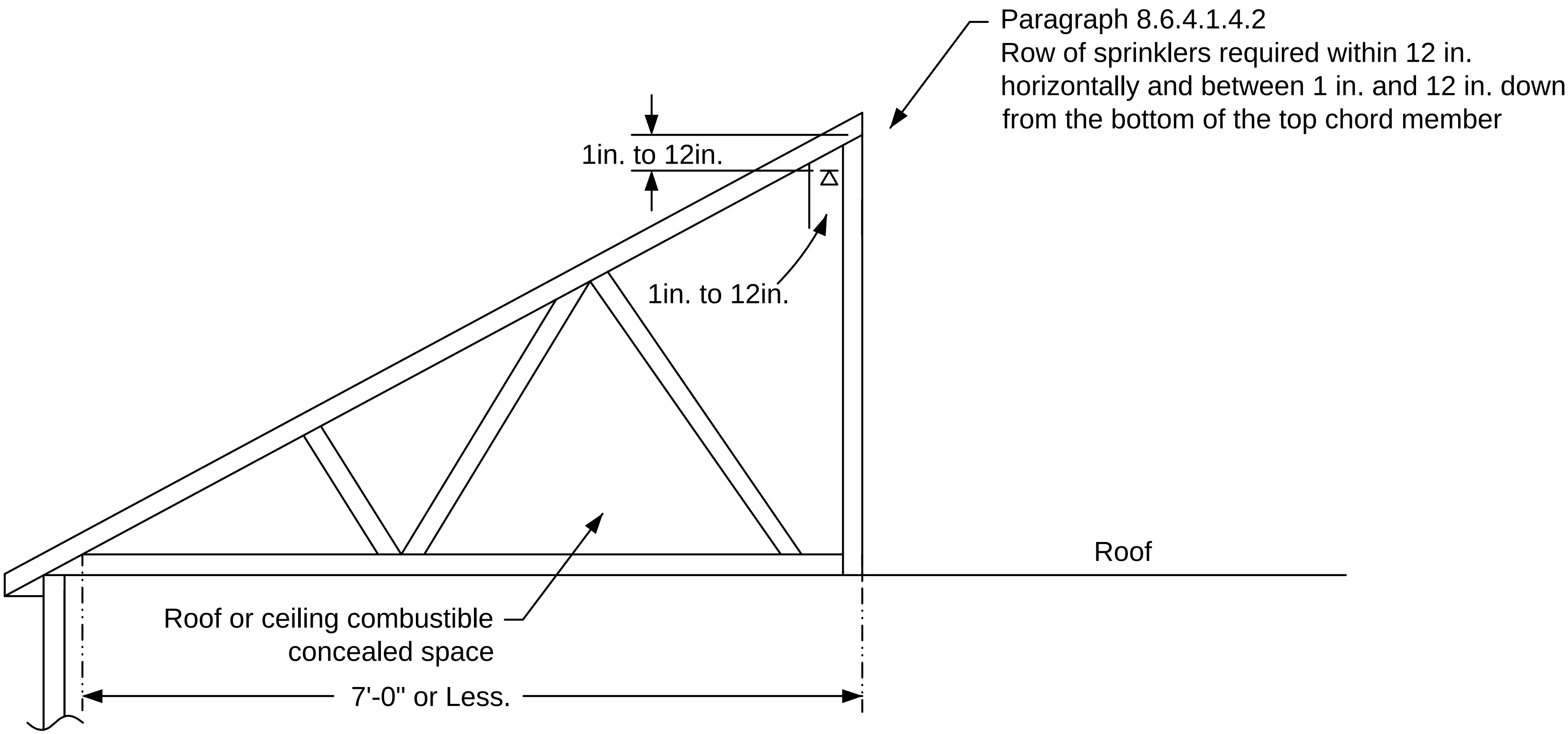
Submittal Date: Tue Jan 15 16:02:08 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358283728872.xml



For SI units, 1 in. = 25.4 mm; 1 ft. = 0.3048 m

FIGURE 8.6.4.1.4(b) Sprinklers Under a Roof or Ceiling in Combustible Concealed Spaces of Wood Joist or Wood Truss Construction with Members 3 ft (0.91 m) or Less on Center and a Slope Having a Pitch of 4 in 12 or Greater.



For SI units, 1 in. = 25.4 mm; 1 ft. = 0.3048 m

FIGURE 8.6.4.1.4(c) Sprinklers Under a Roof or Ceiling in Combustible Concealed Spaces of Wood Joist or Wood Truss Construction with Members 3 ft (0.91 m) or Less on Center and a Slope Having a Pitch of 4 in 12 or Greater.

Public Input No. 466-NFPA 13-2013 [Section No. 8.6.4.1.4.1]

Original | Hide Markup

8.6.4.1.4.1

Sprinklers ~~under a roof or ceiling in combustible concealed spaces of wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater~~ shall be quick-response.

Statement of Problem and Substantiation for Public Input

This removes redundant words already used in the heading of this section.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Thu May 30 14:30:30 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369938630730.xml

Public Input No. 467-NFPA 13-2013 [Section No. 8.6.4.1.4.2]

Original | Hide Markup

8.6.4.1.4.2

Sprinklers ~~under a roof or ceiling in combustible concealed spaces of wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater~~ shall be installed so that a row of sprinklers is installed within 12 in. (305 mm) horizontally of the peak and between 1 in. and 12 in. (25.4 mm and 305 mm) down from the bottom of the top chord member.

Statement of Problem and Substantiation for Public Input

This removes redundant words already used in the heading of this section.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 466-NFPA 13-2013 [Section No. 8.6.4.1.4.1]	Same revision change.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Thu May 30 14:32:59 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369938779876.xml

Public Input No. 468-NFPA 13-2013 [Section No. 8.6.4.1.4.3]

Original Hide Markup

8.6.4.1.4.3

Sprinklers ~~under a roof or ceiling in combustible concealed spaces of wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater~~ shall be installed so that the sprinklers installed along the eave are located not less than 5 ft (1.52 m) from the intersection of the upper and lower truss chords or the wood rafters and ceiling joists.

Statement of Problem and Substantiation for Public Input

This removes redundant words already used in the heading of this section.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 466-NFPA 13-2013 [Section No. 8.6.4.1.4.1]	Same revision change.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Thu May 30 14:34:38 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369938878603.xml

Public Input No. 472-NFPA 13-2013 [New Section after 8.6.4.1.4.4]

Add new text under 8.6.4.1.4.4

8.6.4.1.4.4.1 The requirements of 8.6.4.1.4.4 shall not apply to sprinklers installed at the corner of the eave of a hip type roof where located not less than 5 ft (1.52 m) from the intersection of the upper and lower truss chords or the wood rafters and ceiling joists.

Statement of Problem and Substantiation for Public Input

New 8.6.4.1.4.4.1 allows an attic to be protected without having to apply the minimum of 20-psi requirement for the one sprinkler located at the corner of an eave of a hip type roof. The issue is not that the corner is inadequately protected. The minimum spacing from the intersection of the upper and bottom of the truss chords causes the sprinkler end head pressure to be a minimum of 20 psi. The head spacing over 8 ft but less than 10 ft is critical for sprinklers located at the peak. The spacing is less critical along the eave and should not impose a 20 psi minimum end head pressure for sprinklers at the peak spaced 8 ft or less.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Thu May 30 14:43:03 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369939383887.xml

Public Input No. 469-NFPA 13-2013 [Section No. 8.6.4.1.4.4]

Original | Hide Markup

8.6.4.1.4.4

Sprinklers ~~under a roof or ceiling in combustible concealed spaces of combustible wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater, and using standard spray sprinklers,~~ where the dimension perpendicular to the slope exceeds 8 ft (2.4 m), shall have a minimum pressure of 20 psi (1.4 bar).

Statement of Problem and Substantiation for Public Input

This removes redundant words already used in the heading of this section. 8.6.4.1.4.4 already is addressing standard spray sprinklers and including this wording is redundant.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 466-NFPA 13-2013 [Section No. 8.6.4.1.4.1]	Same revision change.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Thu May 30 14:37:04 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369939024541.xml

Public Input No. 564-NFPA 13-2013 [Section No. 8.6.4.1.4.4]

Original | Hide Markup

<u>8.6.4.1.4.4</u>

<u>Sprinklers under a roof or ceiling in combustible concealed spaces of combustible wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater, and using standard spray sprinklers, for hydraulically calculated systems where the dimension perpendicular to the slope exceeds 8 ft (2.4 m), shall have a minimum pressure of 20 psi (1.4 bar).</u>

Additional Proposed Changes

	File Name	Description	Approved
Open	24_13_Brown.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The 20 psi requirement should not be imposed on a pipe scheduled system.

Submitter Information Verification

Submitter Full Name: Phillip Brown
Organization: American Fire Sprinkler Association
Submittal Date: Mon Jun 03 11:47:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370274444722.xml

Public Input No. 471-NFPA 13-2013 [Section No. 8.6.4.1.4.5]

Original | Hide Markup

8.6.4.1.4.5

The special requirements of 8.6.2.2.1 and 8.6.4.1.4 ~~for sprinklers under a roof or ceiling in combustible concealed spaces of wood joist or wood truss construction with members less than 3 ft (0.91 m) on center and a slope having a pitch of 4 in 12 or greater shall~~ shall not apply when the exposed combustible sheathing in the roof or ceiling space are constructed of pressure impregnated fire-retardant treated wood as defined by NFPA 703.

Statement of Problem and Substantiation for Public Input

This removes redundant words already used in the heading of this section.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 466-NFPA 13-2013 [Section No. 8.6.4.1.4.1]	Same revision change.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Thu May 30 14:39:14 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369939154945.xml

Public Input No. 289-NFPA 13-2013 [Section No. 8.6.5.1.2]

Original | Hide Markup

Revise Figure 8.6.5.1.2 (c) and Figure 8.8.5.1.2 (c) to delete the text “18 in. minimum” and to delete the brackets from around the term “No maximum”.

Additionally, in each figure revise the sprinkler distances from the wall from “S” to “½ S”.

8.6.5.1.2 *

Sprinklers shall be arranged to comply with one of the following arrangements:

(1) Subsection 8.5.5.2, Table 8.6.5.1.2, and Figure 8.6.5.1.2(a) shall be followed.

(2) Sprinklers shall be permitted to be spaced on opposite sides of obstructions not exceeding 4 ft (1.2 m) in width, provided the distance from the centerline of the obstruction to the sprinklers does not exceed one-half the allowable distance permitted between sprinklers.

(3) Obstructions located against the wall and that are not over 30 in. (762 mm) in width shall be permitted to be protected in accordance with Figure 8.6.5.1.2(b).

(4) Obstructions located against the wall and that are not over 24 in. (610 mm) in width shall be permitted to be protected in accordance with Figure 8.6.5.1.2(c). The maximum distance between the sprinkler and the wall shall be measured from the sprinkler to the wall behind the obstruction and not to the face of the obstruction.

Table 8.6.5.1.2 Positioning of Sprinklers to Avoid Obstructions to Discharge [Standard Spray Upright/Standard Spray Pendent (SSU/SSP)]

Distance from Sprinklers to Side of Obstruction (A)	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B) (in.)
Less than 1 ft	0
1 ft to less than 1 ft 6 in.	2 ½
1 ft 6 in. to less than 2 ft	3 ½
2 ft to less than 2 ft 6 in.	5 ½
2 ft 6 in. to less than 3 ft	7 ½
3 ft to less than 3 ft 6 in.	9 ½
3 ft 6 in. to less than 4 ft	12
4 ft to less than 4 ft 6 in.	14
4 ft 6 in. to less than 5 ft	16 ½
5 ft to less than 5 ft 6 in.	18
5 ft 6 in. to less than 6 ft	20
6 ft to less than 6 ft 6 in.	24

6 ft to less than 6 ft 6 in.	24
6 ft 6 in. to less than 7 ft	30
7 ft to less than 7 ft 6 in.	35

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Note: For A and B, refer to Figure 8.6.5.1.2(a).

Figure 8.6.5.1.2(a) Positioning of Sprinkler to Avoid Obstruction to Discharge (SSU/SSP).

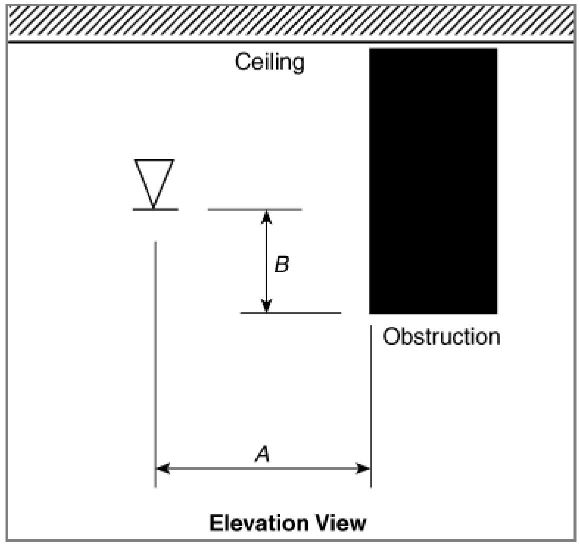


Figure 8.6.5.1.2(b) Obstruction Against Wall (SSU/SSP).

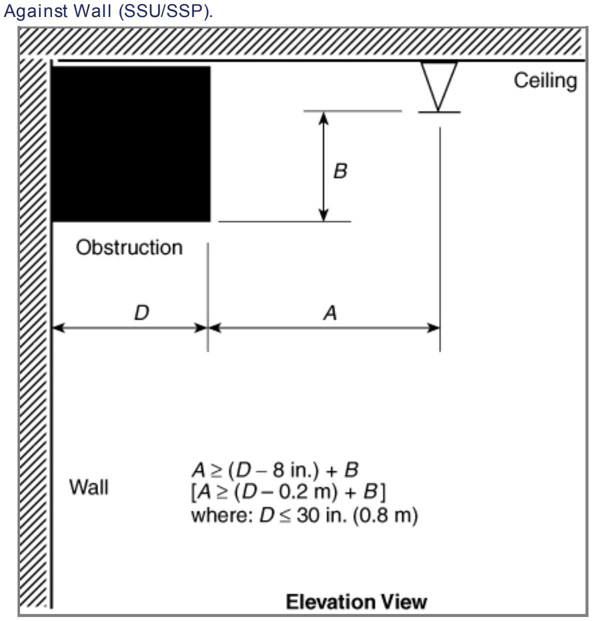
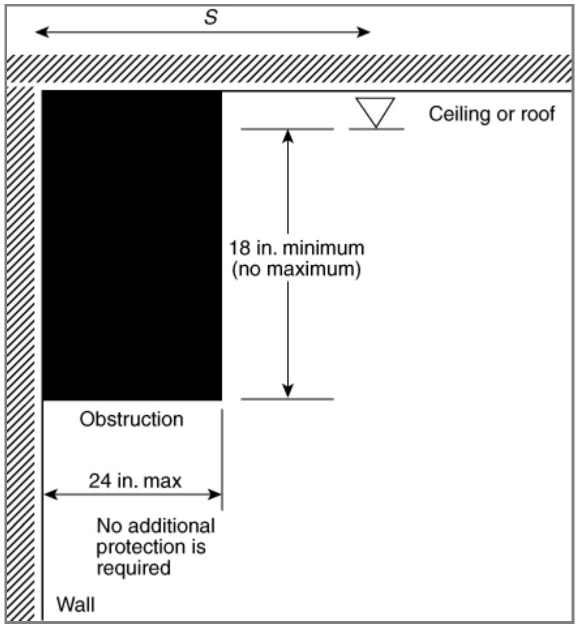


Figure 8.6.5.1.2(c) Obstructions Against Walls (SSU/SSP).



Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_7_of_15.docx	Cover Sjeet	

Statement of Problem and Substantiation for Public Input

It is not necessary to require an obstruction against a wall to more than 18“ below the deflector. If it is less than 18” then it is just a smaller obstruction to the sprinkler spray. The requirement for an obstruction to be 18” below a sprinkler deflector is not relevant in the situation presented in these illustrations. Further, the distance of the sprinkler from the wall should be limited to one half (½ S) of the allowable sprinkler spacing (S).

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:25:17 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368552317589.xml

Public Input No. 310-NFPA 13-2013 [Section No. 8.6.5.1.2]

Original Hide Markup

8.6.5.1.2 *

Sprinklers shall be arranged to comply with one of the following arrangements:

(1) Subsection 8.5.5.2 , Table 8.6.5.1.2 , and Figure 8.6.5.1.2(a) shall be followed.

(2) Sprinklers shall be permitted to be spaced on opposite sides of obstructions not exceeding 4 ft (1.2 m) in width, provided the distance from the centerline of the obstruction to the sprinklers does not exceed one-half the allowable distance permitted between sprinklers.

(3) Obstructions located against the wall and that are not over 30 in. (762 mm) in width shall be permitted to be protected in accordance with Figure 8.6.5.1.2(b) .

(4) Obstructions located against the wall and that are not over 24 in. (610 mm) in width shall be permitted to be protected in accordance with Figure 8.6.5.1.2(c) . The maximum distance between the sprinkler and the wall shall be measured from the sprinkler to the wall behind the obstruction and not to the face of the obstruction.

Table 8.6.5.1.2 Positioning of Sprinklers to Avoid Obstructions to Discharge [Standard Spray Upright/Standard Spray Pendent (SSU/SSP)]

Distance from Sprinklers to Side of Obstruction (A)	Maximum Allowable
~~Distance of~~	
	Distance Between Deflector

~~Above Bottom~~ and Bottom of Obstruction Below (B) (in.)	
Less than 1 ft	0
1 ft to less than 1 ft 6 in.	2 1⁄2
1 ft 6 in. to less than 2 ft	3 1⁄2
2 ft to less than 2 ft 6 in.	5 1⁄2
2 ft 6 in. to less than 3 ft	7 1⁄2
3 ft to less than 3 ft 6 in.	9 1⁄2
3 ft 6 in. to less than 4 ft	12
4 ft to less than 4 ft 6 in.	14
4 ft 6 in. to less than 5 ft	16 1⁄2
5 ft to less than 5 ft 6 in.	18
5 ft 6 in. to less than 6 ft	20
6 ft to less than 6 ft 6 in.	24
6 ft 6 in. to less than 7 ft	30
7 ft to less than 7 ft 6 in.	35

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Note: For A and B , refer to Figure 8.6.5.1.2(a).

Figure 8.6.5.1.2(a) Positioning of Sprinkler to Avoid Obstruction to Discharge (SSU/SSP).

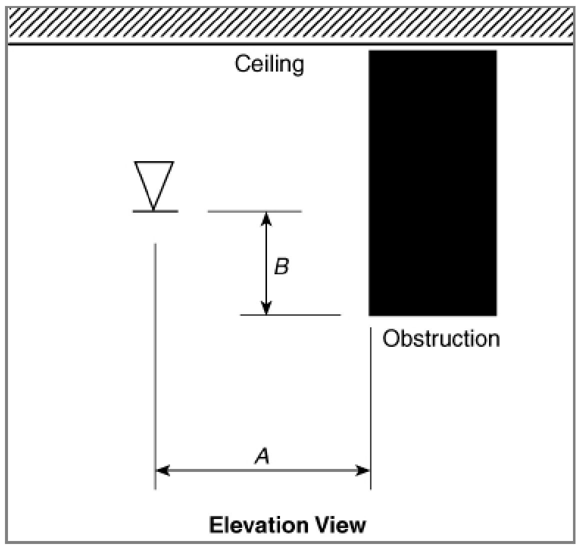


Figure 8.6.5.1.2(b) Obstruction Against Wall (SSU/SSP).

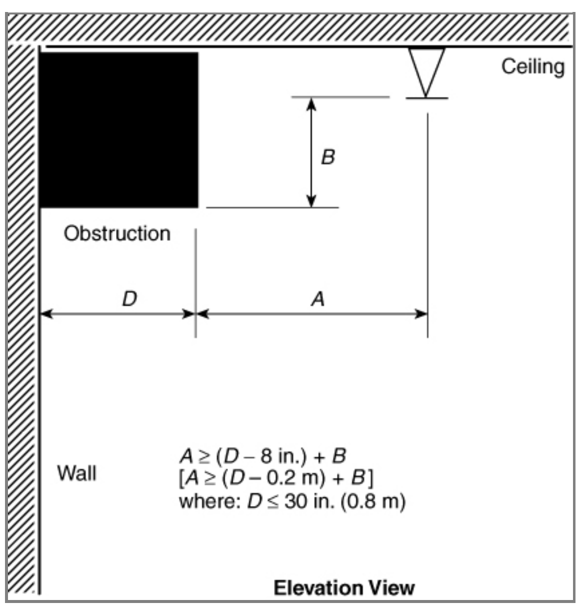
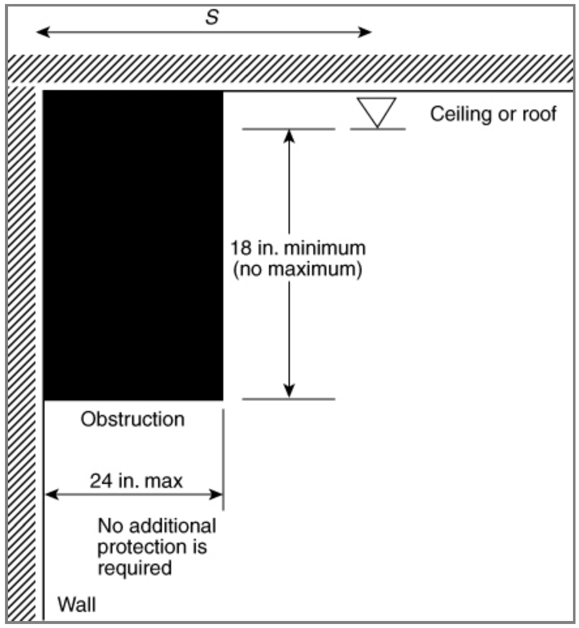


Figure 8.6.5.1.2(c) Obstructions Against Walls (SSU/SSP).



Statement of Problem and Substantiation for Public Input

The column heading is worded improperly. To someone unfamiliar with the code requirement, the wording may appear confusing and unclear. The proposed change would clarify the intent. This change should be implemented throughout the code for all sprinkler types.

Submitter Information Verification

Submitter Full Name: NICHOLAS SEALOVER
Organization: KOFFEL ASSOCIATES, INC.
Submittal Date: Mon May 20 11:14:17 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369062857674.xml

Public Input No. 331-NFPA 13-2013 [Sections 8.6.5.2.1.3(A), 8.6.5.2.1.3(B)]

Original | Hide Markup

Sections 8.6.5.2.1.3(A), 8.6.5.2.1.3(B)

~~(A)~~ –

Unless the requirements of 8.6.5.2.1.4 through 8.6.5.2.1.9 are met, sprinklers shall be positioned away from obstructions a minimum distance of three times the maximum dimension of the obstruction (e.g., structural members, pipe, columns, and fixtures)

~~. (B) The maximum clear distance required shall be 24 in. (609 mm) in accordance with~~

as shown in Figure 8.6.5.2.1.3

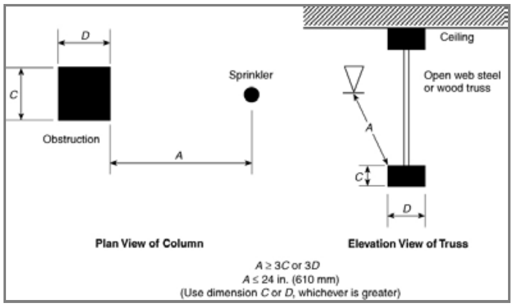
~~(B)~~

.

Figure 8.6.5.2.1.

~~3(B) Minimum~~

3 Minimum Distance from Obstruction (SSU/SSP).



Additional Proposed Changes

File Name	Description	Approved
8-6-5-2-1-3.jpg	New figure to go with text	

Statement of Problem and Substantiation for Public Input

Recent fire testing has shown that there may be an issue with the maximum 24 inch dimension. The sprinkler can be too close to some large obstructions allowing substantial dry area behind large objects like big columns. Data will be available to the committee by the First Draft meeting.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 13:43:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369244615503.xml

Public Input No. 537-NFPA 13-2013 [New Section after 8.6.5.3.4]

8.6.5.3.5 Sprinklers installed under obstructions shall be of same type K-Factor and type as those installed at the ceiling except as permitted by 8.6.5.3.5.1.

8.6.5.3.5.1 Quick response spray sprinklers shall be permitted to be utilized under overhead doors.

Statement of Problem and Substantiation for Public Input

Specific guidance is needed to address the type of sprinklers that are to be installed beneath an obstruction.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 528-NFPA 13-2013 [New Section after 8.5.5.3.2]	

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:03:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370030621821.xml

Public Input No. 159-NFPA 13-2013 [New Section after 8.6.5.3.5]

8.6.5.3.6 The deflector of automatic sprinklers installed under fixed obstructions shall be positioned no more than 12 inches below the bottom of the obstruction.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Sides_Cover_Sheet.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Because no specific guidance is given in the standard, automatic sprinklers are being installed with their deflectors more than 12 inches below open grate mezzanines and large ducts such that actuation over a developing fire is unlikely.

Submitter Information Verification

Submitter Full Name: Michael Sides
Organization: Global Asset Protection Services
Submittal Date: Tue Apr 02 09:36:39 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364909799797.xml

Public Input No. 162-NFPA 13-2013 [New Section after 8.6.5.3.5]

8.6.5.3.7 Sprinklers installed under round ducts shall be of the intermediate level/rack storage type or otherwise shielded from the discharge of overhead sprinklers.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Sides_Cover_Sheet.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Round ductwork over 4 ft in diameter presents a special problem. Operating sprinklers located above the ducts will discharge water onto the duct, and surface tension will cause the water to cling to the outside surface of the duct. Much of the discharge is expected to flow around the duct, and then impinge upon the sprinkler that is located below the duct. This would cool the operating element of the sprinkler, making actuation over a developing fire unlikely. By requiring that sprinklers located below round duct in excess of 4 ft in diameter be shielded from the discharge of overhead sprinklers, these sprinklers should be able to function properly in a fire situation.

Submitter Information Verification

Submitter Full Name: Michael Sides
Organization: Global Asset Protection Services
Submittal Date: Tue Apr 02 09:44:00 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364910240095.xml

Public Input No. 308-NFPA 13-2013 [Section No. 8.6.6.2.1]

Original Hide Markup

8.6.6.2.1
Where shelving is installed on a wall and is not directly below sprinklers, the shelves, including storage thereon, ~~shall extend above~~ shall be permitted to extend above the level of a plane located 18 in. (457 mm) below ceiling sprinkler deflectors.

Statement of Problem and Substantiation for Public Input

This section of the code is improperly worded. The intent of the section is to permit the storage to be within 18 inches of the sprinkler, not require it. The proposed change will clarify the intent.

Submitter Information Verification

Submitter Full Name: NICHOLAS SEALOVER
Organization: KOFFEL ASSOCIATES, INC.
Submittal Date: Mon May 20 11:07:39 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369062459434.xml

Public Input No. 314-NFPA 13-2013 [Section No. 8.6.6.2.1]

Original Hide Markup

8.6.6.2.1

Where shelving is installed on a wall and is not directly below sprinklers, the shelves, including storage thereon, shall be allowed to extend above the level of a plane located 18 in. (457 mm) below ceiling sprinkler deflectors.

Statement of Problem and Substantiation for Public Input

The current wording requries the storage along the wall to be above an 18" plane (shall indicates a mandatory requirement). I believe the intent is to allow stroage along the wall to breach this plane but not mandate it.

Submitter Information Verification

Submitter Full Name: GERALD SCHULTZ
Organization: FPI CONSORTIUM
Submittal Date: Mon May 20 12:30:34 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369067434264.xml

Public Input No. 344-NFPA 13-2013 [Section No. 8.6.7.2]

Original Hide Markup

8.6.7.2
Sprinklers shall not be required in ceiling pockets where all of the following are met:

(1) The total volume of the unprotected ceiling pocket does not exceed 1000 ft^3 (28.3 m^3).

(2) The depth of the unprotected ceiling pocket does not exceed 36 in. (914 mm).

(3) The entire floor under the unprotected ceiling pocket is protected by sprinklers at the lower ceiling elevation.

(4) * The total size of all unprotected ceiling pockets in the same compartment within 10 ft (3 m) of each other does not exceed 1000 ft^3 (28.3 m^3).

(5) The unprotected ceiling pocket has noncombustible or limited-combustible finishes.

(6) ~~Quick-response sprinklers~~ Sprinklers with a fast response thermal sensitivity are utilized throughout the compartment except as provided by 8.3.3.3 and 8.3.3.4.

Statement of Problem and Substantiation for Public Input

Some sprinkler having a fast response thermal sensitivity might not include a listing as a QR sprinkler but would include the necessary thermal sensitivity for use in this application. Addtionally, the reference to 8.3.3.3 is needed to ensure that the use of a SR thermal response sprinkler where needed to address temperature concerns does not negate the use of the Section.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 333-NFPA 13-2013 [Section No. 8.3.3.2]	

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 15:34:11 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369251251615.xml

Public Input No. 518-NFPA 13-2013 [New Section after 8.7.4.1]

New

8.7.4.1.4* Soffits and Cabinets. Where soffits are used for the installation of sidewall sprinklers, the sprinklers and soffits shall be installed in accordance with 8.7.4.1.4.1, 8.7.4.1.4.2, or 8.7.4.1.4.3.

A.8.7.4.1.4 The requirements in 8.7.4.1.4 were developed from years of experience with NFPA 13 obstruction requirements and an additional test series conducted by the National Fire Sprinkler Association with the help of Tyco International (Valentine and Isman, Kitchen Cabinets and Residential Sprinklers, National Fire Sprinkler Association, November 2005), which included fire modeling, distribution tests, and full-scale fire tests. The test series showed that pendent sprinklers definitely provide protection for kitchens, even for fires that start under the cabinets. The information in the series was less than definitive for sidewall sprinklers, but distribution data show that sprinklers in the positions in this standard provide adequate water distribution in front of the cabinets and that sidewall sprinklers should be able to control a fire that starts under the cabinets. When protecting kitchens or similar rooms with cabinets, the pendent sprinkler should be the first option. If pendent sprinklers cannot be installed, the next best option is a sidewall sprinkler on the opposite wall from the cabinets, spraying in the direction of the cabinets. The third best option is the sidewall sprinkler on the same wall as the cabinets, on a soffit flush with the face of the cabinet. The last option should be putting sprinklers on the wall back behind the face of the cabinet because this location is subject to being blocked by items placed on top of the cabinets. It is not the intent of the committee to require sprinklers under kitchen cabinets.

8.7.4.1.4.1 Where soffits exceed more than 8 in. (203 mm) in width or projection from the wall, pendent sprinklers shall be installed under the soffit.

8.7.4.1.4.2 Sidewall sprinklers shall be permitted to be installed in the face of a soffit located directly over cabinets, without requiring additional sprinklers below the soffit or cabinets, where the soffit does not project horizontally more than 12 in. (305 mm) from the wall.

8.7.4.1.4.3 Where sidewall sprinklers are more than 3 ft (0.91 m) above the top of cabinets, the sprinkler shall be permitted to be installed on the wall above the cabinets where the cabinets are no greater than 12 in. (305 mm) from the wall.

Statement of Problem and Substantiation for Public Input

Employee break rooms are similar to kitchens in residential dwelling units. This allows the same guidance for standard spray sidewalls as allowed for extended coverage sprinklers in 8.9.4.1.4 and residential sprinklers in 8.10.7.1.5.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 14:51:15 EDT 2013

Public Input No. 205-NFPA 13-2013 [Section No. 8.7.4.1.3.2]

Original Hide Markup

8.7.4.1.3.2*
Where soffits used for the installation of sidewall sprinklers are less than or equal to 8 in. (203 mm) in width or projection from the wall, additional sprinklers shall not be required below the soffit when the sidewall sprinkler is installed on the soffit~~ is within 4 in~~ .~~ (102 mm) from the bottom of the soffit.~~

Statement of Problem and Substantiation for Public Input

When the 8-inch rule was originally accepted, the idea was not to get direct water spray from the sprinkler back behind the soffit. The idea was to define a small area where direct water spray would not be necessary and a curtain of water would drop straight down from the soffit preventing fire spread beyond the 8-inch width space. There are times when the sprinkler cannot be located within 4 inches of the bottom of a soffit and there is no need to put a pendent sprinkler under such a skinny object.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri Apr 19 15:04:26 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366398266015.xml

Public Input No. 572-NFPA 13-2013 [New Section after 8.7.4.1.3.3]

8.7.4.1.3.4 Soffits used for the installation of sidewall sprinklers shall be a minimum of 8 inches (203 mm) in depth.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Dias.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

No guidance currently exists for the minimum depth of soffits used for the installation of sidewall sprinklers. The 8 inch minimum depth would be consistent with the minimum lintel depth per the "compartment" definition as stated in 3.3.6.
This comment is being submitted by the Tyco Codes and Standards Sprinkler Task Group.

Submitter Information Verification

Submitter Full Name: KENNETH DIAS
Organization: Tyco Fire Protection Products
Submittal Date: Mon Jun 03 14:19:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370283575904.xml

Public Input No. 350-NFPA 13-2013 [Section No. 8.7.5.1.3]

Original Hide Markup

8.7.5.1.3

The distance between light fixtures or similar obstructions located more than 4 ft (1.2 m) from the sprinkler shall be in conformity with Table 8.7.5.1.3 and Figure 8.7.5.1.3 .

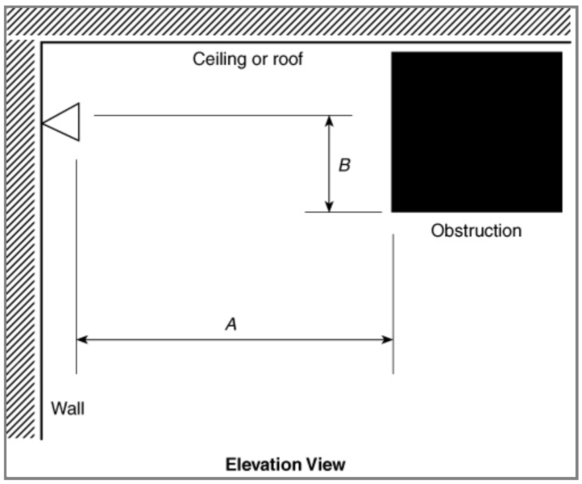
Table 8.7.5.1.3 Positioning of Sprinklers to Avoid Obstructions (Standard Sidewall Spray Sprinklers)

Distance from Sidewall Sprinkler to Side of Obstruction (A)	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B) (in.)
Less than 4 ft	Not allowed
4 ft to less than 5 ft	1
5 ft to less than 5 ft 6 in.	2
5 ft 6 in. to less than 6 ft	3
6 ft to less than 6 ft 6 in.	4
6 ft 6 in. to less than 7 ft	6
7 ft to less than 7 ft 6 in.	7
7 ft 6 in. to less than 8 ft	9
8 ft to less than 8 ft 6 in.	11
8 ft 6 in. or greater	14

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Note: For A and B , refer to Figure 8.7.5.1.3.

Figure 8.7.5.1.3 Positioning of Sprinkler to Avoid Obstruction (Standard Sidewall Spray Sprinklers).



Additional Proposed Changes

File Name	Description	Approved
Open 8-7-5-1-3.jpg	Our intent is to replace existing figure 8.7.5.1.3 with this new figure 8.7.5.1.3	

Statement of Problem and Substantiation for Public Input

Our new Figure 8.7.5.1.3 attempts to clarify two issues with respect to the beam rule and sidewall sprinklers. First, we wish to clarify that when sprinkler spray needs to get under an obstruction, there needs to be some clear space above the sprinkler deflector. Too many people using NFPA 13 think that the obstructions at the same elevation as the deflector are acceptable (which would be true for pendent and upright sprinklers). But sidewall sprinklers need 4 inches of clear space above the deflector as well.

Our second concern is a clarification of the type of obstruction applicable to this rule. Skinny obstructions that meet the "three-times rule" should not have to worry about water spray only going under the obstruction. In this case, the three-ties rule (as modified by our Public Input on section 8.7.5.2.1.3) should be sufficient for sprinkler spray patterns to develop. A 4 inch wide light fixture is not going to be any worse than a 4 inch wide column using the three-times rule.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 16:01:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369252895251.xml

Public Input No. 371-NFPA 13-2013 [Sections 8.7.5.1.4, 8.7.5.1.5]

Original Hide Markup

Sections 8.7.5.1.4, 8.7.5.1.5

8.7.5.1.4

Obstructions projecting from the same wall as the one on which the sidewall sprinkler is mounted shall be in accordance with one of the following arrangements:

(1) Table 8.7.5.1.4 (a) and Figure 8.7.5.1.4 (a) [note, this is old Table and Figure 8 . 7.5.1.4] .

(2)

Sprinklers shall be permitted to be spaced on opposite sides of obstructions less than 4 ft (1.22 m) in width where the distance from the centerline of the obstruction to the sprinklers does not exceed one-half the allowable distance between sprinklers.

(3) Obstructions located against the wall and that are not over 30 inches (762mm) in width shall be permitted to be protected in accordance with Figure 8.7.5.1.4(b)

(4) Obstructions that are located against the wall and that are not over 24 inches (610mm) in width shall be permitted to be protected in accordance with Figure 8.7.5.1.4(c). The maximum distance between the sprinkler and the wall shall be measured from the sprinkler to the wall behind the obstruction and not to the face of the obstruction.

Table 8.7.5.1.

~~4 Positioning~~

4(a) Positioning of Sprinklers to Avoid Obstructions Along Wall (Standard Sidewall Spray Sprinklers)

Distance from Sidewall Sprinkler to Side of Obstruction (A)	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B) (in.)
4 in. to less than 6 in.	1
6 in. to less than 1 ft	2
1 ft to less than 1 ft 6 in.	3
1 ft 6 in. to less than 2 ft	4 1⁄2
2 ft to less than 2 ft 6 in.	5 3⁄4
2 ft 6 in. to less than 3 ft	7
3 ft to less than 3 ft 6 in.	8
3 ft 6 in. to less than 4 ft	9 1⁄4
4 ft to less than 4 ft 6 in.	10
4 ft 6 in. to less than 5 ft	11 1⁄2
5 ft to less than 5 ft 6 in.	12 3⁄4
5 ft 6 in. to less than 6 ft	14
6 ft to less than 6 ft 6 in.	15
6 ft 6 in. to less than 7 ft	16 1⁄4
7 ft to less than 7 ft 6 in.	17 1⁄2

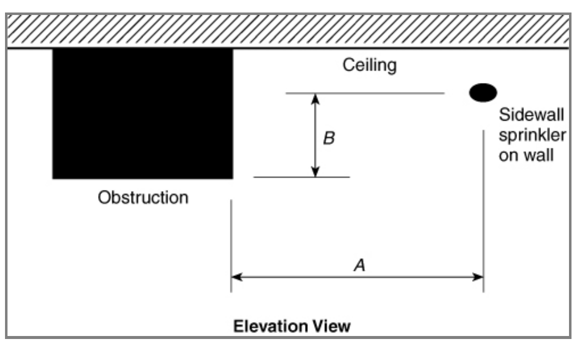
For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Note: For A and B , refer to Figure 8.7.5.1.4 (a) .

Figure 8.7.5.1.

~~4 Positioning~~

4(a) Positioning of Sprinkler to Avoid Obstruction Along Wall (Standard Sidewall Spray Sprinklers).



~~8.7.5.1.4.1~~ –

~~Isolated obstructions projecting from the same wall as the one on which the sidewall sprinkler is mounted shall be located a minimum of 4 in. (102 mm) from the sidewall sprinkler.~~

~~8.7.5.1.5~~ –

~~Sprinklers shall be permitted to be spaced on opposite sides of obstructions less than 4 ft (1.22 m) in width where the distance from the centerline of the obstruction to the sprinklers does not exceed one-half the allowable distance between sprinklers.~~

Additional Proposed Changes

File Name	Description	Approved
Open 8-7-5-1-4.tiff	This is both new Figure 8.7.5.1.4(b) and new Figure 8.7.5.1.4(c)	

Statement of Problem and Substantiation for Public Input

For obstructions to the side of sidewall sprinklers, the same four options should apply as when dealing with upright and pendent sprinklers. This language parallels section 8.6.5.1.2 and provides the same 4 options in a user friendly format. The minimum requirement of 4 inches from the sprinklers to the obstruction has been eliminated to be consistent with our other proposals on that subject. There is not need to require the sprinkler to be 4 inches away if it can spray under the soffit using the rules we have developed here.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Thu May 23 14:00:52 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369332052312.xml

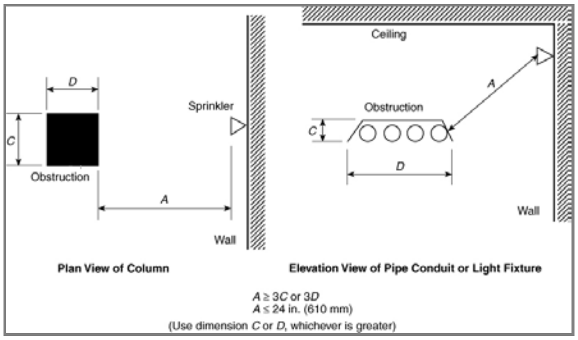
Public Input No. 335-NFPA 13-2013 [Section No. 8.7.5.2.1.3]

Original | Hide Markup

8.7.5.2.1.3 *

Unless the requirements of 8.7.5.2.1.4 or 8.7.5.2.1.5 are met, sprinklers shall be positioned away from obstructions a minimum distance of three times the maximum dimension of the obstruction (e.g., truss webs and chords, pipe, columns, and fixtures) ~~. The maximum clear distance required shall be 24~~ in ~~. (610 mm) and shall be positioned in~~ accordance with Figure 8.7.5.2.1.3 ~~where obstructions are present~~ .

Figure 8.7.5.2.1.3 Minimum Distance from Obstruction (Standard Sidewall Spray Sprinkler).



Additional Proposed Changes

File Name	Description	Approved
8-7-5-2-1-3.jpg	new figure just deleted 24 inch max dimension	

Statement of Problem and Substantiation for Public Input

Recent fire testing has shown that there may be an issue with the maximum 24 inch dimension. The sprinkler can be too close to some large obstructions allowing substantial dry area behind large objects like big columns. Data will be available to the committee by the First Draft meeting.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 14:59:11 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369249151654.xml

Public Input No. 541-NFPA 13-2013 [New Section after 8.7.5.3.3]

8.7.5.3.4 Sprinklers installed under obstructions shall be of same type K-Factor and type as those installed at the ceiling except as permitted by 8.7.5.3.4.1.

8.7.5.3.4.1 Quick response spray sprinklers shall be permitted to be utilized under overhead doors.

Statement of Problem and Substantiation for Public Input

Specific guidance is needed to address the type of sprinklers that are to be installed beneath an obstruction.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 528-NFPA 13-2013 [New Section after 8.5.5.3.2]	

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:13:36 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370031216989.xml

Public Input No. 307-NFPA 13-2013 [Section No. 8.8.3.4.2]

Original | Hide Markup

8.8.3.4.2

Sprinklers shall be permitted to be placed less ~~than 6~~ than 8 ft (~~1~~ 2 . ~~8~~ 4 m) on center where the following conditions are satisfied:

(1) Baffles shall be arranged to protect the actuating elements.

(2) Baffles shall be of solid and rigid material that will stay in place before and during sprinkler operation.

(3) Baffles shall be not less than 8 in. (203 mm) long and 6 in. (152 mm) high.

(4) The tops of baffles shall extend between 2 in. and 3 in. (51 mm and 76 mm) above the deflectors of upright sprinklers.

(5) The bottoms of baffles shall extend downward to a level at least even with the deflectors of pendent sprinklers.

Statement of Problem and Substantiation for Public Input

The change would fix a typographical error which creates an inconsistency in this section of the code.

Submitter Information Verification

Submitter Full Name: NICHOLAS SEALOVER
Organization: KOFFEL ASSOCIATES, INC.
Submittal Date: Mon May 20 10:54:05 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369061645797.xml

Public Input No. 253-NFPA 13-2013 [Section No. 8.8.4.1.1.4(B)]

Original Hide Markup

(B)*
Where the distance between the upper ceiling and the sprinkler deflector is less than or equal to 36 in. (914 mm), the sprinklers shall be permitted to be spaced as though the ceiling were flat, provided the obstruction rules ~~and ceiling pocket rules~~ are observed.

Statement of Problem and Substantiation for Public Input

THe ceiling pocket rules are not pertinent to this guidance. This change matches the current text in 8.6.4.1.1.4 (B).

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Fri May 03 18:55:12 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367621712519.xml

Public Input No. 475-NFPA 13-2013 [Section No. 8.8.4.1.2]

Original Hide Markup

8.8.4.1.2 Obstructed Construction.
Under obstructed construction, the sprinkler deflector shall be located in accordance with one of the following arrangements:

(1) Installed with the deflectors within the horizontal planes of 1 in. to 6 in. (25.4 mm to 152 mm) below ~~the structural~~ <u>noncombustible structural</u> members and a maximum distance of 22 in. (559 mm) below the <u>noncombustible</u> ceiling/roof deck

(2) Installed with the deflectors at or above the bottom of ~~the structural member~~ <u>noncombustible structural members</u> to a maximum of 22 in. (559 mm) below the <u>noncombustible</u> ceiling/roof deck where the sprinkler is installed in conformance with <u>8.8.5.1.2</u>

(3) Installed in each bay of <u>combustible or noncombustible</u> obstructed construction, with the deflectors located a minimum of 1 in. (25.4 mm) and a maximum of 12 in. (305 mm) below the ceiling

(4) Installed in accordance with their listing where sprinklers are listed for use under other ceiling construction features or for different distances

Statement of Problem and Substantiation for Public Input

This provides a reminder that this section applies to noncombustible obstructed construction per 8.4.3(2) in nos. (1) and (2).

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Thu May 30 14:55:13 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369940113477.xml

Public Input No. 212-NFPA 13-2013 [New Section after 8.8.4.2]

8.8.4.2.1

Unless the requirements of 8.8.4.2.2 or 8.8.4.2.3. are met, deflectors of sprinklers shall be aligned parallel to ceilings, roofs, or the incline of stairs.

Statement of Problem and Substantiation for Public Input

We need language on how to address the position of deflectors when sprinklers are installed under pitched or sloped roofs. The language needs to parallel 8.6.4.2 for upright and pendent standard spray sprinklers.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed Apr 24 08:57:17 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366808237770.xml

Public Input No. 213-NFPA 13-2013 [New Section after 8.8.4.2]

8.8.4.2.2

Where sprinklers are installed at the peak below a sloped ceiling or roof surface, the sprinkler shall be installed with the deflector horizontal.

Statement of Problem and Substantiation for Public Input

We need language on how to address the situation where sprinklers are installed at the peak under pitched or sloped roofs and ceilings. This language parallels section 8.6.4.2 for upright and pendent standard spray sprinklers.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 212-NFPA 13-2013 [New Section after 8.8.4.2]	Same issue

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed Apr 24 09:01:56 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366808516333.xml

Public Input No. 214-NFPA 13-2013 [New Section after 8.8.4.2]

8.8.4.2.3

Roofs and ceilings having a pitch not exceeded 2 in 12 (16.7 percent) are considered horizontal in the application of 8.8.4.2, and sprinklers shall be permitted to be installed with deflectors horizontal.

Statement of Problem and Substantiation for Public Input

We need language on how to position the deflector where sprinklers are installed under slightly sloped roofs. This language parallels section 8.6.4.2 regarding upright and pendent standard spray sprinklers.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 213-NFPA 13-2013 [New Section after 8.8.4.2]	Same issue

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed Apr 24 09:05:54 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366808754533.xml

Public Input No. 188-NFPA 13-2013 [Section No. 8.8.4.2]

Original | Hide Markup

8.8.4.2 Deflector Orientation.
~~Deflectors of sprinklers shall be aligned parallel to ceilings or roofs~~ .

Statement of Problem and Substantiation for Public Input

This section is being expanded with subsections to better define approriate deflector orientations parallel to the requirements for upright and pendent standard spray sprinklers in 8.6.4.2.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 212-NFPA 13-2013 [New Section after 8.8.4.2]	Same subject

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 18 15:06:18 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366311978350.xml

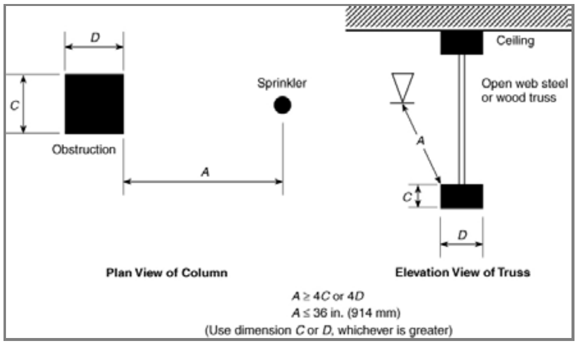
Public Input No. 337-NFPA 13-2013 [Section No. 8.8.5.2.1.3]

Original | Hide Markup

8.8.5.2.1.3 *

Unless the requirements of 8.8.5.2.1.4 through 8.8.5.2.1.8 are met, sprinklers shall be positioned away from obstructions a minimum distance of four times the maximum dimension of the obstruction (e.g., truss webs and chords, pipe, columns, and fixtures) ~~. The maximum clear distance required shall be 36~~ in ~~. (914 mm) in~~ accordance with Figure 8.8.5.2.1.3 .

Figure 8.8.5.2.1.3 Minimum Distance from Obstruction (Extended Coverage Upright and Pendent Spray Sprinklers).



Additional Proposed Changes

File Name	Description	Approved
Open 8-8-5-2-1-3.jpg	New figure, just eliminated the 36 inch maximum dimension	

Statement of Problem and Substantiation for Public Input

Recent fire testing has shown that there may be an issue with the maximum 36 inch dimension. The sprinkler can be too close to some large obstructions allowing substantial dry area behind large objects like big columns. Data will be available to the committee by the First Draft meeting.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 15:03:22 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369249402628.xml

Public Input No. 542-NFPA 13-2013 [New Section after 8.8.5.3.3]

8.8.5.3.4 Sprinklers installed under obstructions shall be of same type K-Factor and type as those installed at the ceiling except as permitted by 8.8.5.3.4.1.

8.8.5.3.4.1 Quick response spray sprinklers shall be permitted to be utilized under overhead doors.

Statement of Problem and Substantiation for Public Input

Specific guidance is needed to address the type of sprinklers that are to be installed beneath an obstruction.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 528-NFPA 13-2013 [New Section after 8.5.5.3.2]	

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:16:14 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370031374977.xml

Public Input No. 160-NFPA 13-2013 [New Section after 8.8.5.3.4]

8.8.5.3.5 The deflector of automatic sprinklers installed under fixed obstructions shall be positioned no more than 12 inches below the bottom of the obstruction.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Sides_Cover_Sheet.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Because no specific guidance is given in the standard, automatic sprinklers are being installed with their deflectors more than 12 inches below open grate mezzanines and large ducts such that actuation over a developing fire is unlikely.

Submitter Information Verification

Submitter Full Name: Michael Sides
Organization: Global Asset Protection Services
Submittal Date: Tue Apr 02 09:39:32 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364909972223.xml

Public Input No. 163-NFPA 13-2013 [New Section after 8.8.5.3.4]

8.8.5.3.6 Sprinklers installed under round ducts shall be of the intermediate level/rack storage type or otherwise shielded from the discharge of overhead sprinklers.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Sides_Cover_Sheet.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Round ductwork over 4 ft in diameter presents a special problem. Operating sprinklers located above the ducts will discharge water onto the duct, and surface tension will cause the water to cling to the outside surface of the duct. Much of the discharge is expected to flow around the duct, and then impinge upon the sprinkler that is located below the duct. This would cool the operating element of the sprinkler, making actuation over a developing fire unlikely. By requiring that sprinklers located below round duct in excess of 4 ft in diameter be shielded from the discharge of overhead sprinklers, these sprinklers should be able to function properly in a fire situation.

Submitter Information Verification

Submitter Full Name: Michael Sides
Organization: Global Asset Protection Services
Submittal Date: Tue Apr 02 09:48:58 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364910538923.xml

Public Input No. 345-NFPA 13-2013 [Section No. 8.8.7.2]

Original | Hide Markup

8.8.7.2
Sprinklers shall not be required in ceiling pockets where all of the following are met:

(1) The total volume of the unprotected ceiling pocket does not exceed 1000 ft^3 (28.3 m^3).

(2) The depth of the unprotected ceiling pocket does not exceed 36 in. (914 mm).

(3) The entire floor under the unprotected ceiling pocket is protected by sprinklers at the lower ceiling elevation.

(4) * The total size of all unprotected ceiling pockets in the same compartment within 10 ft (3 m) of each other does not exceed 1000 ft^3 (28.3 m^3).

(5) The unprotected ceiling pocket has noncombustible or limited-combustible finishes.

(6) ~~Quick-response sprinklers~~ Sprinklers with fast response thermal sensitivity are utilized throughout the compartment except as provided by 8 . 3.3.3 or 8.3.3.4.

Statement of Problem and Substantiation for Public Input

Some sprinkler having a fast response thermal sensitivity might not include a listing as a QR sprinkler but would include the necessary thermal sensitivity for use in this application. Addtionally, the reference to 8.3.3.3 is needed to ensure that the use of a SR thermal response sprinkler where needed to address temperature concerns does not negate the use of the Section.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 333-NFPA 13-2013 [Section No. 8.3.3.2]	

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 15:42:42 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369251762430.xml

Public Input No. 388-NFPA 13-2013 [Section No. 8.9.4.1.3.1]

Original Hide Markup

8.9.4.1.3.1 *
Where soffits used for the installation of sidewall sprinklers are less than or equal to 8 in. (203 mm) in width or projection from the wall, additional sprinklers shall not be required below the soffit ~~when the sidewall sprinkler on the soffit is within 4 in. (102 mm) from the bottom of the soffit.~~

Statement of Problem and Substantiation for Public Input

When the 8-inch rule was originally accepted, the idea was not to get direct water spray from the sprinkler back behind the soffit. The idea was to define a small area where direct water spray would not be necessary and a curtain of water would drop straight down from the soffit preventing fire spread beyond the 8-inch width space. There are times when the sprinkler cannot be located within 4 inches of the bottom of a soffit and there is no need to put a pendent sprinkler under such a skinny object.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 15:34:50 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369337690702.xml

Public Input No. 571-NFPA 13-2013 [New Section after 8.9.4.1.3.2]

8.9.4.1.3.3 Soffits used for the installation of sidewall sprinklers shall be a minimum of 8 inches (203 mm) in depth.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Dias.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

No guidance currently exists for the minimum depth of soffits used for the installation of sidewall sprinklers. The 8 inch minimum depth would be consistent with the minimum lintel depth per the "compartment" definition as stated in 3.3.6.
This comment is being submitted by the Tyco Codes and Standards Sprinkler Task Group.

Submitter Information Verification

Submitter Full Name: KENNETH DIAS
Organization: Tyco Fire Protection Products
Submittal Date: Mon Jun 03 14:11:34 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370283094840.xml

Public Input No. 353-NFPA 13-2013 [Section No. 8.9.5.1.3]

Original Hide Markup

8.9.5.1.3

The distance between light fixtures or similar obstructions located more than 8 ft (2.4 m) from the sprinkler shall be in conformance with Table 8.9.5.1.3 and Figure 8.9.5.1.3 .

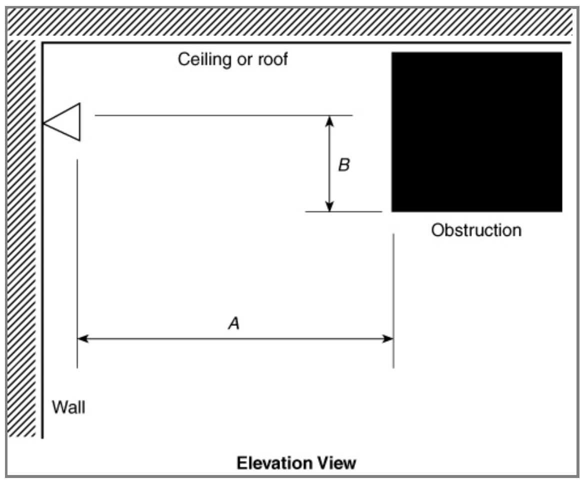
Table 8.9.5.1.3 Positioning of Sprinklers to Avoid Obstructions (Extended Coverage Sidewall Spray Sprinklers)

Distance from Sidewall Sprinkler to Side of Obstruction (A)	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B) (in.)
Less than 8 ft	Not allowed
8 ft to less than 10 ft	1
10 ft to less than 11 ft	2
11 ft to less than 12 ft	3
12 ft to less than 13 ft	4
13 ft to less than 14 ft	6
14 ft to less than 15 ft	7
15 ft to less than 16 ft	9
16 ft to less than 17 ft	11
17 ft or greater	14

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Note: For A and B , refer to Figure 8.9.5.1.3.

Figure 8.9.5.1.3 Positioning of Sprinkler to Avoid Obstruction (Extended Coverage Sidewall Spray Sprinklers).



Additional Proposed Changes

File Name	Description	Approved
Open 8-9-5-1-3.jpg	Our intent is to replace existing figure 8.9.5.1.3 with our new Figure 8.9.5.1.3	

Statement of Problem and Substantiation for Public Input

Our new Figure 8.7.5.1.3 attempts to clarify two issues with respect to the beam rule and sidewall sprinklers. First, we wish to clarify that when sprinkler spray needs to get under an obstruction, there needs to be some clear space above the sprinkler deflector. Too many people using NFPA 13 think that the obstructions at the same elevation as the deflector are acceptable (which would be true for pendent and upright sprinklers). But sidewall sprinklers need 4 inches of clear space above the deflector as well.

Our second concern is a clarification of the type of obstruction applicable to this rule. Skinny obstructions that meet the "four-times rule" should not have to worry about water spray only going under the obstruction. In this case, the four-times rule (as modified by our Public Input on section 8.9.5.2.1.3) should be sufficient for sprinkler spray patterns to develop. A 4 inch wide light fixture is not going to be any worse than a 4 inch wide column using the four-times rule.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 16:12:39 EDT 2013

Public Input No. 495-NFPA 13-2013 [New Section after 8.9.5.1.4]

8.9.5.1.4 Isolated Obstructions

8.9.5.1.4 Isolated obstructions projecting from the same wall as the one on which the extended coverage sidewall sprinkler is mounted shall be located a minimum of 6 in. (152 mm) from the sidewall sprinkler.

Statement of Problem and Substantiation for Public Input

The committee added a 4" distance requirement for standard sidewall sprinklers to be located from isolated obstructions on the same wall, such as smoke detectors and horn/strobes (in 2007?) but did not address the same requirement for extended coverage sidewall sprinklers. Guidance should be provided for positioning extended coverage sidewall sprinklers away from isolated obstructions on the same wall to ensure adequate wall wetting behing the sprinkler.

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Fri May 31 11:17:46 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370013466393.xml

Public Input No. 373-NFPA 13-2013 [Sections 8.9.5.1.4, 8.9.5.1.5]

Original Hide Markup

Sections 8.9.5.1.4, 8.9.5.1.5

8.9.5.1.4

Continuous obstructions projecting from the same wall as the one on which the sidewall sprinkler is mounted shall be in accordance with one of the following arrangements:

(1) Table 8.9.5.1.4 (a) and Figure 8.9.5.1.4 (a) .

(2)

Sprinklers shall be permitted to be spaced on opposite sides of obstructions less than 4 ft (1.22 m) in width where the distance from the centerline of the obstruction to the sprinklers does not exceed one-half the allowable distance between sprinklers.

(3) Obstructions located against the wall and that are not over 30 inches (762mm) in width shall be permitted to be protected in accordance with Figure 8.9.5.1.4(b).

(4) Obstructions located against the wall and that are not over 24 inches (610mm) in width shall be permitted to be protected in accordance with Table 8.9.5.1.4(c). The maximum distance between the sprinkler and the wall shall be measured from the sprinkler to the wall behind the obstruction and not to the face of the obstruction.

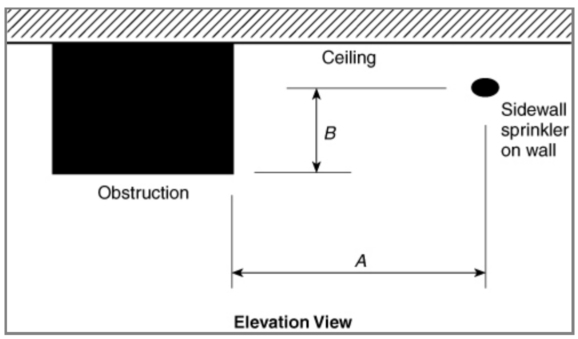
Table 8.9.5.1. ~~4 Positioning~~ 4(a) Positioning of Sprinklers to Avoid Obstructions Along Wall (Extended Coverage Sidewall Spray Sprinklers)

Distance from Sidewall Sprinkler to Side of Obstruction (A)	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B) (in.)
Less than 1 ft 6 in.	0
1 ft 6 in. to less than 3 ft	1
3 ft to less than 4 ft	3
4 ft to less than 4 ft 6 in.	5
4 ft 6 in. to less than 6 ft	7
6 ft to less than 6 ft 6 in.	9
6 ft 6 in. to less than 7 ft	11
7 ft to less than 7 ft 6 in.	14

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Note: For A and B , refer to Figure 8.9.5.1.4 (a) .

Figure 8.9.5.1. ~~4 Positioning~~ 4(a) Positioning of Sprinkler to Avoid Obstruction Along Wall (Extended Coverage Sidewall Spray Sprinklers).



8.9.5.1.5

~~Sprinklers shall be permitted to be spaced on opposite sides of obstructions less than 4 ft (1.22 m) in width where the distance from the centerline of the obstruction to the sprinklers does not exceed one-half the allowable distance between sprinklers.~~

Additional Proposed Changes

File Name	Description	Approved
Open 8-9-5-1-4.tiff	This is both new Figure 8.9.5.1.4 (b) and new Figure 8.9.5.1.4(c)	

Statement of Problem and Substantiation for Public Input

For obstructions to the side of extended coverage sidewall sprinklers, the same four options should apply as when dealing with extended coverage upright and pendent sprinklers. This language parallels section 8.8.5.1.2 and provides the same 4 options in a user friendly format.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 14:18:18 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369333098759.xml

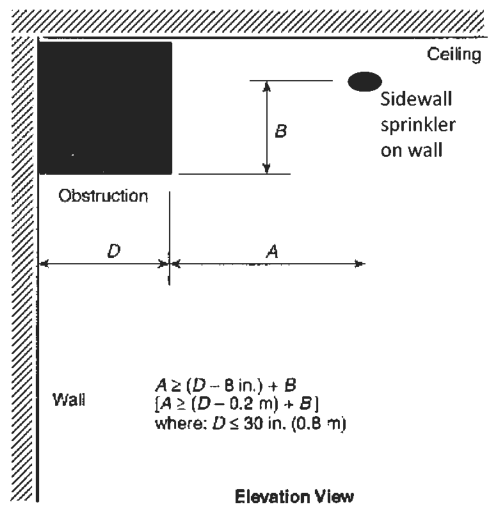


FIGURE 8.9.5.1.4(b) Obstruction Against Wall (Standard Sidewall Spray Sprinklers)

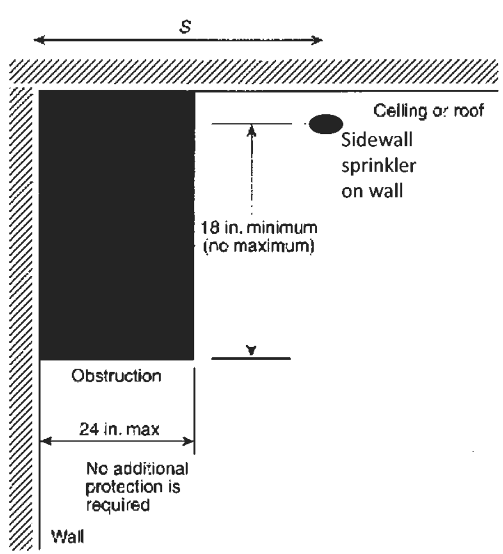


FIGURE 8.9.5.1.4(c) Obstruction Against Wall (Standard Sidewall Spray Sprinklers)

Public Input No. 339-NFPA 13-2013 [Sections 8.9.5.2.1.3, 8.9.5.2.1.4]

Original Hide Markup

Sections 8.9.5.2.1.3, 8.9.5.2.1.4

8.9.5.2.1.3 *

Unless the requirements of 8.9.5.2.1.4 through 8.9.5.2.1.6 are met, sprinklers shall be positioned away from obstructions a minimum distance of four times the maximum dimension of the obstruction (e.g., truss webs and chords, pipe, columns, and fixtures ~~). The maximum clear distance required shall be 36 in. (914 mm) from the sprinkler.~~

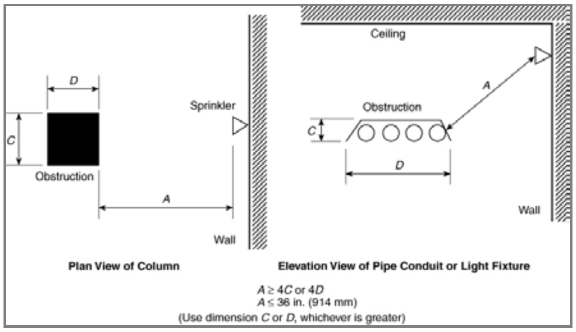
~~8.9.5.2.1.4 Sidewall sprinklers shall be positioned~~

in accordance with Figure 8.9.5.2.1.

~~4 when obstructions are present~~

3 .

Figure 8.9.5.2.1. ~~4 Minimum~~ 3 Minimum Distance from Obstruction (Extended Coverage Sidewall).



Additional Proposed Changes

File Name	Description	Approved
Open 8-9-5-2-1-4.jpg	New Figure, note that this should be renumbered 8.9.5.2.1.3 since section 8.9.5.2.1.4 has been eliminated	

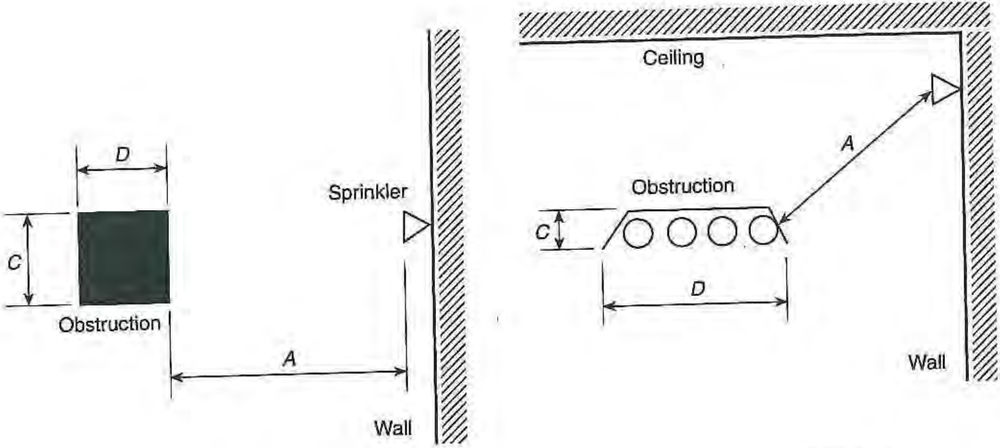
Statement of Problem and Substantiation for Public Input

Recent fire testing has shown that there may be an issue with the maximum 36 inch dimension. The sprinkler can be too close to some large obstructions allowing substantial dry area behind large objects like big columns. Data will be available to the committee by the First Draft meeting.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 15:10:08 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369249808087.xml



Plan View of Column **Elevation View of Pipe Conduit or Light Fixture**

$A \geq 4C$ or $4D$

~~$A \leq 36$ in. (914 mm)~~

(Use dimension C or D, whichever is greater)

FIGURE 8.9.5.2.1.4 Minimum Distance from Obstruction (Extended Coverage Sidewall).

Public Input No. 545-NFPA 13-2013 [New Section after 8.9.5.3.3]

8.9.5.3.4 Sprinklers installed under obstructions shall be of same type K-Factor and type as those installed at the ceiling except as permitted by 8.9.5.3.4.1.

8.9.5.3.4.1 Quick response spray sprinklers shall be permitted to be utilized under overhead doors.

Statement of Problem and Substantiation for Public Input

Specific guidance is needed to address the type of sprinklers that are to be installed beneath an obstruction.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 528-NFPA 13-2013 [New Section after 8.5.5.3.2]	

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:18:53 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370031533197.xml

Public Input No. 220-NFPA 13-2013 [New Section after 8.10.2.1]

8.10.2.2

Residential sprinklers shall not be permitted to be used on ceilings with slopes greater than 8 in 12 or ceiling with heights greater than 24 ft unless specifically listed for this purpose.

Statement of Problem and Substantiation for Public Input

The requirement for residential sprinklers to be listed for use on a slope was in the 2010 and previous editions of NFPA 13. It was eliminated during the 2013 revision cycle due to testing, but that testing was limited to ceilings with slopes of 8 in 12 and heights of 24 ft. In situations where the ceiling exceeds these limits, residential sprinklers still need to be specially listed for the steep slope, or residential sprinklers should not be used. NFPA 13 allows the use of quick response sprinklers in residential occupancies (as light hazard) and these sprinklers are more applicable to steeply pitched situations due to the known design area increases already incorporated into Chapter 11.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed Apr 24 09:22:05 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366809725753.xml

Public Input No. 323-NFPA 13-2013 [New Section after 8.10.4.6.2]

8.10.4.7 Deflector Orientation (Residential Upright and Pendent Spray)

8.10.4.7.1 Unless the requirements of 8.10.4.7.2 or 8.10.4.7.3 are met, deflectors of upright and pendent sprinklers shall be aligned parallel to ceilings, roofs, or the incline of stairs.

8.10.4.7.2 Where upright or pendent sprinklers are installed at the peak below a sloped ceiling or roof surface, the sprinkler shall be installed with the deflector horizontal.

8.10.4.7.3 Roofs and ceilings having a pitch not exceeded 2 in 12 (16.7 percent) are considered horizontal in the application of 8.10.4.7, and upright and pendent sprinklers shall be permitted to be installed with deflectors horizontal.

Statement of Problem and Substantiation for Public Input

Guidance is needed on upright and pendent residential sprinkles and the deflector orientation under the ceiling or roof. While section 8.5 provides some general guidance, more specific information is needed that parallels 8.6.4.2.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Wed May 22 11:20:45 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369236045593.xml

Public Input No. 340-NFPA 13-2013 [Section No. 8.10.6.2.1.3]

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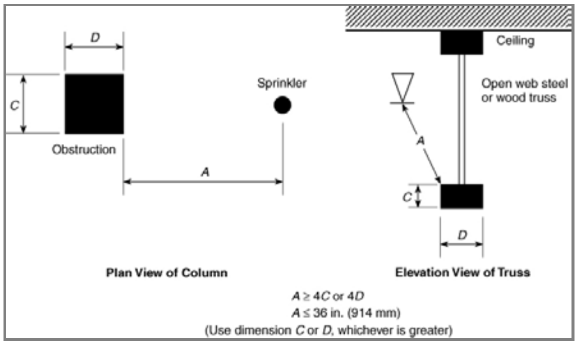
8.10.6.2.1.3 *

Unless the requirements of 8.10.6.2.1.4 through 8.10.6.2.1.8 are met, sprinklers shall be positioned away from obstructions a minimum distance of four times the maximum dimension of the obstruction (e.g., truss webs and chords, pipe, columns, and fixtures) ~~. The maximum clear distance required shall be 36~~ in ~~. (914 mm) in~~ accordance with Figure 8.10.6.2.1.3 .

Figure 8.10.6.2.1.3 Minimum Distance from Obstruction (Residential Upright and Pendent Spray Sprinklers).



Additional Proposed Changes

File Name	Description	Approved
8-10-6-2-1-3.jpg	New figure, just deleted 36 inch maximum dimension	

Statement of Problem and Substantiation for Public Input

Recent fire testing has shown that there may be an issue with the maximum 36 inch dimension. The sprinkler can be too close to some large obstructions allowing substantial dry area behind large objects like big columns. Data will be available to the committee by the First Draft meeting.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 15:15:42 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369250142798.xml

Public Input No. 355-NFPA 13-2013 [Section No. 8.10.7.1.3]

Original | Hide Markup

8.10.7.1.3

The distance between light fixtures or similar obstructions located more than 8 ft (2.4 m) from the sprinkler shall be in conformance with Table 8.10.7.1.3 and Figure 8.10.7.1.3 .

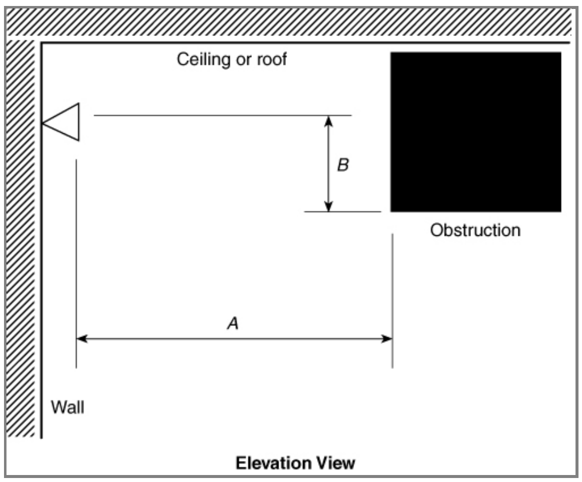
Table 8.10.7.1.3 Positioning of Sprinklers to Avoid Obstructions (Residential Sidewall Sprinklers)

Distance from Sidewall Sprinkler to Side of Obstruction (A)	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B) (in.)
Less than 8 ft	Not allowed
8 ft to less than 10 ft	1
10 ft to less than 11 ft	2
11 ft to less than 12 ft	3
12 ft to less than 13 ft	4
13 ft to less than 14 ft	6
14 ft to less than 15 ft	7
15 ft to less than 16 ft	9
16 ft to less than 17 ft	11
17 ft or greater	14

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Note: For A and B , refer to Figure 8.10.7.1.3.

Figure 8.10.7.1.3 Positioning of Sprinkler to Avoid Obstruction (Residential Sidewall Sprinklers).



Additional Proposed Changes

File Name	Description	Approved
Open 8-10-7-1-3.jpg	Our intent is just to replace the existing Figure 8.10.7.1.3 with new Figure 8.10.7.1.3	

Statement of Problem and Substantiation for Public Input

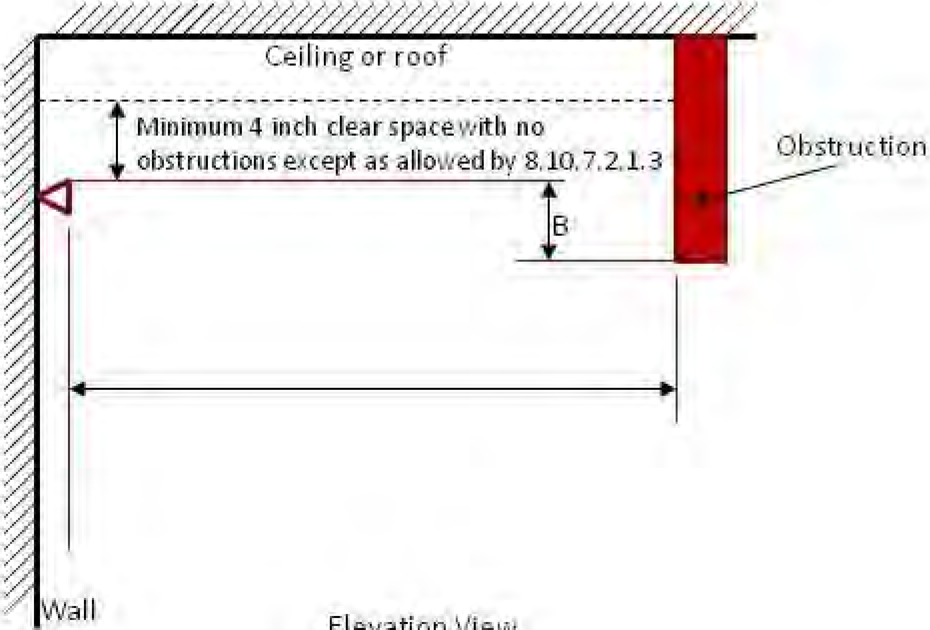
Our new Figure 8.10.7.1.3 attempts to clarify two issues with respect to the beam rule and sidewall sprinklers. First, we wish to clarify that when sprinkler spray needs to get under an obstruction, there needs to be some clear space above the sprinkler deflector. Too many people using NFPA 13 think that the obstructions at the same elevation as the deflector are acceptable (which would be true for pendent and upright sprinklers). But sidewall sprinklers need 4 inches of clear space above the deflector as well.

Our second concern is a clarification of the type of obstruction applicable to this rule. Skinny obstructions that meet the "four-times rule" should not have to worry about water spray only going under the obstruction. In this case, the four-times rule (as modified by our Public Input on section 8.10.7.2.1.3) should be sufficient for sprinkler spray patterns to develop. A 4 inch wide light fixture is not going to be any worse than a 4 inch wide column using the four-times rule.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 16:19:12 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369253952108.xml



Elevation View

Public Input No. 375-NFPA 13-2013 [Section No. 8.10.7.1.4]

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8.10.7.1.4
~~Obstructions~~

Continuous obstructions projecting from the same wall as the one on which the sidewall sprinkler is mounted shall be in accordance with one of the following arrangements:

(1) Table 8.10.7.1.4 (a) and Figure 8.10.7.1.4 (a) .

(2) Sprinklers shall be permitted to be spaced on opposite sides of obstructions less than 4 ft (1.22 m) in width where the distance from the centerline of the obstruction to the sprinklers does not exceed one-half the allowable distance between sprinklers.

(3) Obstructions located against the wall and that are not over 30 inches (762mm) in width shall be permitted to be protected in accordance with Figure 8.10.7.1.4(b).

(4) Obstructions located against the wall and that are not over 24 inches (610mm) in width shall be permitted to be protected in accordance with Table 8.10.7.1.4(c). The maximum distance between the sprinkler and the wall shall be measured from the sprinkler to the wall behind the obstruction and not to the face of the obstruction.

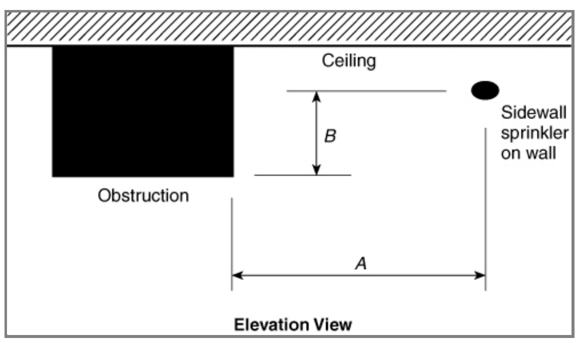
Table 8.10.7.1. ~~4 Positioning~~ 4(a) Positioning of Sprinklers to Avoid Obstructions Along Wall (Residential Sidewall Sprinklers)

Distance from Sidewall Sprinkler to Side of Obstruction (A)	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B) (in.)
Less than 1 ft 6 in.	0
1 ft 6 in. to less than 3 ft	1
3 ft to less than 4 ft	3
4 ft to less than 4 ft 6 in.	5
4 ft 6 in. to less than 6 ft	7
6 ft to less than 6 ft 6 in.	9
6 ft 6 in. to less than 7 ft	11
7 ft to less than 7 ft 6 in.	14

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Note: For A and B , refer to Figure 8.10.7.1.4 (a) .

Figure 8.10.7.1. ~~4 Positioning~~ 4(a) Positioning of Sprinkler to Avoid Obstruction Along Wall (Residential Sidewall Sprinklers).



Additional Proposed Changes

	File Name	Description	Approved
Open	8-10-7-1-4.tiff	This is both new Figure 8.10.7.1.4(b) and new Figure 8.10.7.1.4(c)	

Statement of Problem and Substantiation for Public Input

For obstructions to the side of residential sidewall sprinklers, the same four options should apply as when dealing with pendent residential sprinklers. This language parallels section 8.10.6.1.2 and provides the same 4 options in a user friendly format.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 14:29:51 EDT 2013

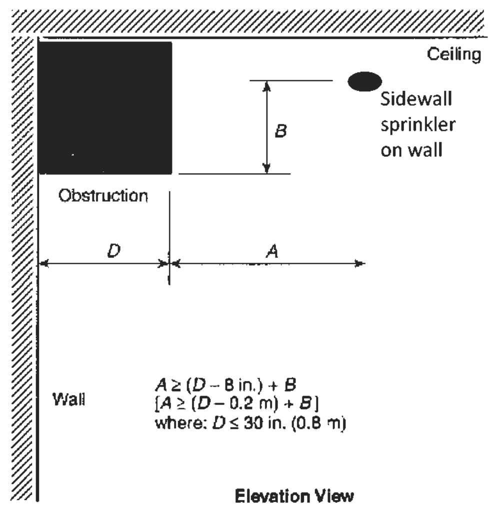


FIGURE 8.10.7.1.4(b) Obstruction Against Wall (Standard Sidewall Spray Sprinklers)

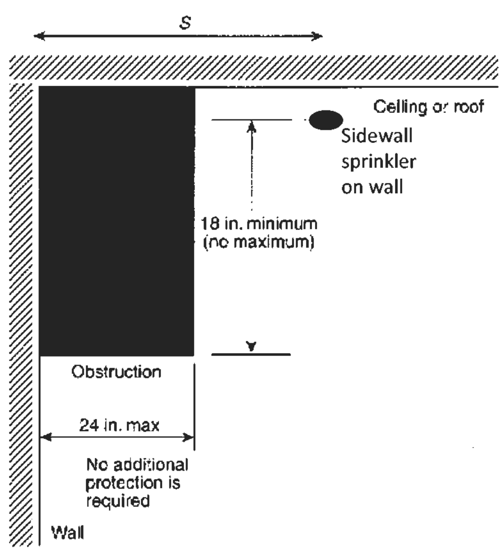


FIGURE 8.10.7.1.4(c) Obstruction Against Wall (Standard Sidewall Spray Sprinklers)

/TerraView/Content/13-2013.ditamap/2/C1369333791165.xml

Public Input No. 341-NFPA 13-2013 [Sections 8.10.7.2.1.3, 8.10.7.2.1.4]

Original | Hide Markup

Sections 8.10.7.2.1.3, 8.10.7.2.1.4

8.10.7.2.1.3 *

Unless the requirements of 8.10.7.2.1.4 through 8.10.7.2.1.7 are met, sprinklers shall be positioned away from obstructions

~~a minimum distance of four times the maximum dimension of the obstruction.~~

(

~~A) The maximum clear distance required shall be 36 in. (914 mm) from the sprinkler (~~

e.g., truss webs and chords, pipe, columns, and fixtures)

~~. 8.10.7.2.1.4 Sidewall sprinklers shall be positioned~~

a minimum distance of four times the maximum dimension of the obstruction

from the sprinkler in accordance with Figure 8.10.7.2.1.

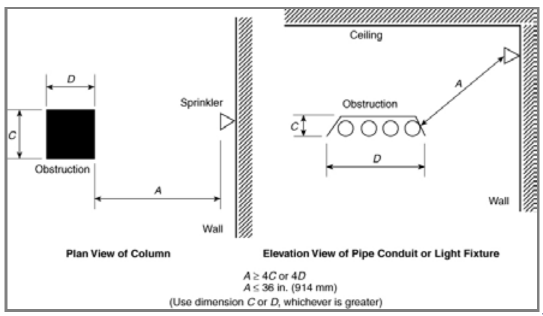
~~4 when obstructions are present~~

3 .

Figure 8.10.7.2.1.

~~4 Minimum~~

3 Minimum Distance from Obstruction (Residential Sidewall Sprinklers).



Additional Proposed Changes

File Name	Description	Approved
Open 8-10-7-2-1-4.jpg	New Figure, note that this needs to be renumbered to figure 8.10.7.2.1.3 since the base paragraph was deleted.	

Statement of Problem and Substantiation for Public Input

Recent fire testing has shown that there may be an issue with the maximum 36 inch dimension. The sprinkler can be too close to some large obstructions allowing substantial dry area behind large objects like big columns. Data will be available to the committee by the First Draft meeting.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 15:19:30 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369250370942.xml

Public Input No. 547-NFPA 13-2013 [New Section after 8.10.7.3.3]

8.10.7.3.4 Sprinklers installed under obstructions shall be of same type K-Factor and type as those installed at the ceiling except as permitted by 8.10.7.3.4.1.

8.10.7.3.4.1 Quick response spray sprinklers shall be permitted to be utilized under overhead doors.

Statement of Problem and Substantiation for Public Input

Specific guidance is needed to address the type of sprinklers that are to be installed beneath an obstruction.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 528-NFPA 13-2013 [New Section after 8.5.5.3.2]	

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:21:37 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370031697795.xml

Public Input No. 161-NFPA 13-2013 [New Section after 8.10.7.3.4]

8.10.7.3.5 The deflector of automatic sprinklers installed under fixed obstructions shall be positioned no more than 12 inches below the bottom of the obstruction.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Sides_Cover_Sheet.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Because no specific guidance is given in the standard, automatic sprinklers are being installed with their deflectors more than 12 inches below open grate mezzanines and large ducts such that actuation over a developing fire is unlikely.

Submitter Information Verification

Submitter Full Name: Michael Sides
Organization: Global Asset Protection Services
Submittal Date: Tue Apr 02 09:41:15 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364910075951.xml

Public Input No. 164-NFPA 13-2013 [New Section after 8.10.7.3.4]

8.10.7.3.6 Sprinklers installed under round ducts shall be of the intermediate level/rack storage type or otherwise shielded from the discharge of overhead sprinklers.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Sides_Cover_Sheet.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Round ductwork over 4 ft in diameter presents a special problem. Operating sprinklers located above the ducts will discharge water onto the duct, and surface tension will cause the water to cling to the outside surface of the duct. Much of the discharge is expected to flow around the duct, and then impinge upon the sprinkler that is located below the duct. This would cool the operating element of the sprinkler, making actuation over a developing fire unlikely. By requiring that sprinklers located below round duct in excess of 4 ft in diameter be shielded from the discharge of overhead sprinklers, these sprinklers should be able to function properly in a fire situation.

Submitter Information Verification

Submitter Full Name: Michael Sides
Organization: Global Asset Protection Services
Submittal Date: Tue Apr 02 09:50:33 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364910633139.xml

Public Input No. 272-NFPA 13-2013 [Section No. 8.11.2.2.2]

Original Hide Markup

8.11.2.2.2

In any case, the maximum area of coverage of any sprinkler shall not exceed 130 ft^2 (12.9 m^2).

Proposal: Change metric value to be consistent with table 8.11.2.2.1 (i.e. 12.1m2)

Statement of Problem and Substantiation for Public Input

Inconcistent (and incorrect) metric conversion.

Submitter Information Verification

Submitter Full Name: Bo Hjorth
Organization: AlbaCon AB
Submittal Date: Sun May 12 04:08:20 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368346100748.xml

Public Input No. 549-NFPA 13-2013 [New Section after 8.11.5.3.2]

8.11.5.3.3 Sprinklers installed under obstructions shall be of same type K-Factor and type as those installed at the ceiling except as permitted by 8.11.5.3.3.1.

8.11.5.3.3.1 Quick response spray sprinklers shall be permitted to be utilized under overhead doors.

Statement of Problem and Substantiation for Public Input

Specific guidance is needed to address the type of sprinklers that are to be installed beneath an obstruction.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 528-NFPA 13-2013 [New Section after 8.5.5.3.2]	

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:25:44 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370031944370.xml

Public Input No. 254-NFPA 13-2013 [Section No. 8.12.5.2]

Original Hide Markup

8.12.5.2 * Isolated Obstructions Below Elevation of Sprinklers.

Sprinklers shall be arranged with respect to obstructions in accordance with one of the following:

(1) Sprinklers shall be installed below isolated noncontinuous obstructions that restrict only one sprinkler and are located below the elevation of sprinklers such as light fixtures and unit heaters.

(2) Additional sprinklers shall not be required where the obstruction is 2 ft (0.6 m) or less in width and the sprinkler is located horizontally 1 ft (0.3 m) or greater from the nearest edge of the obstruction.

(3) Additional sprinklers shall not be required where sprinklers are positioned with respect to the bottom of obstructions in accordance with 8.12.5.1.

(4) Additional sprinklers shall not be required where the obstruction ~~is 2~~ is 1.25 in. (~~51~~ 32 mm) or less in width and is located a minimum ~~of 2 ft~~ of 16 in. (0.~~6~~ 4 m) below the elevation of the sprinkler deflector~~ or is positioned a minimum of 1 ft (0.3 m) horizontally from the sprinkler.~~

(5) Sprinklers with a special obstruction allowance shall be installed according to their listing.

Statement of Problem and Substantiation for Public Input

Currently NFPA 13 does not allow an obstruction of any size in the area 1ft horizontally and 2ft vertically below an ESFR sprinkler. This is manageable when an obstruction is either parallel or perpendicular to the branch line. However, some roof structures have diagonal bracing in the roof diaphragm that can cause frequent, but isolated obstructions to ESFR sprinkers. These braces are typically located between 1ft and 2ft below the sprinkler deflector and can be made from 1/2 in thru 1 1/4" rod. The location of these rods can vary from concept to construction and it is virtually impossiple to anticipate which sprinklers will be obstructed. FM Global Data Sheet 2.0, Section 2.2.3.5.1 provides some relief of this condition. Allowing for isolated obstructions to be addressed as proposed would help to maintain uniform spacing and eliminate haphazard sprinkler locations.

Elimination of the "or is positioned a minimum of 1ft......." is because that is already addressed in (2)

Submitter Information Verification

Submitter Full Name: Jeffrey Rovegno
Organization: Mr. Sprinkler Fire Protection
Submittal Date: Fri May 03 18:56:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367621801768.xml

Public Input No. 261-NFPA 13-2013 [Section No. 8.12.5.2]

Original Hide Markup

8.12.5.2 * Isolated Obstructions Below Elevation of Sprinklers.

Sprinklers shall be arranged with respect to obstructions in accordance with one of the following:

(1) Sprinklers shall be installed below isolated noncontinuous obstructions that restrict only one sprinkler and are located below the elevation of sprinklers such as light fixtures and unit heaters.

(2) Additional sprinklers shall not be required where the obstruction is 2 ft (0.6 m) or less in width and the sprinkler is located horizontally 1 ft (0.3 m) or greater from the nearest edge of the obstruction.

(3) Additional sprinklers shall not be required where sprinklers are positioned with respect to the bottom of obstructions in accordance with 8.12.5.1.

(4) Additional sprinklers shall not be required where the obstruction is 0.75 in (20 mm) or less in width and is located a minimum of 4 in (100mm) below the elevation of the sprinkler deflector.

(5) Additional sprinklers shall not be required where the obstruction is 2 in. (51 mm) or less in width and is located a minimum of 2 ft (0.6 m) below the elevation of the sprinkler deflector or is positioned a minimum of 1 ft (0.3 m) horizontally from the sprinkler.

(6) Sprinklers with a special obstruction allowance shall be installed according to their listing.

Statement of Problem and Substantiation for Public Input

Currently NFPA 13 does not allow an obstruction of any size in the area 1ft horizontally and 3ft vertically below an ESFR sprinkler. This is manageable when an obstruction is either parallel or perpendicular to the branch line. However, some roof structures have diagonal bracing in the diaphragm that can cause frequent, but isolated obstructions to ESFR sprinklers. These braces are typcially located between 1ft and 2ft below the sprinkler deflector, but can be closer in some cases. The location of these braces can vary from concept to construction and it is vurtually impossible to anticipate which sprinklers will be obstructed. FM Global Data Sheet 2.0, Section 2.2.3.5.1 provides some relief of this condition. Allowing isolated obstructions to be addressed as proposed above would help to maintain uniform sprinkler spacing by reducing haphazard sprinkler locations.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 254-NFPA 13-2013 [Section No. 8.12.5.2]	Same code section

Submitter Information Verification

Submitter Full Name: Jeffrey Rovegno
Organization: Mr. Sprinkler Fire Protection
Submittal Date: Tue May 07 12:40:26 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367944826846.xml

Public Input No. 449-NFPA 13-2013 [New Section after 8.12.5.3.2.1]

8.12.5.3.3* For pipes, conduits, or groups of pipes and conduit to be considered individual, they must be separated from the closest adjacent pipe, conduit, cable tray, etc. by a minimum of 6 times the width of the obstruction.

Statement of Problem and Substantiation for Public Input

It is a common question as to how many small obstructions can be near each other before they are considered one obstruction to the sprinkler discharge. As ESFR sprinklers are sensitive to obstructions, guidance is needed on acceptable distances between these small obstructions. This is thought to be a conservative separation value.

This public input was developed by the UL/FM/NFSA Standards Review Committee.

Submitter Information Verification

Submitter Full Name:	Victoria Valentine
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA
Submittal Date:	Wed May 29 16:04:25 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369857865950.xml

Public Input No. 10-NFPA 13-2013 [New Section after 8.15.1.2.7]

A.8.15.1.2.7

This option of filling the space entirely with noncombustible insulation can be logistically difficult to achieve. For interstitial floor spaces, this requires either that batt insulation be installed prior to the ceiling being installed or if blown in insulation is used, it has to be installed as the ceiling is installed or openings need to be strategically left in the ceiling so the insulation can be blown in afterwards. It is also possible to use netting to keep the insulation in place prior to the ceiling being installed. Care must also be taken by the building owner in the event that the ceiling cavity needs to be opened for any repairs or modifications.

Statement of Problem and Substantiation for Public Input

Using insulation in some combustible concealed spaces is adventatious compared to installing sprinklers. However, in large concealed spaces, insuring that the space gets filled properly and remains filled can be an issue.

Submitter Information Verification

Submitter Full Name:	Peter Schwab
Organization:	Wayne Automatic Fire Sprinkler
Submittal Date:	Tue Jan 15 12:27:32 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358270852901.xml

Public Input No. 7-NFPA 13-2013 [Section No. 8.15.1.2.8]

Original | Hide Markup

8.15.1.2.8

Concealed spaces within wood joist construction and composite wood joist construction having noncombustible insulation filling the space from the ceiling up to the bottom edge of the joist of the roof or floor deck, provided that in composite wood joist construction the joist channels ~~are firestopped~~ are sealed into volumes each not exceeding 160 ft^3 (4.53 m^3) to the full depth of the joist with material equivalent to the web construction, shall not require sprinkler protection.

Statement of Problem and Substantiation for Public Input

By using the word firestop, many AHJ's are requiring a UL assembly to seal any penetrations through the joists. Since the joists are fiber board wood and rather combustible, there are not many readily available through penetration details. It is more logical to use the term sealed vs. firestopped.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Sat Jan 12 22:06:45 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358046405422.xml

Public Input No. 168-NFPA 13-2013 [Section No. 8.15.1.2.10]

Original | Hide Markup

~~8.15.1.2.10~~ –

~~Concealed spaces where rigid materials are used and the exposed surfaces have a flame spread index of 25 or less, and the materials have been demonstrated not to propagate fire more than 10.5 ft (3.2 m) when tested in accordance with ASTM E 84, Standard Test Method of Surface Burning Characteristics of Building Materials , or ANSI/UL 723, Standard for Test for Surface Burning Characteristics of Building Materials , extended for an additional 20 minutes in the form in which they are installed, shall not require sprinkler protection.~~

-

Statement of Problem and Substantiation for Public Input

This section is somewhat confusing and is being frequently misapplied. The NFPA 13 Handbook states: "When considering these materials, verification that the testing used to determine each material's combustibility was conducted with the material arranged in the position in which it is to be installed is important. Changes in the orientation or arrangement of the material can significantly change the flame spread characteristics and the combustibility of the material. Additionally, the materials are required to be rigid, because experience indicates that non-rigid materials do not demonstrate the same characteristics during a fire."

There are companies that have after-market applied materials that reduce flame spread ratings of combustible products (such as wood) to 25 or less. This section is being misapplied to allow these products to be used for protecting concealed spaces in lieu of fire sprinklers. Typically, designers and contractors do not have these products tested in their ultimate configuration and orientation. We have also seen applications of this subsection utilizing rigid plastic materials painted with these products which would not seem to be the intent of this section.

Submitter Information Verification

Submitter Full Name: Doug Hohbein
Organization: Northcentral Fire Code Develop
Submittal Date: Tue Apr 02 22:34:00 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364956440547.xml

Public Input No. 132-NFPA 13-2013 [Section No. 8.15.1.2.17 [Excluding any Sub-Sections]]

Original Hide Markup

Concealed spaces formed by noncombustible or limited-combustible ceilings suspended from the bottom of wood joists and composite wood joists with a maximum nominal chord width of 2 in. (50.8 mm), where joist spaces are full of noncombustible batt insulation with a maximum 2 in. (50.8 m) air space between ~~the roof decking~~ the decking material and the top of the batt insulation shall not require sprinklers.

Statement of Problem and Substantiation for Public Input

Remove the term roof. This implies that this exception only applies to a top floor or roof condition.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 08:08:03 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364299683881.xml

Public Input No. 505-NFPA 13-2013 [New Section after 8.15.1.2.18]

Add new text:

A.8.15.1.2.18 This applies to soffits, eaves, overhangs, and decorative frame elements located both interior and exterior to the building.

Statement of Problem and Substantiation for Public Input

This criteria is not specific if it applies to interior and exterior of the building. 8.15.1.2.18.4 implies this is for exterior applications. There are benefits to allow this for the interior of the building. Some rooms have utility soffits of combustible construction where there is insufficient clearances for sprinklers but are required to be installed. This would solve these issues.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 13:53:20 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370022800632.xml

Public Input No. 459-NFPA 13-2013 [Section No. 8.15.1.2.18]

Original Hide Markup

8.15.1.2.18 Soffits, Eaves, Overhangs, Signs, and Decorative Frame Elements.

8.15.1.2.18.1

Combustible soffits, eaves, overhangs, signs, and decorative frame elements shall not exceed 4 ft 0 in. (1.2 m) in width.

8.15.1.2.18.2

Combustible soffits, eaves, overhangs, signs, and decorative frame elements shall be draftstopped, with a material equivalent to that of the soffit, into volumes not exceeding 160 ft^3 (4.5 m^3).

8.15.1.2.18.3

Combustible soffits, eaves, overhangs, signs, and decorative frame elements shall be separated from the interior of the building by walls or roofs of noncombustible or limited-combustible construction.

8.15.1.2.18.4

Combustible soffits, eaves, overhangs, signs, and decorative frame elements shall have no openings or unprotected penetrations directly into the building.

Statement of Problem and Substantiation for Public Input

Many building have large signs attached to the building that are built like a large narrow box with lights that illuminate the outside of the sign. Many of these sign enclosures have access to allow light bulbs to be changed. These enclosures should be treated like any other attachment to a building included in this group.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu May 30 09:00:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369918824290.xml

Public Input No. 68-NFPA 13-2013 [Section No. 8.15.1.2.18]

Original Hide Markup

8.15.1.2.18 Soffits, Eaves, ~~Overhangs,~~ and Similar Decorative Frame Elements.

8.15.1.2.18.1

Combustible soffits, eaves, ~~overhangs,~~ and similar decorative frame elements shall not exceed 4 ft 0 in. (1.2 m) in width.

8.15.1.2.18.2

Combustible soffits, eaves, ~~overhangs,~~ and similar decorative frame elements shall be draftstopped, with a material equivalent to that of the soffit, into volumes not exceeding 160 ft^3 (~~4~~ 2 .5 m^3).

8.15.1.2.18.3

Combustible soffits, eaves, ~~overhangs,~~ and similar decorative frame elements shall be separated from the interior of the building by walls or roofs of noncombustible or limited-combustible construction.

8.15.1.2.18.4

Combustible soffits, eaves, ~~overhangs,~~ and similar decorative frame elements shall have no openings or unprotected penetrations directly into the building.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Bean.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The use of term "overhang" in section 8.15.1.2.18 would appear to exclude the use of combustible canopies and similar combustible projections which project more than 4'-0". We do not believe this was the intent of this section because combustible canopies and similar projects are dealt with in section 8.15.7.

Submitter Information Verification

Submitter Full Name: MATTHEW BEAN
Organization: NORIAN/SIANI ENGINEERING INC
Submittal Date: Fri Feb 22 09:31:33 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361543493656.xml

Public Input No. 131-NFPA 13-2013 [New Section after 8.15.1.2.18.1]

TITLE OF NEW CONTENT

Type your content here ...

8.15.1.2.18.1 Sprinklers shall be permitted to be omitted from within combustible soffits, eaves, overhangs, and decorative frame elements that are constructed in accordance with 8.15.1.2.18.2 through 8.15.1.2.18.5.

Also, renumber existing sections 8.15.1.2.18.1-8.15.1.2.18.4 as 8.15.1.2.18.2-8.15.1.2.18.5.

Statement of Problem and Substantiation for Public Input

This is text that was originally included in the 2010 version when these provisions were first added. The charging text to allow for sprinklers to be omitted should have been retained.

Submitter Information Verification

Submitter Full Name: Rodney McPhee
Organization: Canadian Wood Council
Submittal Date: Mon Mar 25 15:10:14 EDT 2013

Origin (from sources other than the submitter)

NFPA 13, 2010 edition.

/TerraView/Content/13-2013.ditamap/2/C1364238614934.xml

Public Input No. 506-NFPA 13-2013 [Section No. 8.15.1.2.18.4]

Original | Hide Markup

8.15.1.2.18.4
Combustible soffits, eaves, overhangs, and decorative frame elements located on the exterior shall have no openings or unprotected penetrations directly into the building.

Statement of Problem and Substantiation for Public Input

Clarifies that this applies only to when the elements are located outside the building.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 505-NFPA 13-2013 [New Section after 8.15.1.2.18]	The annex clarifies it applies to interior portions of the structure and penetrations are not allowed when element are installed exterior to the building.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 14:08:28 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370023708787.xml

Public Input No. 513-NFPA 13-2013 [New Section after 8.15.1.3]

Add new Annex:

A.8.15.1.3 Utilities and other building services can located within the concealed combustible spaces. Heat producing devices are permitted within these spaces without increasing the density since the primary threat is a source of ignition and does not significantly add to fuel load.

Statement of Problem and Substantiation for Public Input

It is common to have heat producing devices within these spaces. Some jurisdictions are requiring an increased density when a furnace is located in an attic. The furnace is just a source of ignition and does not add to the fuel load with exception of a flame produced by gas. This also clarifies that electrical, ducts, plumbing, communication wiring can be located within these spaces.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 14:36:49 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370025409568.xml

Public Input No. 563-NFPA 13-2013 [Section No. 8.15.1.5]

Original | Hide Markup

8.15.1.5 Localized Protection of Exposed Combustible Construction or Exposed Combustibles.
When otherwise noncombustible or limited-combustible concealed spaces that would not require sprinkler protection have localized exposed combustible construction, or contain localized areas of exposed combustibles, the combustibles shall be permitted to be protected as follows:

(1) If the exposed combustibles are in the vertical partitions or walls around all or a portion of the enclosure, a single row of sprinklers spaced not over 12 ft (3.7 m) apart nor more than 6 ft (1.8 m) from the inside of the partition shall be permitted to protect the surface. The first and last sprinklers in such a row shall not be over 5 ft (1.5 m) from the ends of the partitions.

(2) If the exposed combustibles are in the horizontal plane, the area of the combustibles shall be permitted to be protected with sprinklers on a light hazard spacing. Additional sprinklers shall be installed no more than 6 ft (1.8 m) outside the outline of the area and not more than 12 ft (3.7 m) on center along the outline. When the outline returns to a wall or other obstruction, the last sprinkler shall not be more than 6 ft (1.8 m) from the wall or obstruction. <u>Suspended combustibles over 4 foot wide will require sprinkler protection under them.</u>

Additional Proposed Changes

	File Name	Description	Approved
Open	24_13_Brown.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Clarification is needed that protection will also be needed under items that can create an obstruction to sprinkler coverage that is above them.

Submitter Information Verification

Submitter Full Name: Phillip Brown
Organization: American Fire Sprinkler Association
Submittal Date: Mon Jun 03 11:40:54 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370274054158.xml

Public Input No. 256-NFPA 13-2013 [New Section after 8.15.1.6]

A.8.15.6

Where a non-combustible or limited combustible ceiling is attached to, or suspended below combustible wood truss, wood joist, composite wood joist (with or without a 1 in. maximum metal channel), or bar joist construction having a combustible upper surface, the combustible space may be protected with either standard spray sprinklers or specially listed sprinklers, regardless of the depth of the space created by a single layer of joist.

Statement of Problem and Substantiation for Public Input

This annex material will clarify the construction conditions where specially listed sprinklers are required where the depth of the space is 36" or less.

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Mon May 06 01:18:46 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367817526903.xml

Public Input No. 70-NFPA 13-2013 [New Section after 8.15.1.6.1]

TITLE OF NEW CONTENT

8.15.1.6.2 Sprinklers specifically listed to provide protection of combustible concealed spaces described in 8.15.1.6 shall be permitted to be used throughout the area when a portion of the area exceeds a depth of 36 inches.

Statement of Problem and Substantiation for Public Input

It is not uncommon for a long space or when depths start at close to 36 inches where the allowed slope causes the depth to exceed 36 inches. The manufacturer cut-sheets indicate that the listed sprinklers cannot be used beyond 36 inches whereas it seems the intent should be that the sprinklers must be used for depths less than 36 without limiting their use when the depth also exceeds this value.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Tue Feb 26 17:08:18 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361916498650.xml

Public Input No. 153-NFPA 13-2013 [Section No. 8.15.5]

Original | Hide Markup

8.15.5 Elevator Hoistways ~~and~~ , Machine Rooms~~.~~ , Machinery Spaces, Control Rooms, and Control Spaces

8.15.5.1

~~*~~

~~Sidewall spray sprinklers shall be installed at the bottom of each elevator hoistway not more than 2 ft (0.61 m) above the floor of the pit.~~

~~8.15.5.2~~

~~The sprinkler required at the bottom of the elevator hoistway by 8.15.5.1 shall not be required for enclosed, noncombustible elevator shafts that do not contain combustible hydraulic fluids.~~

~~8.15.5.3~~

Automatic fire sprinklers shall not be required to be installed in elevator machine rooms, elevator machinery spaces, elevator control rooms, or elevator control spaces,

~~or hoistways~~

of traction elevators installed in accordance with the applicable provisions in NFPA 101 , or the applicable building code, where all of the following conditions are met:

(1) The elevator machine room, machinery space, control room

~~, control~~

(1) or control space,

~~or hoistway~~

(1) of traction elevator is dedicated to elevator equipment only.

(2) The elevator machine room,

~~machine room,~~

(1) machinery space, control room

~~, control~~

(1) or control space,

~~or hoistway~~

(1) of traction

~~elevators are~~

(1) elevator is protected by smoke detectors, or other automatic fire detection, installed in accordance with NFPA 72 .

(2) The elevator machine room, machinery space, control room

~~, control~~

(1) or control space,

~~or hoistway~~

(1) of traction

~~elevators~~

(1) elevator is separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire resistance rating of not less than that specified by the applicable building code.

(2) No materials unrelated to elevator equipment are permitted to be stored in elevator machine

~~rooms~~

(1) room , machinery

~~spaces~~

(1) space , control

~~rooms, control spaces, or hoistways~~

(1) room or control space, of traction

~~elevators~~

(1) elevator .

(2) The elevator machinery is not of the hydraulic type.

8.15.5.

~~4~~

2 *

Automatic sprinklers in elevator machine

~~rooms or~~

room, machinery space, control room, control space, or at the tops of elevator hoistways , shall be of ordinary- or intermediate-temperature rating.

8.15.5.

~~5~~

3 *

Upright, pendent, or sidewall spray sprinklers shall be installed at the top of elevator hoistways.

8.15.5.

~~6~~

4

The sprinkler required at the top of the elevator hoistway by 8.15.5.

~~5~~

3 shall not be required where the hoistway for passenger elevators is noncombustible or limited-combustible and the car enclosure materials meet the requirements of ASME A17.1, Safety Code for Elevators and Escalators .

8.15.5.

~~7 Combustible Suspension in Elevators.~~

4.1

Upright, pendent, or sidewall spray sprinklers shall be installed at the top of traction freight elevator hoistways.

8.15.5.4.2

Upright, pendent, or sidewall spray sprinklers shall be installed at the top of hydraulic freight elevator hoistways.

8.15.5.5 Combustible Suspension Means and Combustible Elevator Equipmet in Elevator Hoistways

8.15.5.

~~7~~

5 .1

Sprinklers shall be installed at the top and bottom of elevator hoistways where the elevators utilize combustible suspension means such as noncircular elastomeric-coated or polyurethane-coated steel belts or where the hoisting machine, elevator motor, elevator controller, or other combustible elevator equipment is installed inside the elevator hoistway .

8.15.5.

~~7~~

5 .2

The

~~sprinklers in the elevator hoistway~~

sprinklers required at the top and bottom of the elevator hoistway by 8.15.5.5.1 shall not be required when the suspension means provide not less than an FT-1 rating when tested to the vertical burn test requirements of UL 62, Flexible Cords and Cables , and UL 1581, Reference Standard for Electrical Wires, Cables, and Flexible Cords , and the top of the elevator hoistawy is protected by smoke detectors, or other automatic fire detection, installed in accordance with NFPA 72 .

Statement of Problem and Substantiation for Public Input

Problems:

1) Inconsistency of terms between NFPA 13 and ASME A17.1. All associated elevator spaces mentioned in NFPA 13 should be consistent throughout with ASME A17.1: Elevator Hoistways, Machine Rooms, Machinery Spaces, Control Rooms, and Control Spaces

2) Per Annex: A.8.15.5.1 "The sprinklers in the pit are intended to protect against fires caused by debris, which can accumulate over time. Ideally, the sprinklers should be located near the side of the pit below the elevator doors, where most debris accumulates. However, care should be taken that the sprinkler location does not interfere with the elevator toe guard, which extends below the face of the door opening". - The intent of the pit sprinklers is to protect against fires caused by debris, but only for Hydraulic elevators, since the potential fire risk is combustible fluids (elevator hydraulic oils) which are existing in hydraulic elevators hoistways and maybe, due to a leak, will accumulate on the elevator pit floor, and may be ignited by burning debris. This potential risk is extremely unlikely (Hydraulic oil fire in elevator hoistway pits) and based on a research I have conducted I could not find any documented fire-data on hydraulic-oil fires in elevator pits. The main reason for not having hydraulic-oil fires in elevator pits, is that even if there is an oil leak (which should be detected, repaired and cleaned shortly by an elevator mechanic), there is a need for a significant amount of fire caused by debris to ignite these hydraulic oils. The likelihood for having all the following conditions at the same time: an oil-leak, significant amount of combustible debris, and an ignition source to start the fire, is slim.

Two more points related to this issue are:

1) Even if the debris-fire starts it will need to generate significant amount of heat to ignite the elevator hydraulic-oils which are generally classified as Class-3-B combustible fluids per NFPA 30 (Most hydraulic elevator oils have flash point between 400-600 Deg F.). This is a very high ignition temperature which is very unlikely to be caused by debris fire.

2) Even, if under a very unlikely condition (which based on my research I have not found any data on such event), there will be an hydraulic-oil fire in the elevator pit, I don't believe that a pit sprinkler spraying water on this oil-fire in the elevator pit, will be very effective. Generally elevator pits are constructed of concrete and even under a very unlikely condition when an hydraulic oil fire may occur in the pit, this fire will be contained to the elevator pit concrete enclosure.

The problems for having pit sprinkler in hydraulic elevator hoistways are:

1) Initial installation cost and ongoing maintenance and repair cost due to the required coordination with elevator personnel for work inside the elevator pit.

2) Potential leaks or sprinkler water damage in the elevator pit due to work and maintenance performed by elevator mechanics in the pit could cause potential damage to the elevator equipment and taking the elevator out of service.

3) The requirements of ASME A17.1 and NFPA 72-2013 to provide Phase I Emergency Recall where pit sprinklers are installed. This requirement for Phase I recall is tied into the Hoistway sprinklers required by NFPA 13 (ASME A17.1 requires Phase I recall anytime sprinklers are installed in the hoistway which includes the pit, and NFPA 72-2013 Requires Phase I emergency recall specifically for pit sprinklers). This is a very costly requirement, since now fire alarm initiating devices must be installed inside the hoistway pit to generate the elevator recall, these initiating devices may be required to be accessible from outside the hoistway for testing and repair purposes, or a water flow switch with no delay on the pit sprinkler pipe may be required to initiate the elevator recall.

From all the reasons above, I think that pit sprinklers should not be required for hydraulic elevators. It seems that this is a very costly protection against a very unlikely potential risk.

Proposed Solution to the problem mentioned above:

1) Revise the NFPA 13 associated sections to eliminate requirements for pit sprinklers for all elevators. (The only cases where sprinklers should be required to be installed inside elevator hoistways by NFPA 13, will be at the top of freight elevators and at top and bottom of elevators having combustible suspension means which do not comply with the limited-combustibility exception of NFPA 13).

2) Delete Annex A.8.15.5.1

3) All freight elevators, regardless if they are traction type or hydraulic type should be provided with sprinklers at the top of their hoistways (currently it is not specifically clear from the term "passenger elevator" since additional knowledge is required to understand that if the elevators are not passenger they are typically freight type)

4) NFPA 13-13 section 8.15.5.7 only addresses "combustible suspension in elevators" regarding the "coated steel belts" However, any Machine Room Less (MRL) elevator, regardless if the suspension means is combustible or not (steel coated belts OR non-combustible steel ropes) has the hoisting machine or the elevator motor and sometimes even the elevator controller itself installed inside the hoistway - So the suspension means is not the only potential combustible elevator component that may be inside the hoistway. Therfore, my proposal is to treat any combustible elevator component (machine, controller, etc.) same way as combustible suspension means which triggers sprinklers protection in the hoistway.

5) Since the intent of current building and fire code is to eliminate the shunt trip function for elevators, to reduce the potential hazard of trapping firefighters in Phse II emergency operation, my proposal is to require a smoke detector (or other automatic fire detection) at the top of each elevator hoistway having combustible elevator equipment in the hoistway. This smoke detector will comply with NFPA 72 and will generate Phase I emergency reacll upon early smoke detection. When the smoke detector will be required and provided at the top of all MRL elevators, the sprinklers at the top of the hoistway will not be required by

NFPA 13 and therfore the shunt trip function will not be required by ASME A17.1 and therfore the risk of trapped firefighters under phase II emergency operation will be eliminated.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department, P.E. Fire Protection Engineer
Submittal Date: Sun Mar 31 16:32:12 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364761932041.xml

Public Input No. 144-NFPA 13-2013 [New Section after 8.15.7.2]

8.15.7.2.1 Restaurant seating areas shall be protected regardless of the combustibility of the exterior projection.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Schwab_PI_144_Supporting.pdf	Supporting material	

Statement of Problem and Substantiation for Public Input

It is common to have restaurant seating located below exterior projections. Many times these areas are equipped with portable propane heaters. Also, the handbook discusses pedestrian walkways typically found on strip shopping malls. A dining area is not transient in nature.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 11:11:12 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364310672457.xml

Public Input No. 38-NFPA 13-2013 [Section No. 8.15.7.2]

Original Hide Markup

8.15.7.2*

Sprinklers shall be permitted to be omitted where the ~~exterior~~ canopies, roofs, porte-cocheres, balconies, decks, or similar projections are constructed with materials that are noncombustible, limited-combustible, or fire retardant–treated wood as defined in NFPA 703, Standard for Fire Retardant-Trested Wood and Fire-Retardant Coatings for Building Material , or where the projections are constructed utilizing a noncombustible frame with an inherently flame resistant fabric overlay as demonstrated by test method 2 in accordance with NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films .

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Brunette.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

As currently written, fabric canopies that are attached to buildings do not meet the construction requirements if the sprinklers are to be omitted in these areas, therefore, it must be assumed that all exterior fabric canopies must be sprinkler protected. If the fabric has been tested in accordance with test method 2 of NFPA 701, it has been demonstrated that flame propagation is not sustained and that there is no degradation to the material's flame resistant properties due to anticipated exposures and based on these findings, it is evident that these projections present very little, if any, hazard and can therefore be added to the listo f permitted sprinkler omissions.

Submitter Information Verification

Submitter Full Name: Christopher Brunette
Organization: [Not Specified]
Submittal Date: Thu Jan 24 13:46:54 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359053214495.xml

Public Input No. 135-NFPA 13-2013 [Section No. 8.15.8.1]

Original Hide Markup

8.15.8.1 Bathrooms.

8.15.8.1.1 * _ _

~~Sprinklers~~

Except as required by 8.15.8.1.2, sprinklers shall not be required in bathrooms that are located within dwelling units

~~of hotels and motels~~

, that do not exceed 55 ft ^{2} (5.1 m ^{2}) in area, and that have walls and ceilings of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

8.15.8.1.2 Sprinklers shall be required in bathrooms where the only means of egress is through the bathroom.

Statement of Problem and Substantiation for Public Input

In certain situations, egress from a bedroom or closet may be through a bathroom (usually a vanity area). In these instances in hotels/motels, this are needs to be protected.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 08:52:32 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364302352780.xml

Public Input No. 158-NFPA 13-2013 [Section No. 8.15.8.1.1]

Original | Hide Markup

8.15.8.1.1*

Sprinklers shall not be required in bathrooms that are located within dwelling units of apartment buildings, hotels and motels, that do not exceed 55 ft^2 (5.1 m^2) in area, and that have walls and ceilings of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

Statement of Problem and Substantiation for Public Input

The proposed revision reinstates the sprinkler exception that was recently deleted in the 2013 edition of NFPA 13 from Section 8.15.8.1.1. The NFPA 13 AUT-SSI Committee accepted a code proposal to delete this apartment dwelling unit sprinkler exception that has been in its standard since the 1991 edition of NFPA 13. The original code proposal, as well as the public comment that the AUT-SSI Committee accepted to delete this bathroom sprinkler exception, provided no technical fire data and substantiation to delete this exception for apartment bathrooms in dwelling units. In addition, the deletion of this exception will have an adverse affect on the retrofitting of existing high-rise apartment buildings with sprinklers.

During the 2010 NFPA 13 code process, the AUT-SSI Committee attempted to delete this same exception, but the NMHC submitted a CAM that was approved by the membership at the Annual Technical Meeting in Chicago that reinstated the exception.

This bathroom exception has been in NFPA Codes (first placed NFPA 101 and then moved to NFPA 13) for over 34 years with no adverse fire protection or life safety issues. The apartment dwelling unit sprinkler exception was original in the 1976 edition of NFPA 101, and was only removed from the NFPA 101 editions after 1991 because of the informal understanding between the NFPA 101 Residential Subcommittee and NFPA 13 Committee that sprinkler contractors would rather have such an exception in NFPA 13 so it would not be missed during the bidding, design and installation process.

Before deleting this exception for apartment dwelling unit bathrooms, NFPA 13 AUT-SSI Committee should had requested from the NFPA Fire Analysis & Research Division a report on fires in bathrooms in apartment building like we did to justify the reinstatement of this exception. The NFPA Fire Data Report, “1582-Area of Origin in Reported Apartment Fires 2004-2008,” dated January 2011, that clearly provides fire data showing that fires in bathrooms in sprinklered apartments building are small in number, with limited property loss, and have not caused any fire deaths. In this report for the latest fire data (2004-2008 annual averages):

1. Table 3, "Apartment fires in Which Sprinklers were Present, by Area of Origin", that include fire data for both NFPA 13 & NFPA 13R systems, bathrooms fires accounted for only 300 (1%) fires out of a total of 18,200/year fires in such buildings, with 0 deaths out of 17 deaths/year, with 7 injuries (2%) out of 399/year, with a total direct property loss of $1 million (2%) out of $71 million/year .
2. Table 20, "Apartment Buildings of Five or More Stories in Which Sprinklers were Present, by Area of Origin", that would be only apartment buildings sprinklered in accordance with NFPA 13 systems (NFPA 13R systems are limited to buildings up to 4 stories in height), bathrooms fires accounted for only 80 (1%) fires out of a total of 6,070/year fires in such buildings, with 0 deaths out of 9 deaths/year, with 1 injury (1%) out of 129/year, with a total direct property loss of $0 out of $11 million/year.
3. Table 22, "Apartment Buildings of Five or More Stories in Which Sprinklers were Present and Flame Damage Spread beyond the Room of Origin, by Area of Origin", that would be only apartment buildings sprinklered in accordance with NFPA 13 systems (NFPA 13R systems are limited to buildings up to 4 stories in height), bathrooms fires accounted for only 1 (1%) fires out of a total of 72/year fires in such buildings, with 0 deaths out of 2 deaths/year, with 0 injuries out of 21/year, with a total direct property loss of $0 out of $3 million/year.

Based on NFPA fire data there is no rational reason or evidence to support the deletion of this reasonable bathroom sprinkler exception for dwelling units in apartment buildings that was in the Codes for over 34 years until it was removed in the 2013 edition of NFPA 13. It is an entirely reasonable request based on the NFPA fire data report to reinstate this bathroom exception for such small bathrooms (less than or equal to 55 sq. ft.) in dwelling units in apartment buildings. We urge the Sprinkler Committee to reconsider it position on this important issue that can have a very adverse affect on retro fitting of existing residential buildings, and reinstate this important bathroom exception back into the Code for apartments.

Submitter Information Verification

Submitter Full Name: Marshall Klein
Organization: Marshall A. Klein & Associates
Affilliation: National Multi-Family Council (NMHC)
Submittal Date: Mon Apr 01 16:33:19 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364848399261.xml

Public Input No. 222-NFPA 13-2013 [Section No. 8.15.8.1.1]

Original Hide Markup

8.15.8.1.1 *

~~Sprinklers~~ Unless the sprinklers are required by 8.15.8.1.2 or 8.15.8.1.3, sprinklers shall not be required in bathrooms that are located within dwelling units - ~~of hotels and motels~~ , that do not exceed 55 ft ^{2} (5.1 m ^{2}) in area, and that have walls and ceilings of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating, including the walls and ceilings behind any shower enclosure or tub.

8.15.8.1.2 Sprinklers shall be required in bathrooms of limited care facilities and nursing homes, as defined in NFPA 101, Life Safety Code.

8.15.8.1.3 Sprinklers shall be required in bathrooms opening directly onto public corridors or exitways.

-

Statement of Problem and Substantiation for Public Input

Reinstates provisions from the 2010 Edition. While the actions are not final at the time of submission, it appears as if NFPA 101, NFPA 5000, and the ICC will all add language to exempt sprinklers from most bathrooms in dwelling units in response to the change made in the 2013 Edition. In addition, one of the primary reasons given for deleting the language was an assumption that the space would be used for purposes other than as a bathroom. There are many instances in which a space may be used for a purpose other than the intended purpose and the Standard cannot be written assuming a potential future change of use that should require modification to the sprinkler system and the modification is not done.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Submittal Date: Wed Apr 24 18:37:28 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366843048302.xml

Public Input No. 11-NFPA 13-2013 [Section No. 8.15.11.2]

Original Hide Markup

8.15.11.2

Hoods or shields installed to ~~protect important electrical~~ protect electrical equipment from sprinkler discharge shall be noncombustible.

Statement of Problem and Substantiation for Public Input

The term important is non enforceable and should be removed. The committee should define exactly what is considered important with annex guidance.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Jan 15 12:53:08 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358272388584.xml

Public Input No. 139-NFPA 13-2013 [Section No. 8.15.11.2]

Original Hide Markup

~~8.15.11.2~~ –

~~Hoods or shields installed to protect important electrical equipment from sprinkler discharge shall be noncombustible.~~

Statement of Problem and Substantiation for Public Input

Delete this section in its entirety. The standard gives no guidance on how to install a hood or shield. If water is such a concern, then the standard should require that the electrical equipment be installed in the appropriate NEMA enclosure.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 10:17:54 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364307474834.xml

Public Input No. 138-NFPA 13-2013 [New Section after 8.15.23]

8.15.24 Revolving Doors

8.15.24.1 Sprinkler protection shall not be required within revolving doors.

Statement of Problem and Substantiation for Public Input

It is impractical to install sprinklers within these areas. The standard should specifically exclude these.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 10:09:26 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364306966994.xml

Public Input No. 585-NFPA 13-2013 [New Section after 8.15.23.3.1]

8.15.24 Sprinkler Protected Glazing.

8.15.24.1 Where sprinklers are used in combination with glazing as an alternative to a fire-rated wall or window assembly, the sprinkler protected assembly shall comply with the following:

(1) Sprinklers shall be listed as specific application window sprinklers.

(2) Sprinklers shall be supplied by a wet-pipe system.

(3) Glazing shall be heat-strengthened or tempered and shall be fixed.

(4) The sprinkler protected assembly shall pass a fire test that demonstrates protection for a duration equivalent to the required fire rating. The sprinkler protected assembly test shall be based the natural gas flow rate curve required to generate a time-temperature relationship as specified in ASTM E119 and UL 263.

(5) Where the rated wall or window assembly is required to be rated for a fire exposure from both sides, sprinklers shall be installed on both sides of the glazing.

(6) The use of sprinkler protected glazing as an alternative to a fire-rated wall assembly shall be limited to non-load bearing walls.

The glazed wall assembly shall not have any horizontal members that would interfere with uniform distribution of water over the surface of the glazing, and there shall be no obstructions between sprinklers and glazing that would obstruct water distribution.

Additional Proposed Changes

	File Name	Description	Approved
Open	Signed_Submittals.PDF	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Sprinkler protected glazing has been permitted in atriums, exterior walls and other applications approved by code officials for more than 20 years. Recent actions in building codes have attempted to diminish the permissible use of these assemblies, and by providing specific provisions in NFPA 13 or NFPA 13R (proposals have been submitted to both standards), questions regarding the lack of appropriate installation requirements would be resolved. The proposed provisions are consistent with limitations currently in place in building codes and established by UL and ICC-ES.

Submitter Information Verification

Submitter Full Name: Jeffrey Shapiro
Organization: International Code Consultants
Affilliation: Tyco Fire Protection Products
Submittal Date: Tue Jun 04 09:32:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370352755546.xml

Public Input No. 460-NFPA 13-2013 [New Section after 8.16]

Above Ground Piping

8.16.x Sprinkler system piping shall not be used as a grounding electrode for electrical systems.

8.16.x.1* The requirement of 10.6.8 shall not preclude the bonding of the sprinkler system piping to the lightning protection grounding system as required by NFPA 780 in those cases where lightning protection is provided for the structure.

A.8.16.x.1 While the use of the sprinkler system piping as the grounding electrode for the building is prohibited, NFPA 70 requires that all metallic piping systems be bonded and grounded to disperse stray electrical currents. Therefore, the sprinkler system piping will be bonded to other metallic systems and grounded, but the electrical system will need an additional ground for its operation.

Statement of Problem and Substantiation for Public Input

There currently isn't a requirement in NFPA 13 that prohibits the attachemnt of electrical system ground wires to a sprinkler system. Chapter 10 has a prohibition on using underground pipe for this purpose, but there are instances where grounding wires have been found attached to the above ground piping. This new text will prohibit this practice.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu May 30 09:43:05 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369921385860.xml

Public Input No. 237-NFPA 13-2013 [New Section after 8.16.1.1.1]

TITLE OF NEW CONTENT: SPRINKLER RISER ROOM LOCATION AND ACCESS

Type your content here . In residentail occupanicies of two or more units a seperate locked room shall be provided for the location of th sprinkler riser and it's components so only the building owner, their representative and the fire department has access.

Statement of Problem and Substantiation for Public Input

With the change requiring fire sprinklers to be installed in residential occupancies, the sprinkler riser, it's valves and controls along with fire alarm panels are being installed in utility rooms of an individual apartment or dwelling unit. This poses several issues. Valves and other components can be tampered with, quick and easy access will not be possible, a clear area around the riser may not be adequate for easy access, regular service and testing will be more difficult and firefighters safety may be jeopardized by having to enter a tenant's apartment at any hour day or night startling the tenant. These components need to have their own locked room to make sure these life safety systems are protected and will work as intended.

Submitter Information Verification

Submitter Full Name: Gary A. Puljas
Organization: Eau Claire Fire Rescue
Affilliation: Eau Claire Fire Inspector
Submittal Date: Mon Apr 29 12:04:38 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367251478072.xml

Public Input No. 290-NFPA 13-2013 [Section No. 8.16.1.1.3.4]

Original | Hide Markup

8.16.1.1.3.4

Check valves shall be installed in a vertical (flow upwards) or horizontal position in accordance with their listing.

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_8_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

A common mistake in design and in installation is to install check valves in a vertical (flow downwards) orientation. Fire protection check valves are not listed in that orientation.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:27:07 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368552427481.xml

Public Input No. 317-NFPA 13-2013 [Section No. 8.16.1.5]

Original | Hide Markup

Relocate this entire section to section 8. 2.3 and renumber the remaining sections as appropriate:

8. 16.1.5 Floor Control Valve Assemblies.

8.16.1.5.1 *

Multistory buildings exceeding two stories in height shall be provided with a floor control valve, check valve, main drain valve, and flow switch for isolation, control, and annunciation of water flow on each floor level.

8.16.1.5.2

The floor control valve, check valve, main drain valve, and flow switch required by 8.16.1.6.3 shall not be required where sprinklers on the top level of a multistory building are supplied by piping on the floor below.

8.16.1.5.3

The floor control valve, check valve, main drain valve, and flow switch required by 8.16.1.6.3 shall not be required where the total area of all floors combined does not exceed the system protection area limitations of 8.2.1 .

Statement of Problem and Substantiation for Public Input

This section was added in the 2013 edition of the standard as section 8.16.1.5 but is more directly associated with section 8.2.1.X and should be relocated there for clarity and consistency

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Tue May 21 00:42:08 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369111328445.xml

Public Input No. 202-NFPA 13-2013 [Section No. 8.16.2.3]

Original Hide Markup

8.16.2.3 Dry Pipe, Preaction and ~~Preaction~~ Antifreeze Systems.
Piping shall be pitched to drain as stated in 8.16.2.3.1
~~through~~
and 8.16.2.3.
~~3~~
2 .
8.16.2.3.1
~~Dry Pipe~~
Systems in Nonrefrigerated Areas.
~~In dry pipe system, branch~~
Branch lines shall be pitched at least 1⁄2 in. per 10 ft (4 mm/m), and mains shall be pitched at least 1⁄4 in. per 10 ft (2 mm/m) in nonrefrigerated areas.
8.16.2.3.2
~~Preaction~~
Systems
~~.In preaction systems, branch lines shall be pitched at least 1⁄2~~
in
~~. per 10 ft (4 mm/m), and mains shall be pitched at least 1⁄4 in. per 10 ft (2 mm/m). 8.16.2.3.3 Dry Pipe and Preaction Systems in~~
Refrigerated Areas.
Branch lines shall be pitched at least 1⁄2 in. per 10 ft (4 mm/m), and mains shall be pitched at least 1⁄2 in. per 10 ft (4 mm/m) in refrigerated areas.

Statement of Problem and Substantiation for Public Input

Add drainage requirements to include antifreeze solutions. It should not make any difference what kind of system is installed, the pitch requirements should be the same. All that matters is whether the system is in a rerigerated area or not.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri Apr 19 14:24:13 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366395853995.xml

Public Input No. 181-NFPA 13-2013 [Section No. 8.16.2.4.2]

Original Hide Markup

8.16.2.4.2

Drain connections for systems supply risers and mains shall be sized as shown in Table 8.16.2.4.2.

Table 8.16.2.4.2 Drain Size

Riser or Main Size (in.)	Size of Drain Connection (in.)
Up to 2	¾ or larger
2 ½ , 3, 3 ½	1 ¼ or larger
4 and larger	2 ~~only~~ or larger

For SI units, 1 in. = 25.4 mm.

Statement of Problem and Substantiation for Public Input

The current text restricts the main drain to no larger than 2". This is a very practical means for performing the forward flow test of the backflow device as required by 8.17.4.6.1 but it needs to be allowed to be a larger diameter.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Mon Apr 15 11:02:47 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366038167116.xml

Public Input No. 223-NFPA 13-2013 [Section No. 8.16.2.4.2]

Original Hide Markup

8.16.2.4.2

Drain connections for systems supply risers and mains shall be sized as shown in Table 8.16.2.4.2.

Table 8.16.2.4.2 Drain Size

Riser or Main Size (in.)	Size of Drain Connection (in.)
Up to 2	¾ ~~or larger~~ to 2 in.
2 ½ , 3, 3 ½	1 ¼ or ~~larger~~ 2 in.
4 and larger	2 only

For SI units, 1 in. = 25.4 mm.

Statement of Problem and Substantiation for Public Input

The largest drain size should be 2 in., the table does not currently reflect this. Drains larger than 2-inch waste water during main drain tests and potentially damage sprinklers when large volumes of water leave the system quickly, creating a vacuum up in the pipes.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 25 09:10:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366895448551.xml

Public Input No. 562-NFPA 13-2013 [Section No. 8.16.2.4.3]

Original Hide Markup

8.16.2.4.3

Where an interior sectional or floor control valve(s) is provided, it shall be provided with a check valve. A drain connection having a minimum size as shown in Table 8.16.2.4.2 to drain that portion of the system controlled by the sectional valve.

Additional Proposed Changes

	File Name	Description	Approved
Open	24_13_Brown.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

A check valve is needed to prevent the unnecessary draining of a floor when maintenance is being performed on a different floor level.

Submitter Information Verification

Submitter Full Name: Phillip Brown
Organization: American Fire Sprinkler Association
Submittal Date: Mon Jun 03 11:38:06 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370273886990.xml

Public Input No. 13-NFPA 13-2013 [Section No. 8.16.4.1.4.2]

Original | Hide Markup

8.16.4.1.4.~~2~~

~~Electric supervision of the heat-tracing system shall provide positive confirmation that the circuit is energized.~~

2*

Where heat tracing systems are used, they shall be supervised by one of the following methods:

(1) Central station, proprietary or remote station signaling service.

(2) Local signaling service that will cause a signal at a constantly attended location.

A.16.4.1.4.2

The standards for the listing of heat tracing should include the supervision of the following items:

(1) Ground Fault

(2) Low System Temperature

(3) Hish System Temperature

(4) Temperature Sensor Failure

(5) Primary Controller Failure

(6) Electrical Continuity

(7) Loss of Incoming Supply Voltage

(8) Engagement of Secondary Controller

Statement of Problem and Substantiation for Public Input

This change is to correlate with NFPA 14. A similar PI has been submitted to NFPA 13R.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Jan 15 15:26:34 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358281594715.xml

Public Input No. 266-NFPA 13-2013 [New Section after 8.17]

8.18 Bonding

8.18.1 Fire sprinkler systems shall be permitted to be used for bonding in accordance with NFPA 70.

8.18.2 Fire sprinkler systems shall not be used for grounding of electrical systems.

Statement of Problem and Substantiation for Public Input

Currently there is some language in Chapter 10 in regards to bonding of underground pipe. Language that applies to the overhead piping of the system needs to be included in the standard.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Thu May 09 09:46:57 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368107217218.xml

Public Input No. 189-NFPA 13-2013 [Section No. 8.17.2.3]

Original | Hide Markup

8.17.2.3* Size.

The size of the pipe for the fire department connection shall be in accordance with one of the following:

(1) Pipe size shall be a minimum of 4 in. (100 mm) for fire engine connections.

(2) Pipe size shall be a minimum of 6 in. (150 mm) for fire boat connections.

(3) For hydraulically calculated systems, the fire department connection shall be permitted to be less than 4 in. (100 mm) ~~and no less than the size of system riser, where serving one system riser~~ as long as it is at least as large as the largest riser served by the connection .

Statement of Problem and Substantiation for Public Input

There is no reason to limit the FDC pipe to the size of the riser for single systems as we assume one fire (see 1.1.2)

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 18 15:52:04 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366314724958.xml

Public Input No. 291-NFPA 13-2013 [New Section after 8.17.2.5.1]

8.17.2.5.1.1 The automatic drip shall be installed in a location that permits inspection and testing as required by NFPA 25 and to reduce the likelihood of freezing.

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_9_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The text for this proposal was copied from 5.9.4.2 of NFPA 24-2013. The same instruction for accessibility and freeze protection for a ball drip valve should also be provided in NFPA 13.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:28:29 EDT 2013

Origin (from sources other than the submitter)

5.9.4.2 of NFPA 24-2013.

/TerraView/Content/13-2013.ditamap/2/C1368552509785.xml

Public Input No. 332-NFPA 13-2013 [Section No. 8.17.3.3]

Original | Hide Markup

8.17.3.3

The required pressure gauges shall be approved ASME B40.1 Grade B Commercial gauges and shall have a maximum limit not less than twice the normal system working pressure at the point where installed.

Statement of Problem and Substantiation for Public Input

With the modificaiton of 8.17.3.3 to allow the use of approved guages no specific guidance is provided as the the accuracy of the gauge required for sprinkler system applications. Consistent with the accuracy of the perviously required Listed guages the use of a ASME B40.1 Grade B Commerical gauge would set a minimum parameter.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy

Organization: Telgian Corporation

Submittal Date: Wed May 22 13:46:39 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369244799440.xml

Public Input No. 512-NFPA 13-2013 [Section No. 8.17.4.1]

Original Hide Markup

8.
~~17~~
16 .
~~4.1 * Main Drain Test Connections. 8.17.4.1.1~~
2.4.6
Main drain test connections shall be provided at locations that will permit flow tests of water supplies and connections.
8.
~~17~~
16 . 2. 4. 6. 1
~~.2~~
They shall be so installed that the valve can be opened wide for a sufficient time to assure a proper test without causing water damage.
8.
~~17~~
16 . 2. 4.
~~1~~
6 .
~~3~~
2
Main drain connections shall be sized in accordance with 8.16.2.4
~~and 8~~
.
~~16.~~
2
~~.6.~~

Statement of Problem and Substantiation for Public Input

Having these reqirements in two places and referring each to the other is confusing for the user of NFPA 13.

Submitter Information Verification

Submitter Full Name: Cecil Bilbo
Organization: Academy of Fire Sprinkler Technology
Submittal Date: Fri May 31 14:34:14 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370025254606.xml

Public Input No. 538-NFPA 13-2013 [Section No. 8.17.4.1.2]

Original | Hide Markup

8.17.4.1.2
~~They~~ Main drain test connections shall be so installed that the valve can be opened wide for a sufficient time to assure a proper test without causing water damage.

Statement of Problem and Substantiation for Public Input

The use of "They" is not appropriate.

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:05:15 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370030715628.xml

Public Input No. 539-NFPA 13-2013 [Section No. 8.17.4.1.3]

Original | Hide Markup

8.17.4.1.3
Main drain test connections shall be sized in accordance with 8.16.2.4 and 8.16.2.6 .

Statement of Problem and Substantiation for Public Input

Adding the word "test" to coincide with 8.17.4.1.

Submitter Information Verification

Submitter Full Name: Russell Leavitt
Organization: Telgian Corporation
Submittal Date: Fri May 31 16:07:17 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370030837053.xml

Public Input No. 190-NFPA 13-2013 [Section No. 8.17.4.6.1]

Original Hide Markup

8.17.4.6.1 * Backflow Prevention Valves.
Means shall be provided downstream of all backflow prevention valves for flow tests at system ~~demand~~ design flow rate .

Statement of Problem and Substantiation for Public Input

System demand refers to flow rate and pressure. This test is only concerned with testing at the proper flow rate. This terminology is consistent with NFPA 25.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 18 15:56:25 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366314985853.xml

Public Input No. 557-NFPA 13-2013 [Section No. 8.17.4.6.1]

Original Hide Markup

8.17.4.6.1 * Backflow Prevention Valves.
Means shall be provided downstream of all backflow prevention valves for flow tests at system demand.

The backflow connection shall be separate from the Fire Department Connection, on the exterior of the building in an area where water flow is acceptable, and labeled "Backflow Test".

Additional Proposed Changes

	File Name	Description	Approved
Open	ASCC_13-30_NFPA_13_Public_Input_from_APPA.ORG_-_Galante_University_of_Iowa_Concept_for_backflow_testing.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The requirement to test backflow prevention devices has been confusing and led to a wide range of test connections and procedures, many of which will cause years of difficulty for those testing devices in the future. This language will standardize the installation and clarify the issue.

Submitter Information Verification

Submitter Full Name: Michael Anthony
Organization: University of Michigan
Affilliation: APPA.ORG - Leadership in Education
Submittal Date: Mon Jun 03 10:53:48 EDT 2013

Origin (from sources other than the submitter)

Louis Galante, Iow a State University

/TerraView/Content/13-2013.ditamap/2/C1370271228412.xml

Public Input No. 67-NFPA 13-2013 [Section No. 9.1.1.3.1.5]

Original | Hide Markup

9.1.1.3.1.5

Systems that are incompatible with the fire sprinkler systems based on vibration, thermal expansion and contraction, or other factors shall not share support structures. Systems like fire water drain line, multilayer piping for water supply, CPVC drain lines and condensate drain lines, Chilled Water Insulated pipes can however be installed alongside the fire lines on a single C or U channel fastened with U bolts. The C-channel shall be supported by two threaded rods adequate to handle the cumulative load with all services in operation fastened to the supporting structure.

Statement of Problem and Substantiation for Public Input

I work for a contracting company and over the years we have come across issues with installation of pipes for different services. I do not know if this item has even been revised or reviewed for that fact that materials used in the construction industry have evolved over the years. Another common issue we face on site is coordination which is paramount to a smooth execution of works. Apart from the integrity of installations having services on a single support (albeit without any major incompatibilities) gives the installation a better aesthetic quality as well. Therefore at this point if time I am merely suggesting this under the assumption that this has not been studied at length or reviewed in the recent past so that if it is indeed possible to run services parallel along with the fire protection on the same support (adequate to support all services) it will greatly ease the work of coordination and also improve the aesthetic quality of installations.

Submitter Information Verification

Submitter Full Name: MOhammed Lodhi
Organization: ETA
Submittal Date: Thu Feb 21 06:50:58 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361447458265.xml

Public Input No. 44-NFPA 13-2013 [Section No. 9.1.1.5]

Original Hide Markup

9.1.1.5 Listing.

9.1.1.5.1

Unless permitted by 9.1.1.5.2 or 9.1.1.5.3, the components of hanger assemblies that directly attach to the pipe or to the building structure shall be listed.

9.1.1.5.2*

~~Mild steel hangers~~ Hangers formed from mild steel rods shall be permitted to be not listed.

9.1.1.5.3 Hanger rods shall be permitted to be not listed.

9.1.1.5.4 *

Fasteners as specified in 9.1.3, 9.1.4, and 9.1.5 shall be permitted to be not listed.

9.1.1.5.~~4~~ 5

Other fasteners shall be permitted as part of a hanger assembly that has been tested, listed, and installed in accordance with the listing requirements.

Statement of Problem and Substantiation for Public Input

1) Section 9.1.1.5.2 is editorially clarified to indicate the rod material is mild steel.
2) A new Section 9.1.1.5.3 is being proposed since hanger rods were not specifically mentioned as a device that does not require Listing.
3) A new Section 9.1.1.6.3 was added since there are no requirements in the standard for the hanger rod. The hanger rod is a critical component in maintaining the integrity of the sprinkler system and minimum requirements for the rod need to be specified. The hanger rod is assumed by designers and contractors to have characteristics that will provide the anticipated performance after installation. The addition of the requirements in this section should provide the guidance for the anticipated performance.
4) Section 6.1.1.4 needs to be revised to reference the new 9.1.1.6.3.

Submitter Information Verification

Submitter Full Name: George Laverick
Organization: UL LLC
Submittal Date: Tue Jan 29 08:53:38 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359467618474.xml

Public Input No. 257-NFPA 13-2013 [New Section after 9.1.1.5.4]

9.1.1.5.5

Wire or cable assemblies used to support pipe hangers from a building structure shall be permitted when tested and listed for the loads indicated in the manufacturer's installation instructions.

A.9.1.1.5.6

Wire or cable assemblies commonly consists of wire or cable and attachment fittings installed at the ends of the wire or cable. The assemblies can be used in place of threaded rod to support pipe hangers and are intended to be attached to structural members or hangers specifically intended for this application that are attached to the structure and where minimum test loads of the complete suspension and hanger assembly meet the requirements of 9.1.1.2.

9.1.1.5.7

<u>Wire or cable assemblies should be designed to support the weight of the water filled pipe (the weight of the pipe as listed in ANSI Schedule 40 and the weight of the water filled pipe as listed in ASME/ANSI B36. 10/19) plus 250lbs (114kg) at each point of support. The spacing between hangers supported by wire assemblies should be not exceed the value given for the type of pipe indicated in Table 9.2.2.1 (a) and Table 9.2.2.1 (b).</u>

9.1.1.5.8

<u>Wire or cable should be manufactured to EN standards BSEN10244 which determines the zinc coating level and BSEN12385 which covers the processing of the material, the wire rope characteristics (such as tensile strength, diameter and how it is tested, or equivalents</u>

Additional Proposed Changes

File Name	Description	Approved
Open nfpa13_-_wire_application.docx	Original Electronically submitted proposal	

Statement of Problem and Substantiation for Public Input

Section 9.1.1.5.5 is a new section that proposes wire/cable assemblies as permitted to hang pipe hangers from a building structure as there is current listing indicated for this type of hanging system
Section 9.1.1.5.6 is added to explain the common wire/cable assemblies. They can be used in place of rod to support hangers from the building structure, as long as they meet the requirements in 9.1.1.2
Section 9.1.1.5.7 Builds upon 5.1.1.6 specifically for wire assemblies showing the listing that the wire assemblies should be designed to support. Referenced are ANSI Schedule 40 for Steel Pipe, ASME.ANSI B36. 10/19 and Tables 9.2.2.1 (a) and (b)

Section 9.1.1.5.8 References the EN standards (and any equivalent standards) that wire rope should be manufactured to. These standards included characteristics such as tensile strength, diameter and testing

Submitter Information Verification

Submitter Full Name: DAN DESLER
Organization: GRIPPLE
Submittal Date: Mon May 06 10:21:34 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367850094105.xml

Public Input No. 25-NFPA 13-2013 [Section No. 9.1.1.5.4]

Original Hide Markup

9.1.1.5.4

Other ~~fasteners~~ fastener types or designs not covered under Sections 9.1.3, 9.1.4, and 9.1.5, shall be permitted as part of a hanger assembly that has been tested, listed, and installed in accordance with the listing requirements.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Laverick_9-1-1-5-4.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The proposal clarifies that common fastener requirements cannot be reduced based on testing a hanger assembly. The current requirements consider fastening into materials having unknown or uncontrolled conditions such as a void or knot area of a wood beam and should not be reduced.

Submitter Information Verification

Submitter Full Name: George Laverick
Organization: UL LLC
Submittal Date: Thu Jan 24 10:51:33 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359042693460.xml

Public Input No. 45-NFPA 13-2013 [Section No. 9.1.1.6]

Original | Hide Markup

9.1.1.6 Component Material.

9.1.1.6.1

Unless permitted by 9.1.1.6.2 or 9.1.1.6.3, hangers and their components shall be ferrous.

9.1.1.6.2

Nonferrous components that have been proven by fire tests to be adequate for the hazard application, that are listed for this purpose, and that are in compliance with the other requirements of this section shall be acceptable.

9.1.1.6.

~~3~~

3 Hanger rods shall be fabricated from steel that meets the requirements of ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength, Grade A or B, or the material, strength and fit requirements of other equivalent standards.

9.1.1.6.4

Holes through solid structural members shall be permitted to serve as hangers for the support of system piping provided such holes are permitted by applicable building codes and the spacing and support provisions for hangers of this standard are satisfied.

Statement of Problem and Substantiation for Public Input

1) Section 9.1.1.5.2 is editorially clarified to indicate the rod material is mild steel.
2) A new Section 9.1.1.5.3 is being proposed since hanger rods were not specifically mentioned as a device that does not require Listing.
3) A new Section 9.1.1.6.3 was added since there are no requirements in the standard for the hanger rod. The hanger rod is a critical component in maintaining the integrity of the sprinkler system and minimum requirements for the rod need to be specified. The hanger rod is assumed by designers and contractors to have characteristics that will provide the anticipated performance after installation. The addition of the requirements in this section should provide the guidance for the anticipated performance.
4) Section 6.1.1.4 needs to be revised to reference the new 9.1.1.6.3.

Submitter Information Verification

Submitter Full Name: George Laverick
Organization: UL LLC
Submittal Date: Tue Jan 29 08:58:01 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359467881644.xml

Public Input No. 224-NFPA 13-2013 [Section No. 9.1.1.7.1]

Original | Hide Markup

9.1.1.7.1

For trapeze hangers, the minimum size of steel angle or pipe span between purlins or joists shall be such that the section modulus required in Table 9.1.1.7.1(a) does not exceed the available section modulus of the trapeze member from Table 9.1.1.7.1(b).

Table 9.1.1.7.1(a) Section Modulus Required for Trapeze Members (in.3)

	bold"Nominal Diameter of Pipe (in.) Being Supported — Schedule 10 Steel											
Span (ft)	1	1.25	1.5	2	2.5	3	3.5	4	5	6	8	10
1.5	0.08	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.15	0.18	0.26	0.34
2.0	0.11	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.20	0.24	0.34	0.45
2.5	0.14	0.14	0.15	0.16	0.18	0.21	0.23	0.25	0.30	0.36	0.50	0.69
3.0	0.16	0.17	0.18	0.19	0.20	0.22	0.24	0.26	0.31	0.36	0.51	0.67
3.5	0.19	0.20	0.21	0.22	0.24	0.26	0.28	0.30	0.36	0.42	0.60	0.78
4.0	0.22	0.22	0.24	0.25	0.27	0.30	0.32	0.34	0.41	0.48	0.68	0.89
4.5	0.24	0.25	0.27	0.28	0.30	0.33	0.36	0.38	0.46	0.54	0.77	1.01
5.0	0.27	0.28	0.30	0.31	0.34	0.37	0.40	0.43	0.51	0.60	0.85	1.12
5.5	0.30	0.31	0.33	0.34	0.37	0.41	0.44	0.47	0.56	0.66	0.94	1.23
6.0	0.33	0.34	0.35	0.38	0.41	0.44	0.48	0.51	0.61	0.71	1.02	1.34
6.5	0.35	0.36	0.38	0.41	0.44	0.48	0.52	0.56	0.66	0.77	1.11	1.45
7.0	0.38	0.39	0.41	0.44	0.47	0.52	0.56	0.60	0.71	0.83	1.19	1.56
7.5	0.41	0.42	0.44	0.47	0.51	0.55	0.60	0.64	0.76	0.89	1.28	1.68
8.0	0.43	0.45	0.47	0.50	0.54	0.59	0.63	0.68	0.82	0.95	1.36	1.79
8.5	0.46	0.48	0.50	0.53	0.58	0.63	0.67	0.73	0.87	1.01	1.45	1.90

9.0	0.49	0.50	0.53	0.56	0.61	0.66	0.71	0.77	0.92	1.07	1.53	2.01
9.5	0.52	0.53	0.56	0.60	0.64	0.70	0.75	0.81	0.97	1.13	1.62	2.12
10.0	0.54	0.56	0.59	0.63	0.68	0.74	0.79	0.85	1.02	1.19	1.70	2.23
10.5	0.57	0.59	0.62	0.66	0.71	0.78	0.83	0.90	1.07	1.25	1.79	2.35
11.0	0.60	0.62	0.65	0.69	0.74	0.81	0.87	0.94	1.12	1.31	1.87	2.46
11.5	0.63	0.64	0.68	0.72	0.78	0.85	0.91	0.98	1.17	1.37	1.96	2.57
12.0	0.65	0.67	0.71	0.75	0.81	0.89	0.95	1.02	1.22	1.43	2.04	2.68
12.5	0.68	0.70	0.74	0.78	0.85	0.92	0.99	1.07	1.27	1.49	2.13	2.79
13.0	0.71	0.73	0.77	0.81	0.88	0.96	1.03	1.11	1.33	1.55	2.21	2.90
13.5	0.73	0.76	0.80	0.85	0.91	1.00	1.07	1.15	1.38	1.61	2.30	3.02
14.0	0.76	0.78	0.83	0.88	0.95	1.03	1.11	1.20	1.43	1.67	2.38	3.13
14.5	0.79	0.81	0.86	0.91	0.98	1.07	1.15	1.24	1.48	1.73	2.47	3.24
15.0	0.82	0.84	0.89	0.94	1.02	1.11	1.19	1.28	1.53	1.79	2.56	3.35
15.5	0.84	0.87	0.92	0.97	1.05	1.14	1.23	1.32	1.58	1.85	2.64	3.46
16.0	0.87	0.90	0.95	1.00	1.08	1.18	1.27	1.37	1.63	1.91	2.73	3.58

	Nominal Diameter of Pipe (in.) Being Supported — Schedule 40 Steel											
bold" Span (ft)	bold" 1	bold" 1.25	bold" 1.5	bold" 2	bold" 2.5	bold" 3	bold" 3.5	bold" 4	bold" 5	bold" 6	bold" 8	bold" 10
1.5	0.08	0.09	0.09	0.1	0.11	0.12	0.14	0.15	0.18	0.22	0.30	0.41
2.0	0.11	0.11	0.12	0.13	0.15	0.16	0.18	0.20	0.24	0.29	0.40	0.55
2.5	0.14	0.14	0.15	0.16	0.17	0.18	0.20	0.21	0.25	0.30	0.43	0.56
3.0	0.16	0.17	0.18	0.20	0.22	0.25	0.27	0.30	0.36	0.43	0.60	0.82
3.5	0.19	0.20	0.21	0.23	0.26	0.29	0.32	0.35	0.42	0.51	0.70	0.96
4.0	0.22	0.23	0.24	0.26	0.29	0.33	0.36	0.40	0.48	0.58	0.80	1.10
4.5	0.25	0.26	0.27	0.29	0.33	0.37	0.41	0.45	0.54	0.65	0.90	1.23
5.0	0.27	0.29	0.30	0.33	0.37	0.41	0.45	0.49	0.60	0.72	1.00	1.37
5.5	0.30	0.31	0.33	0.36	0.40	0.45	0.50	0.54	0.66	0.79	1.10	1.51
6.0	0.33	0.34	0.36	0.39	0.44	0.49	0.54	0.59	0.72	0.87	1.20	1.64
6.5	0.36	0.37	0.40	0.42	0.48	0.54	0.59	0.64	0.78	0.94	1.31	1.78
7.0	0.38	0.40	0.43	0.46	0.52	0.58	0.63	0.69	0.84	1.01	1.41	1.92
7.5	0.41	0.43	0.46	0.49	0.55	0.62	0.68	0.74	0.90	1.08	1.51	2.06
8.0	0.44	0.46	0.49	0.52	0.59	0.66	0.72	0.79	0.96	1.16	1.61	2.19
8.5	0.47	0.48	0.52	0.56	0.63	0.70	0.77	0.84	1.02	1.23	1.71	2.33
9.0	0.49	0.51	0.55	0.59	0.66	0.74	0.81	0.89	1.08	1.30	1.81	2.47
9.5	0.52	0.54	0.58	0.62	0.70	0.78	0.86	0.94	1.14	1.37	1.91	2.60
10.0	0.55	0.57	0.61	0.65	0.74	0.82	0.90	0.99	1.20	1.45	2.01	2.74
10.5	0.58	0.60	0.64	0.69	0.77	0.86	0.95	1.04	1.26	1.52	2.11	2.88
11.0	0.60	0.63	0.67	0.72	0.81	0.91	0.99	1.09	1.32	1.59	2.21	3.01
11.5	0.63	0.66	0.70	0.75	0.85	0.95	1.04	1.14	1.38	1.66	2.31	3.15
12.0	0.66	0.68	0.73	0.78	0.88	0.99	1.08	1.19	1.44	1.73	2.41	3.29
12.5	0.69	0.71	0.76	0.82	0.92	1.03	1.13	1.24	1.5	1.81	2.51	3.43
13.0	0.71	0.74	0.79	0.85	0.96	1.07	1.17	1.29	1.56	1.88	2.61	3.56
13.5	0.74	0.77	0.82	0.88	0.99	1.11	1.22	1.34	1.62	1.95	2.71	3.70
14.0	0.77	0.80	0.85	0.91	1.03	1.15	1.26	1.39	1.68	2.02	2.81	3.84
14.5	0.80	0.83	0.88	0.95	1.07	1.19	1.31	1.43	1.74	2.1	2.91	3.97
15.0	0.82	0.86	0.91	0.98	1.10	1.24	1.35	1.48	1.8	2.17	3.01	4.11
15.5	0.85	0.88	0.94	1.01	1.14	1.28	1.4	1.53	1.86	2.24	3.11	4.25
16.0	0.88	0.91	0.97	1.05	1.18	1.32	1.44	1.58	1.92	2.31	3.21	4.39

Table 9.1.1.7.1(b) Available Section Modulus of Common Trapeze Hangers (in.3)

Pipe				
in.	mm	Modulus (in.^{3})	Angles (in.)	Modulus (in.^{3})
Schedule 10				
1	25	0.12	1 ½ × 1 ½ × 3⁄16	0.10
1 ¼	32	0.19	2 × 2 × ⅛	0.13
1 ½	40	0.26	2 × 1 ½ × 3⁄16	0.18
2	50	0.42	2 × 2 × 3⁄16	0.19
2 ½	65	0.69	2 × 2 × ¼	0.25
3	80	1.04	2 ½ × 1 ½ × 3⁄16	0.28
3 ½	90	1.38	2 ½ × 2 × 3⁄16	0.29
4	100	1.76	2 × 2 × 5⁄16	0.30
5	125	3.03	2 ½ × 2 ½ × 3⁄16	0.30
6	150	4.35	2 × 2 × ⅜	0.35
			2 ½ × 2 ½ × ¼	0.39
			3 × 2 × 3⁄16	0.41
Schedule 40				
1	25	0.13	3 × 2 ½ × 3⁄16	0.43
1 ¼	32	0.23	3 × 3 × 3⁄16	0.44
1 ½	40	0.33	2 ½ × 2 ½ × 5⁄16	0.48
2	50	0.56	3 × 2 × ¼	0.54
2 ½	65	1.06	2 ½ × 2 × ⅜	0.55
3	80	1.72	2 ½ × 2 ½ × ⅜	0.57
3 ½	90	2.39	3 × 3 × ¼	0.58

4	100	3.21	3 × 3 × 5⁄16	0.71
5	125	5.45	2 ½ × 2 ½ × ½	0.72
6	150	8.50	3 ½ × 2 ½ × ¼	0.75
			3 × 2 ½ × ⅜	0.81
			3 × 3 × ⅜	0.83
			3 ½ × 2 ½ × 5⁄16	0.93
			3 × 3 × 7⁄16	0.95
			4 × 4 × ¼	1.05
			3 × 3 × ½	1.07
			4 × 3 × 5⁄16	1.23
			4 × 4 × 5⁄16	1.29
			4 × 3 × ⅜	1.46
			4 ×4 × ⅜	1.52
			5 × 3 ½ × 5⁄16	1.94
			4 × 4 × ½	1.97
			4 × 4 × ⅝	2.40
			4 × 4 × ¾	2.81
			6 × 4 × ⅜	3.32
			6 × 4 × ½	4.33
			6 × 4 × ¾	6.25
			6 × 6 × 1	8.57

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Statement of Problem and Substantiation for Public Input

Table currently does not specify the units of the internal diameter of piping. Adding (in.) will clarify. Note that this is the only change being proposed to this table in this public input. We are just asking to add "(in.)" to the heading above the span in both parts of the table.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Associ
Submittal Date: Thu Apr 25 09:15:20 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366895720307.xml

Public Input No. 225-NFPA 13-2013 [Section No. 9.1.1.7.1]

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9.1.1.7.1

For trapeze hangers, the minimum size of steel angle or pipe span between purlins or joists shall be such that the section modulus required in Table 9.1.1.7.1(a) does not exceed the available section modulus of the trapeze member from Table 9.1.1.7.1(b) .

Table 9.1.1.7.1(a) Section Modulus Required for Trapeze Members (in.3)

	bold"Nominal Diameter of Pipe Being Supported — Schedule 10 Steel											
Span (ft)	1	1.25	1.5	2	2.5	3	3.5	4	5	6	8	10
1.5	0.08	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.15	0.18	0.26	0.34
2.0	0.11	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.20	0.24	0.34	0.45
2.5	0.14	0.14	0.15	0.16	0.18	0.21	0.23	0.25	0.30	0.36	0.50	0.69
3.0	0.16	0.17	0.18	0.19	0.20	0.22	0.24	0.26	0.31	0.36	0.51	0.67
3.5	0.19	0.20	0.21	0.22	0.24	0.26	0.28	0.30	0.36	0.42	0.60	0.78
4.0	0.22	0.22	0.24	0.25	0.27	0.30	0.32	0.34	0.41	0.48	0.68	0.89
4.5	0.24	0.25	0.27	0.28	0.30	0.33	0.36	0.38	0.46	0.54	0.77	1.01
5.0	0.27	0.28	0.30	0.31	0.34	0.37	0.40	0.43	0.51	0.60	0.85	1.12
5.5	0.30	0.31	0.33	0.34	0.37	0.41	0.44	0.47	0.56	0.66	0.94	1.23
6.0	0.33	0.34	0.35	0.38	0.41	0.44	0.48	0.51	0.61	0.71	1.02	1.34
6.5	0.35	0.36	0.38	0.41	0.44	0.48	0.52	0.56	0.66	0.77	1.11	1.45
7.0	0.38	0.39	0.41	0.44	0.47	0.52	0.56	0.60	0.71	0.83	1.19	1.56
7.5	0.41	0.42	0.44	0.47	0.51	0.55	0.60	0.64	0.76	0.89	1.28	1.68
8.0	0.43	0.45	0.47	0.50	0.54	0.59	0.63	0.68	0.82	0.95	1.36	1.79
8.5	0.46	0.48	0.50	0.53	0.58	0.63	0.67	0.73	0.87	1.01	1.45	1.90
9.0	0.49	0.50	0.53	0.56	0.61	0.66	0.71	0.77	0.92	1.07	1.53	2.01

9.5	0.52	0.53	0.56	0.60	0.64	0.70	0.75	0.81	0.97	1.13	1.62	2.12
10.0	0.54	0.56	0.59	0.63	0.68	0.74	0.79	0.85	1.02	1.19	1.70	2.23
10.5	0.57	0.59	0.62	0.66	0.71	0.78	0.83	0.90	1.07	1.25	1.79	2.35
11.0	0.60	0.62	0.65	0.69	0.74	0.81	0.87	0.94	1.12	1.31	1.87	2.46
11.5	0.63	0.64	0.68	0.72	0.78	0.85	0.91	0.98	1.17	1.37	1.96	2.57
12.0	0.65	0.67	0.71	0.75	0.81	0.89	0.95	1.02	1.22	1.43	2.04	2.68
12.5	0.68	0.70	0.74	0.78	0.85	0.92	0.99	1.07	1.27	1.49	2.13	2.79
13.0	0.71	0.73	0.77	0.81	0.88	0.96	1.03	1.11	1.33	1.55	2.21	2.90
13.5	0.73	0.76	0.80	0.85	0.91	1.00	1.07	1.15	1.38	1.61	2.30	3.02
14.0	0.76	0.78	0.83	0.88	0.95	1.03	1.11	1.20	1.43	1.67	2.38	3.13
14.5	0.79	0.81	0.86	0.91	0.98	1.07	1.15	1.24	1.48	1.73	2.47	3.24
15.0	0.82	0.84	0.89	0.94	1.02	1.11	1.19	1.28	1.53	1.79	2.56	3.35
15.5	0.84	0.87	0.92	0.97	1.05	1.14	1.23	1.32	1.58	1.85	2.64	3.46
16.0	0.87	0.90	0.95	1.00	1.08	1.18	1.27	1.37	1.63	1.91	2.73	3.58

	Nominal Diameter of Pipe Being Supported — Schedule 40 Steel											
bold" Span (ft)	bold" 1	bold" 1.25	bold" 1.5	bold" 2	bold" 2.5	bold" 3	bold" 3.5	bold" 4	bold" 5	bold" 6	bold" 8	bold" 10
1.5	0.08	0.09	0.09	0.1	0.11	0.12	0.14	0.15	0.18	0.22	0.30	0.41
2.0	0.11	0.11	0.12	0.13	0.15	0.16	0.18	0.20	0.24	0.29	0.40	0.55
2.5	0.14	0.14	0.15	0.16	0.17	0.18	0.20	0.21	0.25	0.30	0.43	0.56
3.0	0.16	0.17	0.18	0.20	0.22	0.25	0.27	0.30	0.36	0.43	0.60	0.82
3.5	0.19	0.20	0.21	0.23	0.26	0.29	0.32	0.35	0.42	0.51	0.70	0.96
4.0	0.22	0.23	0.24	0.26	0.29	0.33	0.36	0.40	0.48	0.58	0.80	1.10
4.5	0.25	0.26	0.27	0.29	0.33	0.37	0.41	0.45	0.54	0.65	0.90	1.23
5.0	0.27	0.29	0.30	0.33	0.37	0.41	0.45	0.49	0.60	0.72	1.00	1.37
5.5	0.30	0.31	0.33	0.36	0.40	0.45	0.50	0.54	0.66	0.79	1.10	1.51
6.0	0.33	0.34	0.36	0.39	0.44	0.49	0.54	0.59	0.72	0.87	1.20	1.64
6.5	0.36	0.37	0.40	0.42	0.48	0.54	0.59	0.64	0.78	0.94	1.31	1.78
7.0	0.38	0.40	0.43	0.46	0.52	0.58	0.63	0.69	0.84	1.01	1.41	1.92
7.5	0.41	0.43	0.46	0.49	0.55	0.62	0.68	0.74	0.90	1.08	1.51	2.06
8.0	0.44	0.46	0.49	0.52	0.59	0.66	0.72	0.79	0.96	1.16	1.61	2.19
8.5	0.47	0.48	0.52	0.56	0.63	0.70	0.77	0.84	1.02	1.23	1.71	2.33
9.0	0.49	0.51	0.55	0.59	0.66	0.74	0.81	0.89	1.08	1.30	1.81	2.47
9.5	0.52	0.54	0.58	0.62	0.70	0.78	0.86	0.94	1.14	1.37	1.91	2.60
10.0	0.55	0.57	0.61	0.65	0.74	0.82	0.90	0.99	1.20	1.45	2.01	2.74
10.5	0.58	0.60	0.64	0.69	0.77	0.86	0.95	1.04	1.26	1.52	2.11	2.88
11.0	0.60	0.63	0.67	0.72	0.81	0.91	0.99	1.09	1.32	1.59	2.21	3.01
11.5	0.63	0.66	0.70	0.75	0.85	0.95	1.04	1.14	1.38	1.66	2.31	3.15
12.0	0.66	0.68	0.73	0.78	0.88	0.99	1.08	1.19	1.44	1.73	2.41	3.29
12.5	0.69	0.71	0.76	0.82	0.92	1.03	1.13	1.24	1.5	1.81	2.51	3.43
13.0	0.71	0.74	0.79	0.85	0.96	1.07	1.17	1.29	1.56	1.88	2.61	3.56
13.5	0.74	0.77	0.82	0.88	0.99	1.11	1.22	1.34	1.62	1.95	2.71	3.70
14.0	0.77	0.80	0.85	0.91	1.03	1.15	1.26	1.39	1.68	2.02	2.81	3.84
14.5	0.80	0.83	0.88	0.95	1.07	1.19	1.31	1.43	1.74	2.1	2.91	3.97
15.0	0.82	0.86	0.91	0.98	1.10	1.24	1.35	1.48	1.8	2.17	3.01	4.11
15.5	0.85	0.88	0.94	1.01	1.14	1.28	1.4	1.53	1.86	2.24	3.11	4.25
16.0	0.88	0.91	0.97	1.05	1.18	1.32	1.44	1.58	1.92	2.31	3.21	4.39

Note: The table is based on a maximum bending stress of 15 ksi and a midspan concentrated load from 15 ft (4.6 m) of water-filled pipe, plus 250 lb (114 kg).

Table 9.1.1.7.1(b) Available Section Modulus of Common Trapeze Hangers (in.3)

Pipe				
in.	mm	Modulus (in.^{3})	Angles (in.)	Modulus (in.^{3})
Schedule 10				
1	25	0.12	1 1/2 × 1 1/2 × 3/16	0.10
1 1/4	32	0.19	2 × 2 × 1/8	0.13
1 1/2	40	0.26	2 × 1 1/2 × 3/16	0.18
2	50	0.42	2 × 2 × 3/16	0.19
2 1/2	65	0.69	2 × 2 × 1/4	0.25
3	80	1.04	2 1/2 × 1 1/2 × 3/16	0.28
3 1/2	90	1.38	2 1/2 × 2 × 3/16	0.29
4	100	1.76	2 × 2 × 5/16	0.30
5	125	3.03	2 1/2 × 2 1/2 × 3/16	0.30
6	150	4.35	2 × 2 × 3/8	0.35
			2 1/2 × 2 1/2 × 1/4	0.39
			3 × 2 × 3/16	0.41
Schedule 40				
1	25	0.13	3 × 2 1/2 × 3/16	0.43
1 1/4	32	0.23	3 × 3 × 3/16	0.44
1 1/2	40	0.33	2 1/2 × 2 1/2 × 5/16	0.48
2	50	0.56	3 × 2 × 1/4	0.54
2 1/2	65	1.06	2 1/2 × 2 × 3/8	0.55

3	80	1.72	2 1/2 × 2 1/2 × 3/8	0.57
3 1/2	90	2.39	3 × 3 × 1/4	0.58
4	100	3.21	3 × 3 × 5/16	0.71
5	125	5.45	2 1/2 × 2 1/2 × 1/2	0.72
6	150	8.50	3 1/2 × 2 1/2 × 1/4	0.75
			3 × 2 1/2 × 3/8	0.81
			3 × 3 × 3/8	0.83
			3 1/2 × 2 1/2 × 5/16	0.93
			3 × 3 × 7/16	0.95
			4 × 4 × 1/4	1.05
			3 × 3 × 1/2	1.07
			4 × 3 × 5/16	1.23
			4 × 4 × 5/16	1.29
			4 × 3 × 3/8	1.46
			4 ×4 × 3/8	1.52
			5 × 3 1/2 × 5/16	1.94
			4 × 4 × 1/2	1.97
			4 × 4 × 5/8	2.40
			4 × 4 × 3/4	2.81
			6 × 4 × 3/8	3.32
			6 × 4 × 1/2	4.33
			6 × 4 × 3/4	6.25
			6 × 6 × 1	8.57

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Statement of Problem and Substantiation for Public Input

This public input only seeks to reinstate the important second footnote from the 2010 edition of NFPA 13 that was dropped by accident when producing the 2013 edition. This footnote is necessary to understand the assumptions that went into develoiping the table.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 25 09:19:49 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366895989375.xml

Public Input No. 434-NFPA 13-2013 [Section No. 9.1.1.7.1]

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9.1.1.7.1
For trapeze hangers, the minimum size of steel angle or pipe span between purlins or joists shall be such that the section modulus required in Table 9.1.1.7.1(a) does not exceed the available section modulus of the trapeze member from Table 9.1.1.7.1(b).

Table 9.1.1.7.1(a) Section Modulus Required for Trapeze Members (in.3)

	bold"Nominal Diameter of Pipe Being Supported — Schedule 10 Steel											
Span (ft)	1	1.25	1.5	2	2.5	3	3.5	4	5	6	8	10
1.5	0.08	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.15	0.18	0.26	0.34
2.0	0.11	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.20	0.24	0.34	0.45
2.5	0.14	0.14	0.15	0.16	0.18	0.21	0.23	0.25	0.30	0.36	0.50	0.69
3.0	0.16	0.17	0.18	0.19	0.20	0.22	0.24	0.26	0.31	0.36	0.51	0.67
3.5	0.19	0.20	0.21	0.22	0.24	0.26	0.28	0.30	0.36	0.42	0.60	0.78
4.0	0.22	0.22	0.24	0.25	0.27	0.30	0.32	0.34	0.41	0.48	0.68	0.89
4.5	0.24	0.25	0.27	0.28	0.30	0.33	0.36	0.38	0.46	0.54	0.77	1.01
5.0	0.27	0.28	0.30	0.31	0.34	0.37	0.40	0.43	0.51	0.60	0.85	1.12
5.5	0.30	0.31	0.33	0.34	0.37	0.41	0.44	0.47	0.56	0.66	0.94	1.23
6.0	0.33	0.34	0.35	0.38	0.41	0.44	0.48	0.51	0.61	0.71	1.02	1.34
6.5	0.35	0.36	0.38	0.41	0.44	0.48	0.52	0.56	0.66	0.77	1.11	1.45
7.0	0.38	0.39	0.41	0.44	0.47	0.52	0.56	0.60	0.71	0.83	1.19	1.56
7.5	0.41	0.42	0.44	0.47	0.51	0.55	0.60	0.64	0.76	0.89	1.28	1.68

8.0	0.43	0.45	0.47	0.50	0.54	0.59	0.63	0.68	0.82	0.95	1.36	1.79
8.5	0.46	0.48	0.50	0.53	0.58	0.63	0.67	0.73	0.87	1.01	1.45	1.90
9.0	0.49	0.50	0.53	0.56	0.61	0.66	0.71	0.77	0.92	1.07	1.53	2.01
9.5	0.52	0.53	0.56	0.60	0.64	0.70	0.75	0.81	0.97	1.13	1.62	2.12
10.0	0.54	0.56	0.59	0.63	0.68	0.74	0.79	0.85	1.02	1.19	1.70	2.23
10.5	0.57	0.59	0.62	0.66	0.71	0.78	0.83	0.90	1.07	1.25	1.79	2.35
11.0	0.60	0.62	0.65	0.69	0.74	0.81	0.87	0.94	1.12	1.31	1.87	2.46
11.5	0.63	0.64	0.68	0.72	0.78	0.85	0.91	0.98	1.17	1.37	1.96	2.57
12.0	0.65	0.67	0.71	0.75	0.81	0.89	0.95	1.02	1.22	1.43	2.04	2.68
12.5	0.68	0.70	0.74	0.78	0.85	0.92	0.99	1.07	1.27	1.49	2.13	2.79
13.0	0.71	0.73	0.77	0.81	0.88	0.96	1.03	1.11	1.33	1.55	2.21	2.90
13.5	0.73	0.76	0.80	0.85	0.91	1.00	1.07	1.15	1.38	1.61	2.30	3.02
14.0	0.76	0.78	0.83	0.88	0.95	1.03	1.11	1.20	1.43	1.67	2.38	3.13
14.5	0.79	0.81	0.86	0.91	0.98	1.07	1.15	1.24	1.48	1.73	2.47	3.24
15.0	0.82	0.84	0.89	0.94	1.02	1.11	1.19	1.28	1.53	1.79	2.56	3.35
15.5	0.84	0.87	0.92	0.97	1.05	1.14	1.23	1.32	1.58	1.85	2.64	3.46
16.0	0.87	0.90	0.95	1.00	1.08	1.18	1.27	1.37	1.63	1.91	2.73	3.58

Nominal Diameter of Pipe Being Supported — Schedule 40 Steel

bold" Span (ft)	bold" 1	bold" 1.25	bold" 1.5	bold" 2	bold" 2.5	bold" 3	bold" 3.5	bold" 4	bold" 5	bold" 6	bold" 8	bold" 10
1.5	0.08	0.09	0.09	0.1	0.11	0.12	0.14	0.15	0.18	0.22	0.30	0.41
2.0	0.11	0.11	0.12	0.13	0.15	0.16	0.18	0.20	0.24	0.29	0.40	0.55
2.5	0.14	0.14	0.15	0.16	0.17	0.18	0.20	0.21	0.25	0.30	0.43	0.56
3.0	0.16	0.17	0.18	0.20	0.22	0.25	0.27	0.30	0.36	0.43	0.60	0.82
3.5	0.19	0.20	0.21	0.23	0.26	0.29	0.32	0.35	0.42	0.51	0.70	0.96
4.0	0.22	0.23	0.24	0.26	0.29	0.33	0.36	0.40	0.48	0.58	0.80	1.10
4.5	0.25	0.26	0.27	0.29	0.33	0.37	0.41	0.45	0.54	0.65	0.90	1.23
5.0	0.27	0.29	0.30	0.33	0.37	0.41	0.45	0.49	0.60	0.72	1.00	1.37
5.5	0.30	0.31	0.33	0.36	0.40	0.45	0.50	0.54	0.66	0.79	1.10	1.51
6.0	0.33	0.34	0.36	0.39	0.44	0.49	0.54	0.59	0.72	0.87	1.20	1.64
6.5	0.36	0.37	0.40	0.42	0.48	0.54	0.59	0.64	0.78	0.94	1.31	1.78
7.0	0.38	0.40	0.43	0.46	0.52	0.58	0.63	0.69	0.84	1.01	1.41	1.92
7.5	0.41	0.43	0.46	0.49	0.55	0.62	0.68	0.74	0.90	1.08	1.51	2.06
8.0	0.44	0.46	0.49	0.52	0.59	0.66	0.72	0.79	0.96	1.16	1.61	2.19
8.5	0.47	0.48	0.52	0.56	0.63	0.70	0.77	0.84	1.02	1.23	1.71	2.33
9.0	0.49	0.51	0.55	0.59	0.66	0.74	0.81	0.89	1.08	1.30	1.81	2.47
9.5	0.52	0.54	0.58	0.62	0.70	0.78	0.86	0.94	1.14	1.37	1.91	2.60
10.0	0.55	0.57	0.61	0.65	0.74	0.82	0.90	0.99	1.20	1.45	2.01	2.74
10.5	0.58	0.60	0.64	0.69	0.77	0.86	0.95	1.04	1.26	1.52	2.11	2.88
11.0	0.60	0.63	0.67	0.72	0.81	0.91	0.99	1.09	1.32	1.59	2.21	3.01
11.5	0.63	0.66	0.70	0.75	0.85	0.95	1.04	1.14	1.38	1.66	2.31	3.15
12.0	0.66	0.68	0.73	0.78	0.88	0.99	1.08	1.19	1.44	1.73	2.41	3.29
12.5	0.69	0.71	0.76	0.82	0.92	1.03	1.13	1.24	1.5	1.81	2.51	3.43
13.0	0.71	0.74	0.79	0.85	0.96	1.07	1.17	1.29	1.56	1.88	2.61	3.56
13.5	0.74	0.77	0.82	0.88	0.99	1.11	1.22	1.34	1.62	1.95	2.71	3.70
14.0	0.77	0.80	0.85	0.91	1.03	1.15	1.26	1.39	1.68	2.02	2.81	3.84
14.5	0.80	0.83	0.88	0.95	1.07	1.19	1.31	1.43	1.74	2.1	2.91	3.97
15.0	0.82	0.86	0.91	0.98	1.10	1.24	1.35	1.48	1.8	2.17	3.01	4.11
15.5	0.85	0.88	0.94	1.01	1.14	1.28	1.4	1.53	1.86	2.24	3.11	4.25
16.0	0.88	0.91	0.97	1.05	1.18	1.32	1.44	1.58	1.92	2.31	3.21	4.39

For SI units, 1 in^3 = 16.4 cm^3

Table 9.1.1.7.1(b) Available Section Modulus of Common Trapeze Hangers (in.3)

Pipe				
in.	mm	Modulus (in.^{3})	Angles (in.)	Modulus (in.^{3})
Schedule 10				
1	25	0.12	1 ½ × 1 ½ × 3/16	0.10
1 ¼	32	0.19	2 × 2 × 1/8	0.13
1 ½	40	0.26	2 × 1 ½ × 3/16	0.18
2	50	0.42	2 × 2 × 3/16	0.19
2 ½	65	0.69	2 × 2 × ¼	0.25
3	80	1.04	2 ½ × 1 ½ × 3/16	0.28
3 ½	90	1.38	2 ½ × 2 × 3/16	0.29
4	100	1.76	2 × 2 × 5/16	0.30
5	125	3.03	2 ½ × 2 ½ × 3/16	0.30
6	150	4.35	2 × 2 × 3/8	0.35
			2 ½ × 2 ½ × ¼	0.39
			3 × 2 × 3/16	0.41
Schedule 40				
1	25	0.13	3 × 2 ½ × 3/16	0.43
1 ¼	32	0.23	3 × 3 × 3/16	0.44
1 ½	40	0.33	2 ½ × 2 ½ × 5/16	0.48
2	50	0.56	3 × 2 × ¼	0.54

2 ½	65	1.06	2 ½ × 2 × ⅜	0.55
3	80	1.72	2 ½ × 2 ½ × ⅜	0.57
3 ½	90	2.39	3 × 3 × ¼	0.58
4	100	3.21	3 × 3 × 5⁄16	0.71
5	125	5.45	2 ½ × 2 ½ × ½	0.72
6	150	8.50	3 ½ × 2 ½ × ¼	0.75
			3 × 2 ½ × ⅜	0.81
			3 × 3 × ⅜	0.83
			3 ½ × 2 ½ × 5⁄16	0.93
			3 × 3 × 7⁄16	0.95
			4 × 4 × ¼	1.05
			3 × 3 × ½	1.07
			4 × 3 × 5⁄16	1.23
			4 × 4 × 5⁄16	1.29
			4 × 3 × ⅜	1.46
			4 ×4 × ⅜	1.52
			5 × 3 ½ × 5⁄16	1.94
			4 × 4 × ½	1.97
			4 × 4 × ⅝	2.40
			4 × 4 × ¾	2.81
			6 × 4 × ⅜	3.32
			6 × 4 × ½	4.33
			6 × 4 × ¾	6.25
			6 × 6 × 1	8.57

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Statement of Problem and Substantiation for Public Input

This public input only seeks to reinstate the important SI conversion that was dropped by accident when producing the 2013 edition. This footnote is necessary to convert the values in the table to SI units.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Tue May 28 15:50:53 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369770653079.xml

Public Input No. 521-NFPA 13-2013 [Section No. 9.1.1.7.7]

Original | Hide Markup

9.1.1.7.7
Holes for bolts or rod shall not exceed 1⁄16 in. (1.6 mm) greater than the diameter of the bolt.

Statement of Problem and Substantiation for Public Input

The referenced term bolt also applies to all thread rod used commonly to support fire sprinkler piping. Slots in the trapeze member may weaken the member. Like fire to a structural member, the size of the slot permitted? - "it depends" due to the number of variables. The permitted slot size based upon the structural member has not been verified prior the submission date of this public input.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 15:01:05 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370026865291.xml

Public Input No. 525-NFPA 13-2013 [Section No. 9.1.3.10.2]

Original | Hide Markup

9.1.3.10.2
Holes for bolts or rod shall not exceed 1⁄16 in. (1.6 mm) greater than the diameter of the bolt.

Statement of Problem and Substantiation for Public Input

The referenced term bolt also applies to all thread rod used commonly to support fire sprinkler piping especially through thick beams.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 521-NFPA 13-2013 [Section No. 9.1.1.7.7]	Bolt and rod are one in the same.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 15:08:01 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370027281517.xml

Public Input No. 526-NFPA 13-2013 [Section No. 9.1.4.5.2]

Original | Hide Markup

9.1.4.5.2
Holes for bolts or rod shall not exceed 1⁄16 in. (1.6 mm) greater than the diameter of the bolt.

Statement of Problem and Substantiation for Public Input

The referenced term bolt also applies to all thread rod used commonly to support fire sprinkler piping.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 521-NFPA 13-2013 [Section No. 9.1.1.7.7]	Bolt and rod are one in the same.
Open	Public Input No. 525-NFPA 13-2013 [Section No. 9.1.3.10.2]	Bolt and rod are one in the same.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 15:10:37 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370027437609.xml

Public Input No. 527-NFPA 13-2013 [Section No. 9.1.5.3.4]

Original | Hide Markup

9.1.5.3.4
Holes for bolts or rod shall not exceed 1⁄16 in. (1.6 mm) greater than the diameter of the bolt.

Statement of Problem and Substantiation for Public Input

The referenced term bolt also applies to all thread rod used commonly to support fire sprinkler piping especially through thick beams.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 521-NFPA 13-2013 [Section No. 9.1.1.7.7]	Bolt and rod are one in the same
Open	Public Input No. 525-NFPA 13-2013 [Section No. 9.1.3.10.2]	Bolt and rod are one in the same
Open	Public Input No. 526-NFPA 13-2013 [Section No. 9.1.4.5.2]	Bolt and rod are one in the same

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 15:12:30 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370027550838.xml

Public Input No. 206-NFPA 13-2013 [Section No. 9.1.5.6.1]

Original | Hide Markup

9.1.5.6.1

Screws in the side of a timber or joist shall be not less than 2 ½ in. (64 mm) from the lower edge where supporting ~~branch lines and~~ pipe up to and including 2 1/2-inch diameters and not less than 3 in. (76 mm) where supporting ~~main lines~~ pipe greater then 2 1/2- diameter .

Statement of Problem and Substantiation for Public Input

These requirements should be on the loads the screw is carrying and not the type of pipe, there are buildings with small mains and others with large branch lines,the diameter is a better gauge for this requirement.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri Apr 19 15:11:10 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366398670179.xml

Public Input No. 221-NFPA 13-2013 [Section No. 9.1.5.7.2]

Original | Hide Markup

9.1.5.7.2

The minimum plank thickness and the minimum width of the lower face of beams or joists in which coach screw rods are used shall be not less than that specified in Table 9.1.5.7.2 and shown in Figure 9 . 1.5.7.2.

Table 9.1.5.7.2 Minimum Plank Thicknesses and Beam or Joist Widths

Pipe Size		Nominal Plank Thickness		Nominal Width of Beam or Joist Face	
in.	mm	in.	mm	in.	mm
Up to and including 2	50	3	76	2	50
2 1/2	65	4	102	2	50
3	80				
3 1/2	90				
4	100	4	102	3	76

Additional Proposed Changes

	File Name	Description	Approved
Open	9-1-5-7-2.tiff	This is a new Figure 9.1.5.7.2	

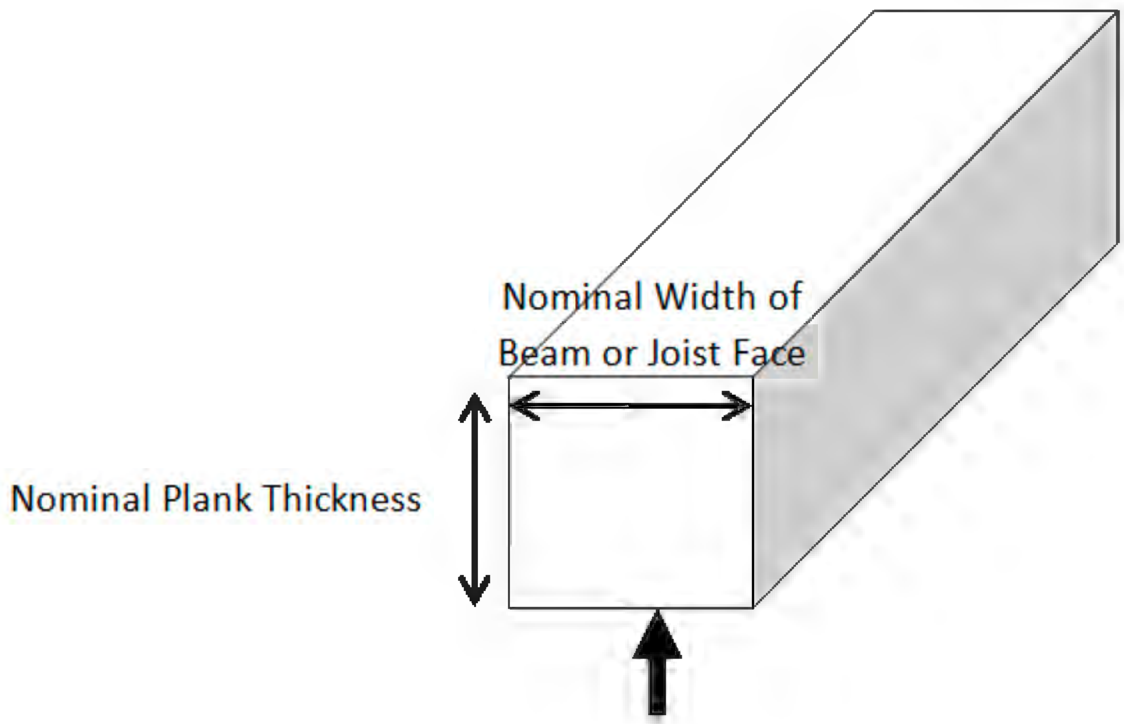
Statement of Problem and Substantiation for Public Input

A figure is extremely helpful in describing which dimension of the beam is the nominal width of the joist face and which is the plank thickness.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed Apr 24 09:54:10 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366811650605.xml


Nominal Width of
Beam or Joist Face
Nominal Plank Thickness

Public Input No. 519-NFPA 13-2013 [New Section after 9.2.1.1]

Add new text:

9.2.1.1.3 Sprinkler piping shall not be supported from ceilings of gypsum or other similar soft material.

Statement of Problem and Substantiation for Public Input

Explicit guidance that it is not acceptable to support sprinkler piping from gypsum using toggle hangers. Piping is found to be supported from gypsum.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 14:55:21 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370026521434.xml

Public Input No. 226-NFPA 13-2013 [Section No. 9.2.1.3.1]

Original | Hide Markup

9.2.1.3.1
~~Unless the requirements of~~ ~~9.2.1.3.3~~ ~~apply, sprinkler~~ Sprinkler piping shall be substantially supported from the building structure, which must support the added load of the water-filled pipe plus a minimum of 250 lb (114 kg) applied at the point of hanging, except where permitted by 9.2.1.1.2, 9.2.1.3.3, and 9.2.1.4.1.

Statement of Problem and Substantiation for Public Input

The preface "Unless the requirements of 9.2.1.3.1 apply" is not necessary as this provision is stated at the end of the section.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 25 09:29:54 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366896594841.xml

Public Input No. 430-NFPA 13-2013 [Section No. 9.2.2.2]

Original | Hide Markup

9.2.2.2

The maximum distance between hangers for listed ~~nonmetallic pipe shall be modified~~ pipe not complying with Table 9.2.2.1 (a) and Table 9.2.2.1 (b) shall be as specified in the individual product listings.

Statement of Problem and Substantiation for Public Input

Any listed pipe, where investigated, should be able to modify the hanger spacing as necessary to meet the listing requirements. Listed piping that does not comply with table 9.2.2.1(a) or table 9.2.2.1 (b) for maximum distance between hangers should be allowed to adhere with a maximum distance between hangers as investigated and specified on the product listing.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S committee
Submittal Date:	Tue May 28 11:31:44 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369755104546.xml

Public Input No. 53-NFPA 13-2013 [New Section after 9.2.3.4.4]

9.2.3.4.4 Whent the length of a vertical sprinkler drop supplying a pendent sprinkler is greater than 6 feet in length and connected by a unsupported armover in accordance with 9.2.3.5 the unsupported armover regardless of length shall be equipped with a hanger when the vertical drop exceeds 6 feet in length.

Additional Proposed Changes

	File Name	Description	Approved
Open	DOC020613-02062013092531.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

It has been noted that onsite inspections, unsupported armovers are serving sprinkler drops to ceilings below. The unsupported length can cause failure in seismic conditions. It is also a requirements of NFPA 13 section 9.2.1.3.3.3 to require support to flexible sprinkler hose fitting. It would be the intent of this requirement to prevent the unnecessary damage to sprinkler drops connected to a armover that is unsupported by the structure. This will prevent unnecessary structure damage by water and shutdown of a building and life safety system. This will also address systems of a static PSI less than 100 PSI per 9.2.3.4.4 and 9.2.3.5.2.

Submitter Information Verification

Submitter Full Name:	Steve Mosiurchak
Organization:	Sonoma County Fire and Emergency Services
Affilliation:	Sonoma County Fire
Submittal Date:	Wed Feb 06 09:31:22 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1360161082474.xml

Public Input No. 529-NFPA 13-2013 [Section No. 9.2.3.4.4.4]

Original Hide Markup

9.2.3.4.4.4

~~The~~ Except where flexible sprinkler hose fittings that are attached to the ceiling structure in accordance with their Listing are used, the hanger closest to the sprinkler shall be of a type that prevents upward movement of the pipe.

Statement of Problem and Substantiation for Public Input

When flexible hoses are installed in accordance with the Listing, the sprinkler is fixed to the ceiling, and no additional means are necessary to prevent upward thrust.

Submitter Information Verification

Submitter Full Name:	Peter Thomas
Organization:	Victaulic Company
Submittal Date:	Fri May 31 15:18:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370027921729.xml

Public Input No. 356-NFPA 13-2013 [New Section after 9.2.3.5.2.2]

9.2.3.5.2.3

Where the armover exceeds the maximum unspupported length of 9.2.3.5.2.1, a hanger shall be installed so that the distance from the end sprinkler or drop nipple to the hanger is not greater than 12 inches for steel or 6 inches for copper.

Statement of Problem and Substantiation for Public Input

For a armover exceeding 12 inches in length, section 9.2.3.5.2.1 requires a hanger, but it does not require the hanger to be within 12 inches of the end. Without this new section, the standard allows unsupported armovers in excess of 12 inches.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E& S Committee
Submittal Date:	Wed May 22 16:40:08 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369255208890.xml

Public Input No. 532-NFPA 13-2013 [Section No. 9.2.3.5.2.2]

Original Hide Markup

9.2.3.5.2.2

~~The~~ Except where flexible sprinkler hose fittings that are attached to the ceiling structure in accordance with their Listing are used, the hanger closest to the sprinkler shall be of a type that prevents upward movement of the pipe.

Statement of Problem and Substantiation for Public Input

When flexible hoses are installed in accordance with the Listing, the sprinkler is fixed to the ceiling, and no additional means are necessary to prevent upward thrust.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Fri May 31 15:30:54 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370028654814.xml

Public Input No. 381-NFPA 13-2013 [Section No. 9.2.4.1]

Original Hide Markup

9.2.4.1

Unless the requirements of 9.2.4.2 , through 9.2.4. ~~3,~~ ~~9.2.4.4~~ ~~,~~ ~~9.2.4.5~~ ~~, or 9.2.4.~~ 6 are met, hangers for mains shall be in accordance with 9.2.2 , between each branch line, or on each section of pipe, whichever is the lesser dimension.

Statement of Problem and Substantiation for Public Input

It is cleaner and more user friendly to say "through" than it is to make a long list.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 15:01:39 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369335699593.xml

Public Input No. 263-NFPA 13-2013 [Section No. 9.2.6]

Original | Hide Markup

9.2.6 * Pipe Stands.

9.2.6.1

Pipe stands shall be sized to support a minimum of five times the weight of the water-filled pipe plus 250 lb (114 kg).

9.2.6.2

The pipe stand base shall be secured by an approved method.

9.2.6.3

Where pipe stands are utilized, they shall be approved.

9.2.6.4 Pipe stands used to support piping shall be in accordance with Table 9.2.6.4 to determine maximum heights for pipe stands supporting various diameters of piping.

9.2.6.5 Pipe stands shall be constructed of schedule 40 pipe and a threaded malleable iron or welded steel flange base.

9.2.6.6 Pipe stands differing from the requirements of 9.2.6 shall be allowed where they are specifically listed for such use and installed in accordance with their listing.

Additional Proposed Changes

	File Name	Description	Approved
Open	Pipe_Stand_Table_-_13_-_2016_edition.docx	Table 9.2.6.4	

Statement of Problem and Substantiation for Public Input

NFPA 13 currently lacks sufficient information for guiding system designers or installers in the proper sizing of pipe stands. This information has been contained in NFPA 15, and has been successfully utilized in fixed spray systems without any know issues for years. The pipe stand sizing and height limitations contained in this proposed change come directly from NFPA 15, 2012 edition. Since fixed spray systems are often subjected to higher reaction loads than typical NFPA 13 systems, the proposed pipe stand sizing requirements should be more than adequate. Including this additional information in the pipe stand section of Chapter 9 of NFPA 13 would potentially save a designer or installer from having to engage an engineer just to size a pipe stand to support a header, for example.

Submitter Information Verification

Submitter Full Name: E. Moore
Organization: S & S Sprinkler Company, LLC
Submittal Date: Wed May 08 15:02:26 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368039746909.xml

Table 9.2.6.4 Maximum Pipe Stand Heights

System Pipe Diameter	**Pipe Stand Diameter**				
	1 ½ in.	**2 in.**	**2 ½ in.**	**3 in.**	**4 in.**
1 ½ in.	10 ft	14 ft	18 ft	28 ft	~~30~~ ft
2 in.	8 ft	12 ft	16 ft	26 ft	30 ft
2 ½ in.	6 ft	10 ft	14 ft	24 ft	30 ft
3 in.	----	8 ft	12 ft	22 ft	30 ft
>3 in. up to and including 8 in.	----	----	----	----	10 ft
For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.					

Public Input No. 227-NFPA 13-2013 [Section No. 9.3.4.2]

Original | Hide Markup

9.3.4.2

Unless the requirements of 9.3.4.3 through 9.3.4.7 or 9.3.4.10 are met, where pipe passes through holes in platforms, foundations, walls, or floors, the holes shall be sized such that the diameter of the holes is nominally 2 in. (50 mm) larger than the pipe for pipe 1 in. (25 mm) nominal to 3 ½ in. (90 mm) nominal and 4 in. (100 mm) larger than the pipe for pipe 4 in. (100 mm) nominal and larger.

Statement of Problem and Substantiation for Public Input

Section 9.3.4.10 was added to the 2013 edition of NFPA 13 but was not added to section 9.3.4.2, which allows exceptions to the 2 in. clearance requirement.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 25 09:36:59 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366897019780.xml

Public Input No. 520-NFPA 13-2013 [Section No. 9.3.4.5]

Original | Hide Markup

9.3.4.5

No clearance shall be required if flexible couplings are located within 1 ft (305 mm) of each side of a ~~wall, floor, platform, or foundation~~ wall or within 12 in. (305 mm) above and within 24 in. (610 mm) below the floors in multistory buildings, platforms, or foundations .

Statement of Problem and Substantiation for Public Input

9.3.4.5 says that flexible couplings have to be within 1 ft (305 mm) of each side of a floor, platform, or foundation to omit the clearance hole. 9.3.2.3.1 in no. 2 says within 24 in. below the floor in multistory buildings. As such, if a flexible coupling is located more than 12 in. and less than 24 in. below a floor, a clearance hole is required by 9.3.4.5. Increasing the coupling distance to within 24 in. below the floor, platform, or foundation in 9.3.4.5 will conform with 9.3.2.3.1(2).

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 14:57:28 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370026648848.xml

Public Input No. 490-NFPA 13-2013 [Section No. 9.3.4.9]

Original | Hide Markup

9.3.4.9

Clearance from structural members not penetrated or used, collectively or independently, to support the piping shall be at least 2 in. (50 mm) except that for piping where lateral bracing is omitted per Section 9 . 3.5.5.10, the clearance shall be at least 4 in. (100 mm).

Additional Proposed Changes

File Name	Description	Approved
Pipe_swing.pdf	Graphic showing the horizontal deflection due to pipe swing from a short rod hanger	

Statement of Problem and Substantiation for Public Input

Where lateral bracing is omitted, the deflection of the pipe (and in the case of cross mains, any attached pipe) can be large. If the angle from vertical is 30 degrees this deflection is 4" and the deflection could be more than 5.5 inches if the angle from vertical approached 45 degrees. Clearance, particularly to sprinklers, should be larger where bracing is omitted.

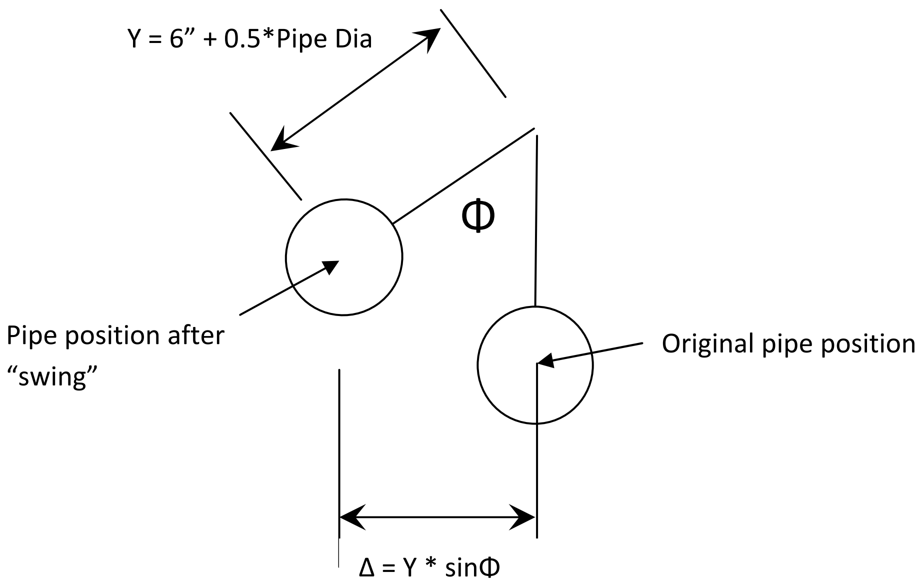
Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 489-NFPA 13-2013 [Section No. 9.3.5.5.10]	

Submitter Information Verification

Submitter Full Name: Christopher Deneff
Organization: FM Global
Submittal Date: Fri May 31 10:13:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370009621678.xml



Horizontal Deflections as a Result of Swinging of Pipe from Rod Hanger

For 6” rod to the top of the pipe and a 4” diameter pipe: X = 8”		
For Φ =	Sin Φ	Horizontal Deflection Δ (inches)
15°	0.259	2.07
30°	0.5	4.0
45°	0.707	5.66

Public Input No. 554-NFPA 13-2013 [Section No. 9.3.4.10]

Original | Hide Markup

9.3.4.10
No clearance shall be required at the point of support where piping is supported by holes through structural members as permitted by 9.1.1.6.3 .

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPAPublicInputForm_9.3.4.10.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The lack of clearance at the other coordinates in/on the bore are problematic.

Submitter Information Verification

Submitter Full Name: Kraig Kirschner
Organization: AFCON
Submittal Date: Mon Jun 03 10:33:12 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370269992696.xml

Public Input No. 394-NFPA 13-2013 [Section No. 9.3.5.2.3]

Original | Hide Markup

9.3.5.2.3
The listed loads shall be reduced as shown in Table 9.3.5.2.3 for installations where the brace is less than 90 degrees from vertical.

Table 9.3.5.2.3 Allowable Horizontal Load on Brace Assemblies Based on Weakest Component of Brace Assembly

Brace Angle Degrees from Vertical	Allowable Horizontal Load
30 to 44	Listed load rating divided by 2.000
45 to 59	Listed load rating divided by 1.414
60 to 89	Listed load rating divided by 1.155
90	Listed load rating

Statement of Problem and Substantiation for Public Input

All we have proposed to change here is adding the word "listed" before "loads". People are inappropriately applying this table to the values in the other tables of NFPA 13 that already take the angle into account. It would be helpful to clarify that the reduction factors only applied to the listed load discussed in this section.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 16:07:05 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369339625969.xml

Public Input No. 418-NFPA 13-2013 [New Section after 9.3.5.5.2.3]

9.3.5.5.2.4 When determining permissible loads as per 9.3.5.5.2 or 9.3.5.5.2.1 on a main with varying sizes, the allowable load shall be based on the smallest pipe size within the zone of influence.

Statement of Problem and Substantiation for Public Input

The situation of a main of varying size is not currently addressed.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH
Organization: VFS FIRE AND SECURITY
Submittal Date: Sat May 25 11:56:51 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369497411900.xml

Public Input No. 420-NFPA 13-2013 [New Section after 9.3.5.5.10]

9.3.5.5.10.1 If intermediate hangers are omitted on cross mains as per 9.2.4.3 or 9.2.4.4 or 9.2.4.5 then lateral sway braces shall be installed.

Statement of Problem and Substantiation for Public Input

If the hanger rods are being used in lieu of sway bracing, they should not be eliminated.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH
Organization: VFS FIRE AND SECURITY
Submittal Date: Sat May 25 12:35:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369499724278.xml

Public Input No. 395-NFPA 13-2013 [Section No. 9.3.5.5.10]

Original | Hide Markup

9.3.5.5.10 *

The requirements of 9.3.5. ~~3~~ 5 shall not apply to pipes individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure.

Statement of Problem and Substantiation for Public Input

Section 9.3.5.5 is the correct section number. The 2013 edition was in error when a renumbering of the section occurred.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 16:14:01 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369340041285.xml

Public Input No. 419-NFPA 13-2013 [Section No. 9.3.5.5.10]

Original | Hide Markup

9.3.5.5.10 *

The requirements of 9.3.5. ~~3~~ 5.1 shall not apply to pipes 4" diameter and smaller when individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure and when the horizontal seismic load on the hanger does not exceed the values in table 9 . 3.5.5.10 based on pipe size and material. The horizontal seismic load shall be determined as per 9.3.5.9.

Additional Proposed Changes

	File Name	Description	Approved
Open	Table_9.3.5.5.10.xlsx	Table 9.3.5.5.10	
Open	Table_9.3.5.5.10_substantiation.xlsx	Substantiation only - Not to be included in actual Standard	

Statement of Problem and Substantiation for Public Input

When sprinkler pipe is braced, the bracing is limited by the zone of influence method but there are no limits when braces are omitted and short hanger rods are used, a cross main is allowed unlimited tributary loads from branch lines if hung with 6" rods.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH
Organization: VFS FIRE AND SECURITY
Submittal Date: Sat May 25 12:10:34 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369498234744.xml

Pipe Size	Steel	Copper	CPVC
3/4	na	7	2
1	25	10	4
1 1/4	35	15	7
1 1/2	55	20	10
2	75	40	18
2 1/2	120	60	30
3	165	80	60
3 1/2	200	135	na
4	250	175	na

Public Input No. 489-NFPA 13-2013 [Section No. 9.3.5.5.10]

Original Hide Markup

9.3.5.5.10 *

The requirements of 9.3.5. ~~3~~ 5 shall not apply to ~~pipes~~ branch lines where all of the hangers are individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure. The rod hanger connections to the structure must be configured such that they do not develop moments due to swinging of the branch line (e.g., using a swivel connector).

Additional Proposed Changes

	File Name	Description	Approved
Open	Pipe_swing.pdf	Graphic showing the horizontal displacements associated with a swinging pipe	

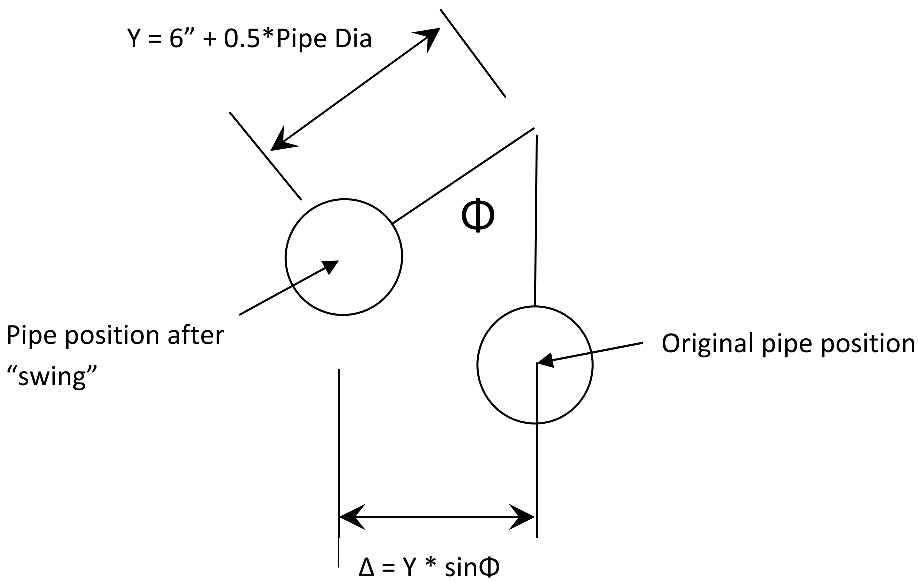
Statement of Problem and Substantiation for Public Input

The current section allows omission of lateral bracing (I believe the reference to Section 9.3.5.3 is incorrect, should be 9.3.5.5) on all pipes using short rods. This allows large displacements (on the order of 4" for even a modest swing of 30 degrees from vertical - see attached graphic). Looking at a cross main in particular, all attached branch lines will deflect possibly allowing impact on sprinklers, forcing their hangers to accommodate large deflections without damage, and putting stress on couplings. Additionally, the tributary force on a cross main hanger could be extremely large since it could include long lengths of unrestrained branch lines. There is no way to determine the lateral capacity of a hanger, since they are not designed for this purpose. Likewise, for a feed main, the lateral force on the hanger could be very large; again, there is no way to determine if the hanger is adequate to resist these forces and these hangers could be attached using methods adequate for vertical forces but questionable for lateral forces (e.g., using C-clamps). Lengths of feed mains and cross mains are limited so providing braces would not be overly expensive, and is justified based on the great consequences of a main failure. Branch lines are typically smaller and are individual pipes rather than a piping system such as cross mains. Although I do not think we have adequate information to be totally confident of the capacity of a branch line hanger to resist lateral forces, allowing the 6" rod exception seems reasonable for branch lines.

Submitter Information Verification

Submitter Full Name: Christopher Deneff
Organization: FM Global
Submittal Date: Fri May 31 09:44:56 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370007896399.xml



Horizontal Deflections as a Result of Swinging of Pipe from Rod Hanger

For 6” rod to the top of the pipe and a 4” diameter pipe: X = 8”		
For Φ =	Sin Φ	Horizontal Deflection Δ (inches)
15°	0.259	2.07
30°	0.5	4.0
45°	0.707	5.66

Public Input No. 551-NFPA 13-2013 [Section No. 9.3.5.5.10]

Original | Hide Markup

9.3.5.5.10 *

The requirements of 9.3.5.3 shall not apply to ~~pipes~~ branch lines individually supported by rods less than 6 in. (152 mm) long measured between the top of the pipe and the point of attachment to the building structure , and shall only be allowable when Cp does not exceed 1 . 0.

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPAPublicInputForm_9.3.5.5.10.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

In Chapter 9 and per ASCE 7 we adjust sway bracing to limit force on system piping to insure integrity of the system and its components. In conformance we evaluate the additive weight, quantify the Cp and address their effects on system pipe by type and size. It is not sound science, engineering or mechanics to assume the dampening effect of a 6" hanger rod is always sufficient to compensate for all the above variables such that none of the above protocol is necessary without defined parameters.

Submitter Information Verification

Submitter Full Name: Kraig Kirschner
Organization: AFCON
Submittal Date: Mon Jun 03 08:45:51 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370263551001.xml

Public Input No. 427-NFPA 13-2013 [Section No. 9.3.5.9.6.1]

Original | Hide Markup

9.3.5.9.6.1*

When riser nipples are provided in systems requiring seismic protection ~~and are longer than 4 ft (1.2 m),~~ the weight of the water-filled branch line pipe in the zone of influence (W_p) as defined by 9.3.5.9.1, including the length of the riser nipple, multiplied by the seismic coefficient (C_p), and by the height of the riser nipple (H_r), divided by the section modulus (S) of the riser nipple piping shall not meet or exceed the yield strength (F_y) of the riser nipple piping. If the calculated value is equal to or greater than the yield strength or the riser nipple, the longitudinal seismic load of each line shall be evaluated individually and branch lines shall be provided with longitudinal sway bracing per 9.3.5.6.

$$\frac{\left(H_r \cdot W_p \cdot C_p\right)}{S} \geq F_y$$

where:

H_r = length of riser nipple piping (in inches)

W_p = tributary weight (in pounds) for the branch line or portion of branch line within the zone of influence including the riser nipple

C_p = seismic coefficient

S = sectional modulus of the riser nipple pipe

F_y = allowable yield strength of 30,000 psi for steel, 30,000 psi for copper (soldered), 8000 psi for CPVC

Statement of Problem and Substantiation for Public Input

The 4' length was an arbitrary number added during the previous cycle. As the document provides a method for determining excessive forces on a riser nipple in areas requiring seismic protection, the 4' value should be deleted.

Submitter Information Verification

Submitter Full Name: Kenneth Wagoner
Organization: Parsley Consulting Engineers
Submittal Date: Tue May 28 10:50:03 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369752603607.xml

Public Input No. 491-NFPA 13-2013 [Section No. 9.3.5.9.6.1]

Original Hide Markup

9.3.5.9.6.1 *

When riser nipples are provided in systems requiring seismic protection ~~and are longer than 4 ft (1.2 m),~~ the weight of the water-filled branch line pipe in the zone of influence (W_p) as defined by 9.3.5.9.1 , including the length of the riser nipple, multiplied by the seismic coefficient (C_p), and by the height of the riser nipple (H_r), divided by the section modulus (S) of the riser nipple piping shall not meet or exceed the yield strength (F_y) of the riser nipple piping nor the allowable bending capacity of the coupling . If the calculated value is equal to or greater than the yield ~~strength or~~ strength of the riser nipple, the longitudinal seismic load of each line shall be evaluated individually and branch lines shall be provided with longitudinal sway bracing per 9.3.5.6 .

$$\frac{\left(H_r \cdot W_p \cdot C_p\right)}{S} \geq F_y$$

where:

H_r	=	length of riser nipple piping (in inches)
W_p	=	tributary weight (in pounds) for the branch line or portion of branch line within the zone of influence including the riser nipple
C_p	=	seismic coefficient
S	=	minimum sectional modulus of the riser nipple pipe (reduce for threaded connections)
F_y	=	allowable yield strength of 30,000 psi for steel, 30,000 psi for copper (soldered), 8000 psi for CPVC

Statement of Problem and Substantiation for Public Input

There is no reason to limit this section to riser nipples greater than 4 ft, the calculation should be performed for all riser nipples. It is easy to come up with a scenario where a shorter riser nipple would be overstressed in bending. Additionally, any coupling should have adequate bending moment capacity and for threaded pipe the section modulus should be based on the section modulus considering the minimum root diameter.

Submitter Information Verification

Submitter Full Name: Christopher Deneff
Organization: FM Global
Submittal Date: Fri May 31 10:24:18 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370010258077.xml

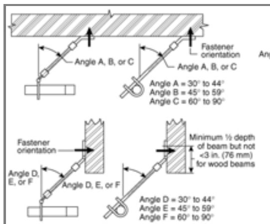
Public Input No. 275-NFPA 13-2013 [Section No. 9.3.5.12.1]

Original | Hide Markup

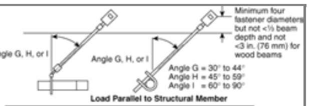
9.3.5.12.1 *

For individual fasteners, the loads determined in 9.3.5.9 shall not exceed the allowable loads provided in Figure 9.3.5.12.1 .

Figure 9.3.5.12.1 Maximum Loads for Various Types of Structures and Maximum Loads for Various Types of Fasteners to Structures.



Load Perpendicular to Structural Member



Load Parallel to Structural Member

Wedge Anchors in 3000 psi Lightweight Concrete-Filled Metal Decking

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	116	216	420	—	—	—	—	—	—
½	3¼	215	406	826	—	—	—	—	—	—
⅝	4	369	673	1282	—	—	—	—	—	—

Wedge Anchors in 3000 psi Normal Weight Cracked Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	173	308	557	321	308	301	458	591	678
½	3¼	391	713	1358	784	713	678	1215	1537	1741
⅝	4	553	1021	2008	1159	1021	956	1904	2378	2671
¾	4¾	717	1332	2638	1523	1332	1243	2536	3155	3537

Undercut Anchors in 3000 psi Normal Weight Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	4	685	1106	1714	989	1106	1187	1171	1571	1849
½	5	855	1479	2552	1473	1479	1483	1975	2582	2988
⅝	7½	1153	2041	3675	2121	2041	1997	3022	3902	4478

Wedge Anchors in 3000 psi Lightweight Cracked Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	110	206	410	236	206	191	396	492	551
½	3¼	245	467	970	559	467	426	1021	1239	1368
⅝	4	344	661	1406	811	661	597	1569	1876	2055
¾	4¾	446	859	1839	1061	859	774	2078	2476	2706

Wedge Anchors in 4000 psi Normal Weight Cracked Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	196	342	600	346	342	341	473	616	711
½	3¼	443	797	1477	852	797	769	1264	1616	1842
⅝	4	627	1147	2198	1268	1147	1088	1990	2513	2843
¾	4¾	816	1498	2891	1668	1498	1414	2653	3339	3770

Wedge Anchors in 6000 psi Normal Weight Cracked Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	232	394	661	381	394	402	492	648	754
½	3¼	528	928	1649	951	928	916	1326	1720	1979
⅝	4	750	1344	2474	1428	1344	1300	2102	2694	3077
¾	4¾	976	1756	3261	1882	1756	1691	2807	3587	4089

Connections to Steel (Values Assume Bolt Perpendicular to Mounting Surface)

Diameter of Unfinished Steel Bolt (in.)																	
¼									⅜								
A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	H	I
400	500	600	300	500	650	325	458	565	900	1200	1400	800	1200	1550	735	1035	1278

Diameter of Unfinished Steel Bolt (in.)																	
½									⅝								
A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	H	I
1600	2050	2550	1450	2050	2850	1300	1830	2260	2500	3300	3950	2250	3300	4400	2045	2880	3557

Through-Bolts in Sawn Lumber or Glue-Laminated Timbers (Load Perpendicular to Grain)

Length of Bolt in Timber (in.)	Bolt Diameter (in.) ½ A	B	C	D	E	F	G	H	I	⅝ A	B	C	D	E	F	G	H	I	¾ A	B	C	D	E	F	G	H	I
1½	115	165	200	135	230	395	130	215	310	135	190	235	155	270	460	155	255	380	155	220	270	180	310	530	170	300	450
2½	140	200	240	160	280	480	165	275	410	160	225	280	185	320	550	190	320	495	180	255	310	205	360	615	215	365	575
3½	175	250	305	200	350	600	200	330	485	200	285	345	230	400	685	235	405	635	220	310	380	255	440	755	260	455	730
5½	—	—	—	—	—	—	—	—	—	280	395	485	325	560	960	315	515	735	310	440	535	360	620	1065	360	610	925

Lag Screws and Lag Bolts in Wood (Load Perpendicular to Grain — Holes Predrilled Using Good Practice)

Length of Bolt in Timber (in.)	Lag Bolt Diameter (in.) ⅜ A	B	C	D	E	F	G	H	I	½ A	B	C	D	E	F	G	H	I	⅝ A	B	C	D	E	F	G	H	I
3½	165	190	200	170	220	310	80	120	170	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4½	180	200	200	175	235	350	80	120	170	300	355	380	315	400	550	145	230	325	—	—	—	—	—	—	—	—	—
5½	190	200	200	175	245	380	80	120	170	320	370	380	320	420	610	145	230	325	435	525	555	425	550	775	195	320	460
6½	195	205	200	175	250	400	80	120	170	340	375	380	325	435	650	145	230	325	465	540	555	430	570	840	195	320	460

Note: Wood fastener maximum capacity values are based on 2001 National Design Specifications (NDS) for wood with a specific gravity of 0.35. Values for other types of wood can be obtained by multiplying the above values by the following factors:

Specific Gravity of Wood	Multiplier
0.36 thru 0.49	1.17
0.50 thru 0.65	1.25
0.66 thru 0.73	1.50

For SI values, 1 in. = 25.4 mm.

Note: For wedge anchors the minimum concrete thickness must be at least 4” for 3/8” anchors, 6” for ½” & 5/8” anchors and 8” for ¾” anchors. The smallest concrete edge distance must be at least 4” for 3/8” anchors, 7½” for ½” anchors, 6” for 5/6” anchors and 9” for ¾” anchors.

Statement of Problem and Substantiation for Public Input

The Proposed Note is intended to be located in FIGURE 9.3.5.12.1 and under the Wedge Anchor Tables. In order to achieve the concretre anchor capacities reflected in the wedge anchor tables, the distacnce to the nearest edge of the concrete and the concrete thickness must be equal to or greaater than these values, which are in the ICC-ES Report that was used to prepare the tables.

Submitter Information Verification

Submitter Full Name:	Daniel Duggan
Organization:	Fire Sprinkler Design
Affilliation:	Loos & Co., Inc.
Submittal Date:	Sun May 12 15:56:45 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368388605955.xml

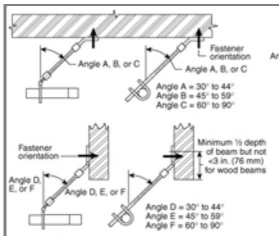
Public Input No. 305-NFPA 13-2013 [Section No. 9.3.5.12.1]

Original | Hide Markup

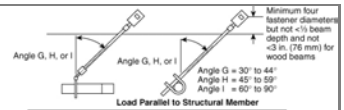
9.3.5.12.1*

For individual fasteners, the loads determined in 9.3.5.9 shall not exceed the allowable loads provided in Figure 9.3.5.12.1.

Figure 9.3.5.12.1 Maximum Loads for Various Types of Structures and Maximum Loads for Various Types of Fasteners to Structures.



Load Perpendicular to Structural Member



Load Parallel to Structural Member

Wedge Anchors in 3000 psi Lightweight Concrete-Filled Metal Decking

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	116	216	420	—	—	—	—	—	—
½	3¼	215	406	826	—	—	—	—	—	—
⅝	4	369	673	1282	—	—	—	—	—	—

Wedge Anchors in 3000 psi Normal Weight Cracked Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	173	308	557	321	308	301	458	591	678
½	3¼	391	713	1358	784	713	678	1215	1537	1741
⅝	4	553	1021	2008	1159	1021	956	1904	2378	2671
¾	4¾	717	1332	2638	1523	1332	1243	2536	3155	3537

Undercut Anchors in 3000 psi Normal Weight Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	4	685	1106	1714	989	1106	1187	1171	1571	1849
½	5	855	1479	2552	1473	1479	1483	1975	2582	2988
⅝	7½	1153	2041	3675	2121	2041	1997	3022	3902	4478

Wedge Anchors in 3000 psi Lightweight Cracked Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	110	206	410	236	206	191	396	492	551
½	3¼	245	467	970	559	467	426	1021	1239	1368
⅝	4	344	661	1406	811	661	597	1569	1876	2055
¾	4¾	446	859	1839	1061	859	774	2078	2476	2706

Wedge Anchors in 4000 psi Normal Weight Cracked Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	196	342	600	346	342	341	473	616	711
½	3¼	443	797	1477	852	797	769	1264	1616	1842
⅝	4	627	1147	2198	1268	1147	1088	1990	2513	2843
¾	4¾	816	1498	2891	1668	1498	1414	2653	3339	3770

Wedge Anchors in 6000 psi Normal Weight Cracked Concrete

Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
⅜	2	232	394	661	381	394	402	492	648	754
½	3¼	528	928	1649	951	928	916	1326	1720	1979
⅝	4	750	1344	2474	1428	1344	1300	2102	2694	3077
¾	4¾	976	1756	3261	1882	1756	1691	2807	3587	4089

Connections to Steel (Values Assume Bolt Perpendicular to Mounting Surface)

Diameter of Unfinished Steel Bolt (in.)	A	B	C	D	E	F	G	H	I
¼	400	500	600	300	500	650	325	458	565
⅜	900	1200	1400	800	1200	1550	735	1035	1278
½	1600	2050	2550	1450	2050	2850	1300	1830	2260
⅝	2500	3300	3950	2250	3300	4400	2045	2880	3557

Through-Bolts in Sawn Lumber or Glue-Laminated Timbers (Load Perpendicular to Grain)

Bolt Diameter (in.) ½

Length of Bolt in Timber (in.)	A	B	C	D	E	F	G	H	I
1½	115	165	200	135	230	395	130	215	310
2½	140	200	240	160	280	480	165	275	410
3½	175	250	305	200	350	600	200	330	485
5½	—	—	—	—	—	—	—	—	—

Bolt Diameter (in.) ⅝

Length of Bolt in Timber (in.)	A	B	C	D	E	F	G	H	I
1½	135	190	235	155	270	460	155	255	380
2½	160	225	280	185	320	550	190	320	495
3½	200	285	345	230	400	685	235	405	635
5½	280	395	485	325	560	960	315	515	735

Bolt Diameter (in.) ¾

Length of Bolt in Timber (in.)	A	B	C	D	E	F	G	H	I
1½	155	220	270	180	310	530	170	300	450
2½	180	255	310	205	360	615	215	365	575
3½	220	310	380	255	440	755	260	455	730
5½	310	440	535	360	620	1065	360	610	925

Lag Screws and Lag Bolts in Wood (Load Perpendicular to Grain — Holes Predrilled Using Good Practice)

Lag Bolt Diameter (in.) ⅜

Length of Bolt in Timber (in.)	A	B	C	D	E	F	G	H	I
3½	165	190	200	170	220	310	80	120	170
4½	180	200	200	175	235	350	80	120	170
5½	190	200	200	175	245	380	80	120	170
6½	195	205	200	175	250	400	80	120	170

Lag Bolt Diameter (in.) ½

Length of Bolt in Timber (in.)	A	B	C	D	E	F	G	H	I
3½	—	—	—	—	—	—	—	—	—
4½	300	355	380	315	400	550	145	230	325
5½	320	370	380	320	420	610	145	230	325
6½	340	375	380	325	435	650	145	230	325

Lag Bolt Diameter (in.) ⅝

Length of Bolt in Timber (in.)	A	B	C	D	E	F	G	H	I
3½	—	—	—	—	—	—	—	—	—
4½	—	—	—	—	—	—	—	—	—
5½	435	525	555	425	550	775	195	320	460
6½	465	540	555	430	570	840	195	320	460

Note: Wood fastener maximum capacity values are based on 2001 National Design Specifications (NDS) for wood with a specific gravity of 0.35. Values for other types of wood can be obtained by multiplying the above values by the following factors:

Specific Gravity of Wood	Multiplier
0.36 thru 0.49	1.17
0.50 thru 0.65	1.25
0.66 thru 0.73	1.50

For SI values, 1 in. = 25.4 mm.

Additional Proposed Changes

File Name	Description	Approved
Open Fig_9_3_5_12_1_Proposed.pdf	Proposed Tables for Figure 9.3.5.12.1 to replace the current tables for wedge anchors.	
Open Support_for_Proposal_on_Fig_9_3_5_12_1.pdf	Document supporting proposed replacement wedge anchor tables for Figure 9.3.5.12.1	

Statement of Problem and Substantiation for Public Input

During the 2010 change cycle, the concrete anchor capacities for Figure 9.3.5.9.1 were revised to reflect values for anchors that had passed the ACI 355.2 seismic prequalification testing, as required by ASCE 7. These calculations were performed based on the ASD shear and tension values for seismic applications, as indicated in the only ICC-ES Report available at the time.

Subsequent to the calculation of these anchor capacities for the 2010 Edition of NFPA-13, the ICC Evaluation Service discovered that ASD shear and tension values published in the ICC-ES Report were “unconservative” and issued a letter of “Clarification on the Use of the Conversion Factor “a” to Convert Strength Design (SD) to Allowable Stress Design (ASD)”.

The simple fix per this clarification was to multiply that ASD seismic shear and tension values that were published in the ICC-ES Report by 1.1, which was the unconservative conversion factor, and then multiply by 1.43, which is the correct SD to ASD conversion factor for seismic applications.

Since increasing the values by 1.1 and then dividing them by 1.43 is the same as simply multiplying them by 0.77, the wedge type anchor capacities in Figure 9.3.5.9.1 are corrected by this Proposal by simply multiplying them by 0.77.

Submitter Information Verification

Submitter Full Name: Daniel Duggan
Organization: Fire Sprinkler Design
Affilliation: Loos & Co., Inc.
Submittal Date: Tue May 14 18:33:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368570804856.xml

PROPOSED 2016 NFPA-13 Fig. 9.3.5.12.1 Wedge Type Anchor Tables

(2013 values mulitpied by 0.77)

Wedge Anchors in 3000 psi Lightweight Concrete-Filled Metal Decking										
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
3/8	2	89	166	323	--	--	--	--	--	--
1/2	3 1/4	166	313	636	--	--	--	--	--	--
5/8	4	284	518	987	--	--	--	--	--	--

Wedge Anchors in 3000 psi Lightweight Cracked Concrete										
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
3/8	2	85	159	316	182	159	147	305	379	424
1/2	3 1/4	189	360	747	430	360	328	786	954	1053
5/8	4	265	509	1083	624	509	460	1208	1445	1582
3/4	4 3/4	343	661	1416	817	661	596	159	1907	2084

Wedge Anchors in 3000 psi Normal Weight Cracked Concrete										
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
3/8	2	133	237	429	247	237	232	353	455	522
1/2	3 1/4	301	549	1046	604	549	522	936	1183	1341
5/8	4	426	786	1546	892	786	736	1466	1831	2057
3/4	4 3/4	552	1026	2031	1173	1026	957	1953	2429	2723

Wedge Anchors in 4000 psi Normal Weight Cracked Concrete										
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
3/8	2	151	263	462	266	263	263	364	474	547
1/2	3 1/4	341	614	1137	656	614	592	973	1244	1418
5/8	4	483	883	1692	976	883	838	1532	1935	2189
3/4	4 3/4	628	1153	2226	1284	1153	1089	2043	2571	2903

Wedge Anchors in 6000 psi Normal Weight Cracked Concrete										
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
3/8	2	179	303	509	293	303	310	379	499	581
1/2	3 1/4	407	715	1270	732	715	705	1021	1324	1524
5/8	4	578	1035	1905	1100	1035	1001	1619	2074	2369
3/4	4 3/4	752	1352	2511	1449	1352	1302	2161	2762	3149

Public Input No. 552-NFPA 13-2013 [Section No. 9.3.6.1]

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9.3.6.1 *

Restraint is considered a lesser degree of resisting loads than bracing and shall be provided by use of one of the following:

(1) Listed sway brace assembly

(2) Wraparound U-hook satisfying the requirements of 9.3.5.5.11

(3) No. 12, 440 lb (200 kg) wire installed at least 45 degrees from the vertical plane and anchored on both sides of the pipe

(4) CPVC hangers ~~utilizing two points of attachment~~ listed to provide restraint

(5) * Hanger not less than 45 degrees from vertical installed within 6 in. (152 mm) of the vertical hanger arranged for restraint against upward movement, provided it is utilized such that l / r does not exceed 400, where the rod shall extend to the pipe or have a surge clip installed

(6) Other approved means

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPA_Public_Input_Form_9.3.6.1_4_.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Correct technical oversight.
CPVC hangers exist that are listed to provide restraint.

Submitter Information Verification

Submitter Full Name: Kraig Kirschner
Organization: AFCON
Submittal Date: Mon Jun 03 10:27:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370269644997.xml

Public Input No. 396-NFPA 13-2013 [Section No. 9.3.6.4]

Original Hide Markup

9.3.6.4 *

Branch lines shall be laterally restrained at intervals not exceeding those specified in Table 9.3.6.4(a) or Table 9.3.6.4(b) based on branch line diameter and the value of C_p. [Add the metric conversions at the end of the tables]

Table 9.3.6.4(a) Maximum Spacing (ft) of Steel Branch Line Restraints

	Seismic Coefficient (C_p)		
Pipe (in.)	$C_p \le 0.50$	$0.5 < C_p \le 0.71$	$C_p > 0.71$
1	43	36	26
1 1⁄4	46	39	27
1 1⁄2	49	41	29
2	53	45	31

Table 9.3.6.4(b) Maximum Spacing (ft) of CPVC and Copper Branch Line Restraints

	Seismic Coefficient (C_p)		
Pipe (in.)	$C_p \le 0.50$	$0.5 < C_p \le 0.71$	$C_p > 0.71$
3⁄4	31	26	18
1	34	28	20
1 1⁄4	37	31	22
1 1⁄2	40	34	24
2	45	38	27

Statement of Problem and Substantiation for Public Input

We are just proposing that the metric conversions be added at the end of the tables. This needs to be done for consistency and user friendliness for people that use NFPA 13 with metric units.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 16:16:57 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369340217333.xml

Public Input No. 492-NFPA 13-2013 [Section No. 9.3.7.1 [Excluding any Sub-Sections]]

Original | Hide Markup

Where seismic protection is provided, C-type clamps (including beam and large flange clamps) used to attach hangers to the building structure shall be equipped with a restraining strap unless the provisions of 9.3.7.1.1 are satisfied. C-type clamps with or without restraining straps shall not be used to attach hangers of any pipe for which lateral bracing has been omitted per the provisions of 9.3.5.5.10 or any pipe attached to that pipe.

Statement of Problem and Substantiation for Public Input

Where lateral bracing is omitted, piping will be subject to large and repeated lateral deflections that could damage or displace c-clamp hangers on the pipe for which the bracing is omitted or on the attached pipe (e.g., branch lines attached to a cross main).

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 489-NFPA 13-2013 [Section No. 9.3.5.5.10]	

Submitter Information Verification

Submitter Full Name: Christopher Deneff
Organization: FM Global
Submittal Date: Fri May 31 10:34:15 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370010855649.xml

Public Input No. 444-NFPA 13-2013 [Section No. 10.7.2]

Original | Hide Markup

10.7.2
The torquing of bolted joints shall ~~be checked~~ be checked against manufacturer's requirments . [24: 10.7.2]

Statement of Problem and Substantiation for Public Input

By requiring checking torque against manufacturer's requirements will ensure that proper torquing is achieved.

Submitter Information Verification

Submitter Full Name: John Campbell
Organization: Telgian Corporation
Submittal Date: Wed May 29 15:56:25 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369857385406.xml

Public Input No. 446-NFPA 13-2013 [New Section after 10.7.4]

TITLE OF NEW CONTENT

Type your content here ...

10.7.4.1 Plugs shall be recorded as to their location.

10.7.4.2 Plugs shall be verified to be removed prior to recommencement of work.

Statement of Problem and Substantiation for Public Input

the installation of plugs is important, but so is the tracking of where they are installed and their removal to ensure that the piping is not blocked when placed in service.

Submitter Information Verification

Submitter Full Name: John Campbell
Organization: Telgian Corporation
Submittal Date: Wed May 29 15:58:53 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369857533165.xml

Public Input No. 448-NFPA 13-2013 [Section No. 10.8.3.1.4.4]

Original | Hide Markup

10.8.3.1.4.4
The diameter of holes shall be 1⁄8 in. (3.2 mm) larger than that of rods or bolts . [24: 10.8.3.1.4.4]

Statement of Problem and Substantiation for Public Input

provides clarification for use of bolts

Submitter Information Verification

Submitter Full Name: John Campbell
Organization: Telgian Corporation
Submittal Date: Wed May 29 16:01:56 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369857716520.xml

Public Input No. 450-NFPA 13-2013 [Section No. 10.8.3.3.1]

Original Hide Markup

10.8.3.3.1
The strap shall be 3/4 in. (19.1 mm) thick and 2 1/2 in. (63.5 mm) wide , regardless of pipe diameter . [24: 10.8.3.3.1]

Statement of Problem and Substantiation for Public Input

provides definition regarding the size of piping vs. the size of the straps

Submitter Information Verification

Submitter Full Name: John Campbell
Organization: Telgian Corporation
Submittal Date: Wed May 29 16:07:17 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369858037477.xml

Public Input No. 452-NFPA 13-2013 [New Section after 10.8.3.4]

TITLE OF NEW CONTENT

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10.8.3.4.1 Material selected shall be compatible with the piping material to be installed.

Statement of Problem and Substantiation for Public Input

material compatibility is necessary to avoid potential electrolysis between dissimilar metals

Submitter Information Verification

Submitter Full Name: John Campbell
Organization: Telgian Corporation
Submittal Date: Wed May 29 16:15:20 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369858520115.xml

Public Input No. 453-NFPA 13-2013 [New Section after 10.10.2.4.1]

TITLE OF NEW CONTENT

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10.10.2.4.1.1 Opening and closing of hydrants shall be completed under both static pressure (no flow) and flow conditions.

Statement of Problem and Substantiation for Public Input

by adding that the hydrant has to be operated under no flow and flow conditions, ensures proper operation of the hydrant

Submitter Information Verification

Submitter Full Name: John Campbell
Organization: Telgian Corporation
Submittal Date: Wed May 29 16:22:46 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369858966346.xml

Public Input No. 192-NFPA 13-2013 [Section No. 11.1.2]

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11.1.2* Adjacent Hazards or Design Methods.

For buildings with two or more adjacent hazards or design methods, the following shall apply:

(1) Where areas are not physically separated by a barrier or partition capable of delaying heat from a fire in one area from fusing sprinklers in the adjacent area, the required sprinkler protection for the more demanding design basis shall extend 15 ft (4.6 m) beyond its perimeter.

(2) The requirements of 11.1.2 (1) shall not apply where the areas are separated by a barrier partition that is capable of ~~preventing~~ delaying heat from a fire in one area from fusing sprinklers in the adjacent area.

(3) The requirements of 11.1.2 (1) shall not apply to the extension of more demanding criteria from an upper ceiling level to beneath a lower ceiling level where the difference in height between the ceiling levels is at least 2 ft (0.6 m).

Statement of Problem and Substantiation for Public Input

The terminology between sections 11.1.2(1) and 11.1.2(2) needs to be consistent. One currently uses the terminology "delay" while the other uses the term "prevent". Since "prevent" has a more permanent connotation, its use here is inappropriate. All we are trying to do is delay the operation of sprinklers in the remote area until sprinklers over the fire have had a chance to open.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 18 16:16:42 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366316202831.xml

Public Input No. 304-NFPA 13-2013 [New Section after 11.2.3.1]

TITLE OF NEW CONTENT

The total hydraulically calculated water demand for the sprinkler system plus hose streams and any other water allowances shall be on or below the water supply curve, as described in Figure A.23.3.2(d).

Statement of Problem and Substantiation for Public Input

Occasionally some individuals have taken it upon themselves to convince AHJ's to arbitrarily require a cushion of as much as 20% of the flow test static pressure and require that cushion to be applied at the hydraulically calculated demand. This cushion is apparently to apply a margin of safety that the proponents of this cushion, who have no statistical data to back their theory up, feel has been inadequately addressed by the responsible NFPA-13 Committee. Since the area design method, room design method, etc. contemplate the hydraulically calculated demand with a margin of safety based on many years of statistical data, it should be made clear in NFPA 13 that no additional margin of safety is required, unless the responsible NFPA 13 Committee feels that it has missed something. This change would not preclude an AHJ form requiring a cushion for good reason, such as a known unreliable water main system.

Submitter Information Verification

Submitter Full Name:	Daniel Duggan
Organization:	Fire Sprinkler Design
Affilliation:	Loos & Co., Inc.
Submittal Date:	Tue May 14 15:17:01 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368559021551.xml

Public Input No. 364-NFPA 13-2013 [Section No. 11.2.3.1.2]

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NOTE: This proposal appeared as Comment 13-253 (Log #269) which was held from the A12 ROC on Proposal 13-371.

Revise the Accepted language as follows:

The minimum water supply shall be calculated using one of the methods in Section 11 .2.3.1 . 1 or as defined in Chapters 13-21, including any supplementary water supply for inrack sprinkler systems. and interior and exterior hose streams. When automatic sprinkler systems. including inside hose, are supplied by tanks. tank size shall be a minimum of 110 percent of nominal design flow. Water flow shall be available for the minimum duration specified in Table 11. 2 .3.1.2.

11.2.3.1.2

The minimum water supply shall be available for the minimum duration specified in Table 11.2.3.1.2.

Table 11.2.3.1.2 Hose Stream Allowance and Water Supply Duration Requirements for Hydraulically Calculated Systems

	Inside Hose		Total Combined Inside and Outside Hose		
Occupancy	gpm	L/min	gpm	L/min	Duration (minutes)
Light hazard	0, 50, or 100	0, 189, or 379	100	379	30
Ordinary hazard	0, 50, or 100	0, 189, or 379	250	946	60–90
Extra hazard	0, 50, or 100	0, 189, or 379	500	1893	90–120

Additional Proposed Changes

	File Name	Description	Approved
Open	13_PI_364_Held_Comment_13-253_Brooks_.pdf	Held Comment 13-253	

Statement of Problem and Substantiation for Public Input

1. The language accepted under 13·371 does not address calculation methods for special storage applications where a density/area approach is used.
2. Sizing of water tanks under the 13·371 accepted language would have to wait until construction drawings are issued, the sprinkler contractor is selected, and sprinkler system shop drawings and calculations are complete. In some cases two different contractors may be responsible for a) site piping and appurtenances, and b) sprinkler system installation. By sizing the water tank for a minimum of 110 percent of the nominal flow it is possible to determine the appropriate tank size during the development of the construction drawings, making early coordination possible. 110 percent of the nominal flow will allow for a reasonable system hydraulic imbalance.

Submitter Information Verification

Submitter Full Name: William Brooks
Organization: Brooks Fire Protection
Submittal Date: Thu May 23 11:01:40 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369321300951.xml

Public Input No. 59-NFPA 13-2013 [Section No. 11.2.3.2.6]

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11.2.3.2.6 High-Temperature Sprinklers.

Where high-temperature sprinklers are used for extra hazard occupancies, the 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 (186 m^2).

11.2.3.2.6.1 High-temperature sprinklers may be used for extra hazard occupancies in place of ordinary-temperature sprinklers at the discretion of the system designer.

Statement of Problem and Substantiation for Public Input

It is very confusing when interpreting the standard on when high temperature sprinklers can be used. This section alludes to the design area reduction when high-temp sprinklers ARE used, but does not state WHEN they can be used. It would be beneficial to note within the standard when High-temperature sprinklers can be used; that they may be specified by the designer when protecting extra hazard occupancies.

Submitter Information Verification

Submitter Full Name: DAN LAMPKE
Organization: HEAPY ENGINEERING
Submittal Date: Wed Feb 13 16:16:27 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1360790187589.xml

Public Input No. 174-NFPA 13-2013 [New Section after 11.3]

TITLE OF NEW CONTENT Special Enclosure Conditions

Type your content here ...Where sprinklers are required by another code (i.e 801) to be installed in gloveboxes or shielded cells, consideration shall be given to the type of operation within the enclosure.

If the installation of a head within the enclosure is required then a shut-off valve may also be installed to allow for isolation of the head within the enclosure. This will allow for quick isolation of the water supply after the fire is out to prevent the additional water and spread of contamination along with criticality concerns with water and radioactive material. (ventilation to the enclosure cannot always be isolated or reduced so a gaseous system or water mist will not work)

Statement of Problem and Substantiation for Public Input

NFPA 801 can require fire suppression within gloveboxes, hoods and sheilded cells where radioavtive work is conducted. Water and chemicals, radioactive material do not always go well together. However if there is no better option then by allowing a shut off valve to be installed to isolate the head after the fire can assist to minimize the danger associated with water within these enclosures.

Submitter Information Verification

Submitter Full Name: Donald Turno
Organization: Savannah River Nuclear Solutions
Submittal Date: Tue Apr 09 11:08:49 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1365520129195.xml

Public Input No. 2-NFPA 13-2013 [New Section after 11.3.1.1]

11.3.1.1.1

When there are not four sprinklers in the compartment, additional adjacent sprinklers shall be added that produce the greatest hydraulic demand.

Statement of Problem and Substantiation for Public Input

This is a companion PI to another PI that changes the requirement in regards to the remote sprinklers to be calculated for residential.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 1-NFPA 13-2013 [Section No. 11.3.1.1]	

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Fri Jan 11 16:22:03 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1357939323515.xml

Public Input No. 1-NFPA 13-2013 [Section No. 11.3.1.1]

Original | Hide Markup

11.3.1.1*
The design area shall be the area that includes the four adjacent sprinklers ~~that~~ in a compartment that produce the greatest hydraulic demand.

Additional Proposed Changes

	File Name	Description	Approved
Open	Chapter_11.pdf	Residential unit with sprinklers	

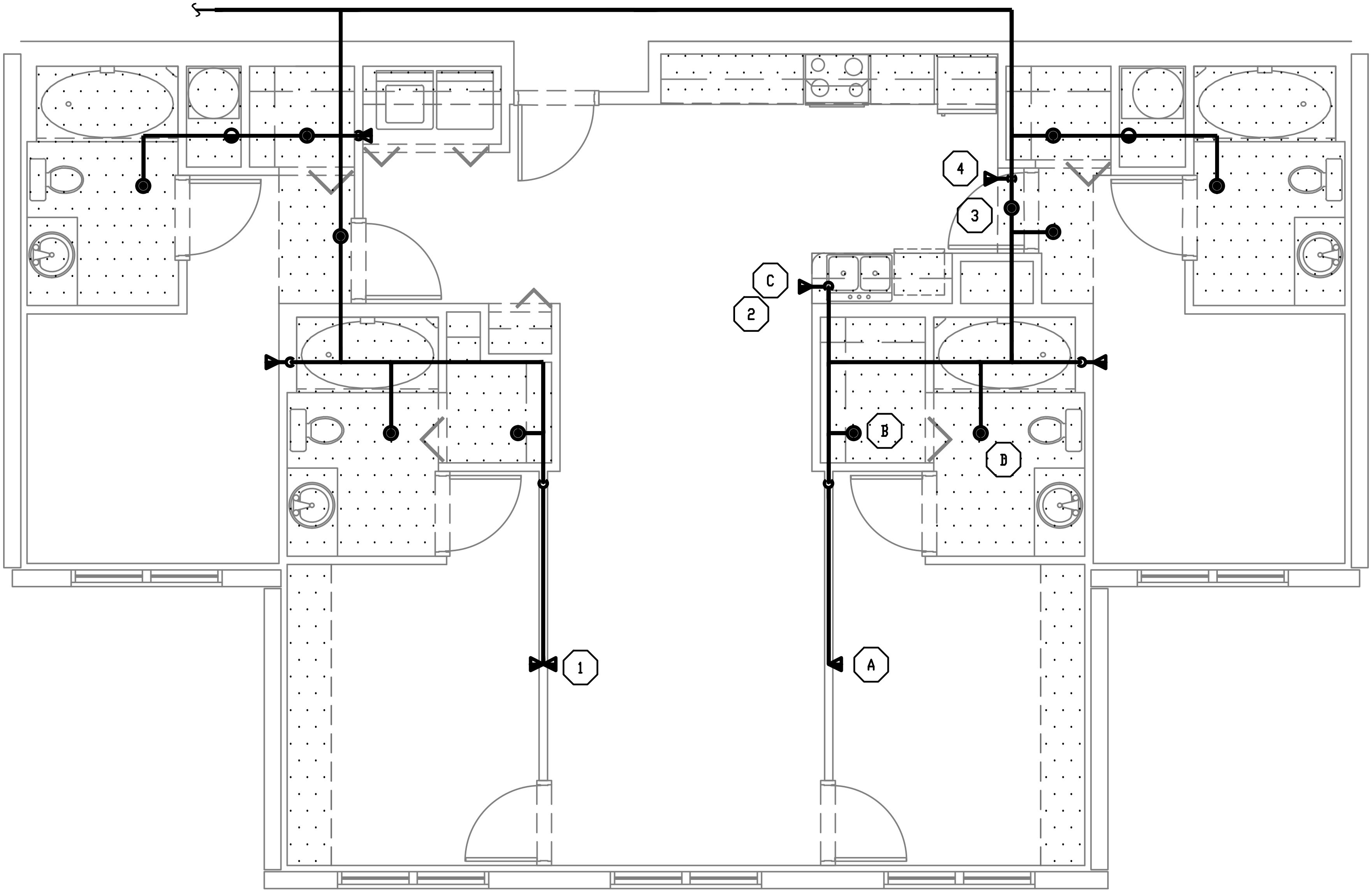
Statement of Problem and Substantiation for Public Input

The requirement to calculate the 4 adjacent residential sprinklers that create the greatest hydraulic demand has been in the standard for quite some time. However, an NFPA 13 sprinkler system will see the same development of a fire that an NFPA 13R system will see. There is already additional safety built into the NFPA 13 calculation by the minimum .10 density requirement. There are many situations where the 4 adjacent sprinklers will not create a demand that is realistic. This can be an issue when there are long throw sidewalls mixed with small spacing pendents. In a fire situation, the sprinklers in the large compartment (probably 4 sidewalls) will operate before a pendent located in another compartment. An example is attached. Sprinklers A,B,C,D would be what is currently required and sprinklers 1,2,3,4 would be what this section would require if accepted. Another PI addresses if there is not 4 sprinklers in the compartment.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Fri Jan 11 16:00:21 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1357938021463.xml



4
3
C
2
B
D
1
A

Public Input No. 4-NFPA 13-2013 [Section No. 11.3.1.3]

Original | Hide Markup

11.3.1.~~3~~ 3*

Unless the requirements of 11.3.1.4 are met, the minimum required discharge from each ~~of the four hydraulically most demanding sprinklers~~ design area sprinkler shall be the greater of the following:

(1) In accordance with minimum flow rates indicated in ~~individual listings~~

~~Calculated~~

(2) the sprinkler listing

(3) In rooms or compartments greater than 800 ft² (74.3 m²), calculated based on delivering a minimum of 0.1 gpm/ft^2 (4.1 mm/min) over the design area in accordance with the provisions of 8.5.2.1 ~~or~~ ~~8.6.2.1.2~~

(4) In rooms or compartments 800 ft² (74.3 m²) or less calculated based on delivering a minimum of 0.1 gpm/ft ^{2} (4.1 mm/min) over the room or the compartment using the average spacing of the sprinklers

A.11.3.1.3

The average spacing of the sprinklers in rooms or compartments 800 ft² (74.3 m²) or less is determined by dividing the number of sprinklers in the room or compartment into the area of the room or compartment. See Figure A.11.3.1.3 (a).

Additional Proposed Changes

	File Name	Description	Approved
Open	Average_Spacing.pdf	Figure A.11.3.1.3 (a)	

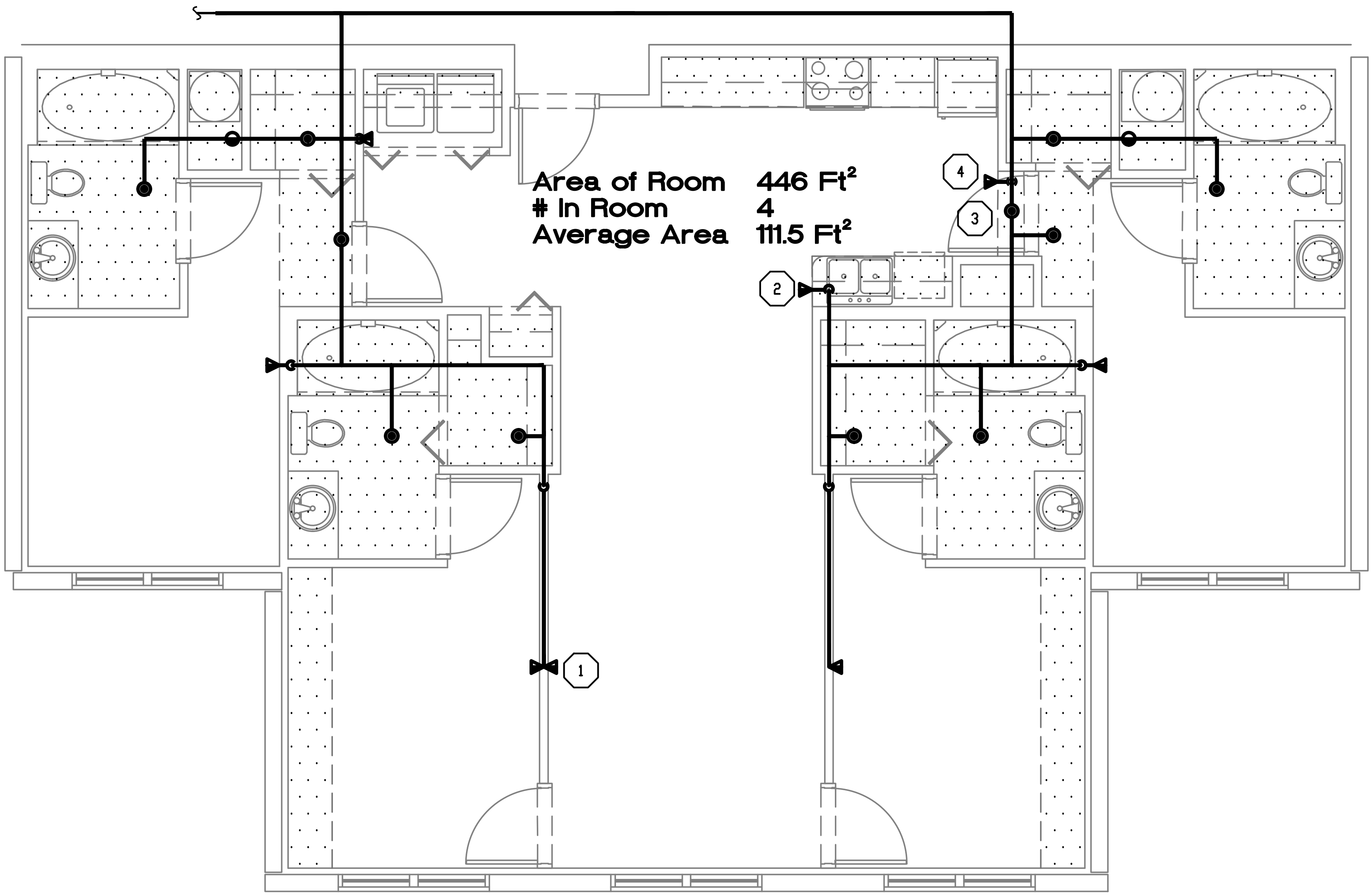
Statement of Problem and Substantiation for Public Input

This section has been modified to incorporate the current requirements for average spacing of sprinklers in small rooms into this section. An annex section has been added to clarify how to calculate average spacing including a new annex figure. Note to staff. The new program inserts a new #2 that simply states "the sprinkler listing". This should be included in #1 and #3 & #4 should be #2 & #3 respectively

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Sat Jan 12 18:34:54 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358033694449.xml


Area of Room 446 Ft²
In Room 4
Average Area 111.5 Ft²
1
2
3
4

Public Input No. 5-NFPA 13-2013 [New Section after 11.3.1.4]

11.3.1.5

When replacing sprinklers that were installed when the density requirements were less than the minimum 0.10 gpm/ft² (4.1 mm/min), a sprinkler with an equivalent K-factor (±.1) shall be permitted to be used without regards to the current listed flow and pressure requirements.

Statement of Problem and Substantiation for Public Input

When residential sprinklers are removed for any reason, they must be replaced. Many residential sprinklers were installed prior to the minimum .10 density requirements. Some AHJ's are requiring that calculations be performed using the new listed flows and pressures. The current 11.3.1.4 gives this allowance for modifications. This new section will allow the same for replacing painted sprinklers, replacing sprinklers removed for an internal inspection and if the owner decides to replace older sprinklers vs. testing them.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Sat Jan 12 21:15:36 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358043336912.xml

Public Input No. 276-NFPA 13-2013 [Section No. 12.1 [Excluding any Sub-Sections]]

Original Hide Markup

The requirements of Section 12.1 shall apply to all storage arrangements and commodities other than miscellaneous storage (see Chapter 13) and as modified by specific sections in Chapter 14 through Chapter 20.

In general outside storage shall be kept at a minimum distance of 30 ft (9,1) meters away or at at a distance of 1,5 x the storage height (which ever is higher) away from any sprinklered building, without outside sprinklers.

Statement of Problem and Substantiation for Public Input

The building codes Europe do not restrict outside storage adjacent to the walls of a building. The building codes in the USA are restricting this outside storage. Due to the fact that the USA building codes is not used in Europe there is an escape to store outside storage against an outside wall. In order to prevent this "posibility" it is a good idea to tackle this in the NFPA 13 code.

Submitter Information Verification

Submitter Full Name: TOM DENOOIJ
Organization: MARSH RISK CNSLT BV
Submittal Date: Mon May 13 08:26:20 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368447980023.xml

Public Input No. 347-NFPA 13-2013 [New Section after 12.1.3.1]

12.1.3.1.1 For corrugated metal deck roofs up to 3 in. (76 mm) in depth, the maximum roof height shall be measured from floor to the bottom of the deck.
12.1.3.1.2 For decks deeper than 3 in. (76 mm), the maximum roof height shall be measured to the highest point on the deck.
12.1.3.1.3 For ceilings that have insulation installed directly against underside of the ceiling or roof structure, the maximum roof height shall be measured to the bottom of insulation and shall be in accordance with 12.1.3.1.3.1 or 12.1.3.1.3.2.
12.1.3.1.3.1 For insulation that is installed directly against the ceiling or roof structure and is installed flat and parallel to the ceiling or roof structure, the maximum roof heihgt shall be measured to the underside of the insulation.
12.1.3.1.3.2 For insulation that is installed in a manner that causes it to deflect or sag down from the ceiling or roof structure, the maximum roof height shall be measured as half of the distance of the deflection from the insulation high point to the insulation low point. If the deflection or sag in the insulation exceeds 6 in. (152 mm), the maximum roof height shall be measured to the high point of the insulation.

Statement of Problem and Substantiation for Public Input

The maximum roof deck should be measured with regards to the same criteria applied to clearance to ceiling and deflector distance.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 346-NFPA 13-2013 [Section No. 12.1.3.1]	Companion Change

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 15:51:47 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369252307576.xml

Public Input No. 346-NFPA 13-2013 [Section No. 12.1.3.1]

Original | Hide Markup

12.1.3.1
The maximum building height shall be measured ~~to the underside of the roof deck or ceiling.~~ in accordance with 12.1.3.1.1 through 12.1.3.1.3.

Statement of Problem and Substantiation for Public Input

The maximum roof deck should be measured with regards to the same criteria applied to clearance to ceiling and deflector distance.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 15:49:13 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369252153965.xml

Public Input No. 311-NFPA 13-2013 [Section No. 12.1.4]

Original Hide Markup

12.1.4 * ~~– High Volume Low Speed (HVLS) Fans.~~
~~12.1.4.1 –~~
~~The installation of HVLS fans in buildings equipped with sprinklers, including ESFR sprinklers, shall comply with the following:~~

(1) ~~The maximum fan diameter shall be 24 ft (7.3 m).~~

(2) ~~The HVLS fan shall be centered approximately between four adjacent sprinklers.~~

(3) ~~The vertical clearance from the HVLS fan to sprinkler deflector shall be a minimum of 3 ft (0.9 m).~~

(4) ~~All HVLS fans shall be interlocked to shut down immediately upon receiving a waterflow signal from the alarm system in accordance with the requirements of NFPA 72 .~~

Statement of Problem and Substantiation for Public Input

This material is covered in Section 11.1.7 so there is no need to repeat it in this section. Placing it in this Section could lead one to conclued that it is only appicable to storage occupancies yet HVLS fans are probably more likely to be encountered in a production area than in a true storage area. We do not repeat other sections in individual chapters so why would HVLS fans be treated differently.

Submitter Information Verification

Submitter Full Name: GERALD SCHULTZ
Organization: FPI CONSORTIUM
Submittal Date: Mon May 20 11:37:53 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369064273669.xml

Public Input No. 193-NFPA 13-2013 [Section No. 12.3]

Original | Hide Markup

12.3* Adjacent Hazards or Design Methods.

For buildings with two or more adjacent hazards or design methods, the following shall apply:

(1) Where areas are not physically separated by a barrier or partition capable of delaying heat from a fire in one area from fusing sprinklers in the adjacent area, the required sprinkler protection for the more demanding design basis shall extend 15 ft (4.6 m) beyond its perimeter.

(2) The requirements of 12.3 (1) shall not apply where the areas are separated by a barrier partition that is capable of ~~preventing~~ delaying heat from a fire in one area from fusing sprinklers in the adjacent area.

(3) The requirements of 12.3 (1) shall not apply to the extension of more demanding criteria from an upper ceiling level to beneath a lower ceiling level where the difference in height between the ceiling levels is at least 2 ft (0.6 m).

Statement of Problem and Substantiation for Public Input

The terminology between sections 12.3(1) and 12.3(2) needs to be consistent. One currently uses the terminology "delay" while the other uses the term "prevent". Since "prevent" has a more permanent connotation, its use here is inappropriate. All we are trying to do is delay the operation of sprinklers in the remote area until sprinklers over the fire have had a chance to open.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu Apr 18 16:20:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366316435567.xml

Public Input No. 194-NFPA 13-2013 [Section No. 12.4.3]

Original | Hide Markup

12.4.3

ESFR sprinklers shall only be permitted to be installed on wet pipe systems.

Statement of Problem and Substantiation for Public Input

Clarification of language

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri Apr 19 13:28:15 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366392495273.xml

Public Input No. 243-NFPA 13-2013 [New Section after 12.5.2]

12.5.2.1 The maximum final area of operation is not restricted for criteria from section 12.12, chapter 18, and chapter 19.

Statement of Problem and Substantiation for Public Input

The assigned maximum area of 3,900 sf relates to the maximum 3,000 sf in area of operation for the design criteria of chapters 13, 14, 15, 16, and 17. It does not apply to the 5,000 sf to 6,000 sf areas of operation for the protection of idle pallets, rubber tires, or rolled paper.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Thu May 02 16:52:42 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367527962426.xml

Public Input No. 284-NFPA 13-2013 [Section No. 12.6.7 [Excluding any Sub-Sections]]

Original Hide Markup

CMSA and ESFR sprinklers shall be permitted to protect storage of Class I through Class IV commodities, <u>Group A</u> plastic commodities, miscellaneous storage, and other storage as specified in Chapter <u>12</u> through Chapter <u>20</u> or by other NFPA standards.

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_3_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This revision is offered to clarify, that the requirements are concerned with Group A plastics, as other types of plastics would be classified as Class III or Class IV commodities.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:17:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368551868805.xml

Public Input No. 424-NFPA 13-2013 [Section No. 12.6.7.1]

Original | Hide Markup

12.6.7.1
ESFR sprinklers designed to meet any criteria in Chapter 12 through Chapter 20 shall be permitted to protect light and ordinary hazard occupancies and any Extra Hazard criteria in Chapter 13 .

Statement of Problem and Substantiation for Public Input

For limited amounts of storage within chapter 13 any ESFR design should provide adequate protection.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH
Organization: VFS FIRE AND SECURITY
Submittal Date: Sat May 25 12:49:07 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369500547344.xml

Public Input No. 425-NFPA 13-2013 [Section No. 12.6.7.2]

Original | Hide Markup

12.6.7.2
Quick-response CMSA sprinklers designed to meet any criteria in Chapter 12 through Chapter 20 shall be permitted to protect light and ordinary hazard occupancies and any Extra Hazard criteria in Chapter 13 .

Statement of Problem and Substantiation for Public Input

For limited amounts of storage within chapter 13 any CMSA design should provide adequate protection.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH
Organization: VFS FIRE AND SECURITY
Submittal Date: Sat May 25 12:51:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369500684513.xml

Public Input No. 426-NFPA 13-2013 [Section No. 12.6.7.3]

Original Hide Markup

12.6.7.3

Standard-response CMSA sprinklers designed to meet any criteria in Chapter 12 through Chapter 20 shall be permitted to protect ordinary hazard occupancies and any Extra Hazard criteria in Chapter 13 .

Statement of Problem and Substantiation for Public Input

For limited amounts of storage within chapter 13 any CMSA design should provide adequate protection.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH
Organization: VFS FIRE AND SECURITY
Submittal Date: Sat May 25 12:55:51 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369500951158.xml

Public Input No. 118-NFPA 13-2013 [Section No. 12.7.7.3]

Original Hide Markup

~~12~~ 16 .~~7~~ 2 .~~7~~ 1 .3.4.1

The minimum design density for any sprinkler system installed in a storage occupancy shall be not less than 0.15 gpm/ft^2 (6.1 mm/min) after all adjustments are made.

Statement of Problem and Substantiation for Public Input

EDITORIAL. There are only 2 chapters that allow densities below 0.15 fpm/sf. Chapter 14 addresses it directly with 0.15 identifies for Class I and II and OHG2 for Class III and IV. Chapter 16 does not directly identify a minimum density. It is easier to find if this restriction is stated in chap 16 instead of in ch 12.

May want to evaluate whether rack storage of Class III and IV should have a higher minimum density as done in chap 14. Also consider giving a fixed value, such as 0.19, instead of referencing a curve from the Occupancy Hazard Approach.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Thu Mar 14 15:53:07 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1363290787618.xml

Public Input No. 116-NFPA 13-2013 [Section No. 12.8.6]

Original | Hide Markup

12.8.6 Hydraulically Designed ~~Occupancy Hazard Fire Control~~ Sprinkler System.

12.8.6.1

Unless indicated otherwise, the minimum water supply requirements for a hydraulically ~~designed occupancy hazard fire control~~ designed sprinkler system shall be determined by adding the hose stream allowance from Table 12.8.6.1 to the water supply for sprinklers.

Table 12.8.6.1 Hose Stream Allowance and Water Supply Duration

Sprinkler Type	Sprinkler Spacing Type	Number of Sprinklers in Design Area *	Size of Design Area	Hose Stream Allowance gpm	Hose Stream Allowance L/min	Water Supply Duration (minutes)
Control mode density/area	Standard and extended-coverage	NA	Up to 1200 ft^2 (111 m^2)	250	950	60
			Over 1200 ft^2 (111 m^2) up to 1500 ft^2 (139 m^2)	500	1900	90
			Over 1500 ft^2 (139 m^2) up to 2600 ft^2 (240 m^2)	500	1900	120
			Over 2600 ft^2 (240 m^2)	500	1900	150
CMSA	Standard	Up to 12	NA	250	950	60
		Over 12 to 15	NA	500	1900	90
		Over 15 to 25	NA	500	1900	120
		Over 25	NA	500	1900	150
	Extended-coverage	Up to 6	NA	250	950	60
		Up to 8	144 ft^2 (13.4 m^2) maximum	250	950	60
		Over 6 to 8	NA	500	1900	90
		Over 8 to 12	NA	500	1900	120
		Over 12	NA	500	1900	150
ESFR	Standard	Up to 12	NA	250	950	60
		Over 12 to 15	NA	500	1900	90
		Over 15 to 25	NA	500	1900	120
		Over 25	NA	500	1900	150

NA: Not applicable.

* For CSMA and ESFR sprinklers the additional sprinklers included in the design area for obstructions do not need to be considered in determining the total number of sprinklers in this column.

12.8.6.2

Unless indicated otherwise, the supply determined in accordance with 12.8.6.1 shall be available for the minimum duration specified in Table 12.8.6.1 .

Statement of Problem and Substantiation for Public Input

The use of the phrase Occupancy Hazard doesn't apply to storage. Also deleted Control Mode since this section also addresses ESFR. Suggest changing the title since all storage systems are hydraulically designed.

The only change was deleting Occupancy Hazard Fire Control. The program underlined the existing text for the section.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Thu Mar 14 12:11:43 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1363277503014.xml

Public Input No. 393-NFPA 13-2013 [Section No. 12.10.2 [Excluding any Sub-Sections]]

Original Hide Markup

To utilize the room design method, all rooms shall be enclosed with walls having a fire resistance rating equal to the water supply duration indicated in Chapters 13 through ~~20~~ 21 .

Statement of Problem and Substantiation for Public Input

Change needed to recognize the additional storage design approaches provided by Chapter 21

Submitter Information Verification

Submitter Full Name: Steve Roszell
Organization: Telgian Corporation
Submittal Date: Thu May 23 15:55:19 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369338919894.xml

Public Input No. 327-NFPA 13-2013 [Section No. 13.2.1]

Original Hide Markup

13.2.1
Table 13.2.1 and Figure 13.2.1 shall apply to any of the following situations:

(1) Miscellaneous storage of Class I through Class IV commodities up to 12 ft (3.7 m) in height

(2) Miscellaneous storage of Group A plastics up to 12 ft (3.7 m) in height

(3) Miscellaneous storage of rubber tires up to 12 ft (3.7 m) in height

(4) Miscellaneous storage of rolled paper up to 12 ft (3.7 m) in height

(5) Storage of Class I through Class IV commodities up to 12 ft (3.7 m) in height as directed by 14.2.3.1 and 16.2.1.2.1

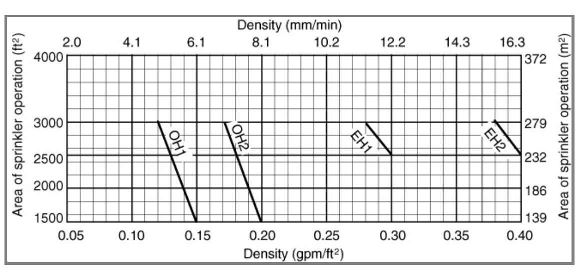
(6) Storage of Group A plastics up to 5 ft (1.5 m) in height as directed by 15.2.1 and 17.2.1.1

Table 13.2.1 Discharge Criteria for Miscellaneous Storage Up to 12 ft (3.7 m) in Height

Commodity	Type of Storage	Storage Height		Maximum Ceiling Height		Design Curve Figure 13.2.1	Note	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		≤12	≤3.7	—	—	OH1		0, 50, 100	0, 189, 379	250	946	90
Class II		≤10	≤3.0	—	—	OH1		0, 50, 100	0, 189, 379	250	946	90
Class II	Solid-piled, palletized, bin box, shelf, single-, double-, multi-row rack, and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	—	—	OH2		0, 50, 100	0, 189, 379	250	946	90
Class III		≤12	≤3.7	—	—	OH2		0, 50, 100	0, 189, 379	250	946	90
Class IV		≤10	≤3.0	—	—	OH2		0, 50, 100	0, 189, 379	250	946	90
Class IV	Palletized, bin box, shelf, and solid-piled	>10 to ≤12	>3.0 to ≤3.7	32	9.8	OH2		0, 50, 100	0, 189, 379	250	946	90
~~Rack~~												
	Single-, double-, multi-row rack and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	32	9.8	EH1		0, 50, 100	0, 189, 379	500	1893	120
Group A Plastic Storage												
				—	—	OH2		0,	0,	250	946	90

			≤5	≤1.5					50, 100	189, 379			
Cartoned	Unexpanded and expanded	Solid-piled, palletized, bin box, shelf, single-, double-, multi-row rack, and back-to-back shelf storage	>5 to ≤10	>1.5 to ≤3.0	15	4.6	EH1		0, 50, 100	0, 189, 379	500	1893	120
			>5 to ≤10	>1.5 to ≤3.0	20	6.1	EH2		0, 50, 100	0, 189, 379	500	1893	120
			>10 to ≤12	>3.0 to ≤3.7	17	5.2	EH2		0, 50, 100	0, 189, 379	500	1893	120
		Solid-piled, palletized, bin box, shelf, and back-to-back shelf storage	>10 to ≤12	>3.0 to ≤3.7	32	9.8	EH2		0, 50, 100	0, 189, 379	500	1893	120
~~Rack~~													
Single-, double-, multi-row rack			>10 to ≤12	>3.0 to ≤3.7	32	9.8	OH2	+ 1 level of in-rack	0, 50, 100	0, 189, 379	250	946	90
Exposed	Unexpanded and expanded	Solid-piled, palletized, bin box, shelf, single-, double-, multi-row rack, and back-to-back shelf storage	≤5	≤1.5	—	—	OH2		0, 50, 100	0, 189, 379	250	946	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		0, 50, 100	0, 189, 379	500	1893	120
		Solid-piled, palletized, bin box, shelf, single-, double-, multi-row rack, and back-to-back shelf storage	>5 to ≤10	>1.5 to ≤3.0	15	4.6	EH2		0, 50, 100	0, 189, 379	500	1893	120
	Unexpanded	Solid-piled, palletized, bin box, shelf, single-, double-, multi-row rack, and back-to-back shelf storage	>5 to ≤10	>1.5 to ≤3.0	20	6.1	EH2		0, 50, 100	0, 189, 379	500	1893	120
	Expanded												
~~Rack~~													
Single-, double-, multi-row rack			>5 to ≤10	>1.5 to ≤3.0	20	6.1	OH2	+1 level of in-rack	0, 50, 100	0, 189, 379	250	946	90
Unexpanded 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		0, 50, 100	0, 189, 379	500	1893	120
~~Rack~~													
Single-, double-, multi-row rack			>10 to ≤12	>3.0 to ≤3.7	17	5.2	EH2		0, 50, 100	0, 189, 379	500	1893	120
			>10 to ≤12	>3.0 to ≤3.7	32	9.8	OH2	+1 level of in-rack	0, 50, 100	0, 189, 379	250	946	90
Tire Storage													
Tires		On floor, on side	>5 to ≤12	>1.5 to ≤3.7	32	9.8	EH1		0, 50, 100	0, 189, 379	500	1893	120
		On floor, on tread, or on side	≤5	≤1.5	—	—	OH2		0, 50, 100	0, 189, 379	250	946	90
		Single-, double-, or multiple-row racks on tread or on side	≤5	≤1.5	—	—	OH2		0, 50, 100	0, 189, 379	250	946	90
		Single-row rack, portable, on tread or on side	>5 to ≤12	>1.5 to ≤3.7	32	9.8	EH1		0, 50, 100	0, 189, 379	500	1893	120
		Single-row rack, fixed, on tread or on side	>5 to ≤12	>1.5 to ≤3.7	32	9.8	EH1		0, 50, 100	0, 189, 379	500	1893	120
			>5 to ≤12	>1.5 to ≤3.7	32	9.8	OH2	+1 level of in-rack	0, 50, 100	0, 189, 379	250	946	90
Rolled Paper Storage													
Heavyweight and mediumweight		On end	≤10	≤3.0	30	9.1	OH2		0, 50, 100	0, 189, 379	250	946	90
Tissue and lightweight		On end	≤10	≤3.0	30	9.1	EH1		0, 50, 100	0, 189, 379	250	946	120

Figure 13.2.1 Miscellaneous Storage Up to 12 ft (3.7 m) in Height — Design Curves (see Table 13.2.1).



Statement of Problem and Substantiation for Public Input

The single term rack appears in the Table for several of the proteciton schemes while the use of single-, double- and multi-row appears where rack is used with tires. Adding the specific guidance to those designations for Class I-IV and Group A Plastic will clarifiy the designation.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 13:27:34 EDT 2013

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Public Input No. 329-NFPA 13-2013 [New Section after 13.3.4]

13.4 Solid Shelf Rack.
13.4.1 The storage of Class I-IV Commodity on solid shelf racks shall comply with 16.1.6.
13.4.2 The storage or Group A Plastic on solid shelf racks shall comply with 17.1.5.

Statement of Problem and Substantiation for Public Input

Chapter 13 does not currently provide direction on the application criteria for solid shelf racks. As written Table 13.2.1 could infer that solid shelf rack storage is allowed.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 13:36:34 EDT 2013

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Public Input No. 330-NFPA 13-2013 [Section No. 13.3.4.2]

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13.3.4.2
Maximum horizontal spacing of in-rack sprinklers ~~in single- or double-row racks with Class I, II, III, or IV commodities shall be in accordance with~~ ~~Table 13.3.4.2~~ ~~.~~

~~Table 13.3.4.2 In-Rack Sprinkler Spacing for Class I, II, III, and IV Commodities Stored in Single- or Double-Row Racks Up to 12 ft (3.7 m) in Height~~

~~Commodity Class Aisle Widths I and~~
~~II III IV Encapsulated ft m ft m ft m ft m No 8 2.4 12 3.7 12 3.7 10 3.0 No 4 1.2 12 3.7 10 3.0 10 3.0 Yes — — 8 2.4 8 2.4 8 2.4~~

shall be not exceed 8 ft (2.4 m).

Statement of Problem and Substantiation for Public Input

The criteria provided in Section 13.3.4.2 and the associated Table applies to Class I-IV Commodites; however, the only required installation of in-rack sprinklers provided by Table 13.2.1 is for Group A Plastics and Tires. The maximum spacing for these commodities is 8 ft as prescribed in Chapter 17 and 18.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 13:41:06 EDT 2013

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Public Input No. 351-NFPA 13-2013 [New Section after 14.1.2]

14.1.3 Protection criteria for Group A plastics shall be permitted for the protection of the same storage height and configuration of Class I, II, III and IV commodities.

Statement of Problem and Substantiation for Public Input

The same as 16.1.2.2 provides that rack storage of Class I-IV commodities can be protected by protection designed for Group A plastics 14.1.3 should be added to permit the same for Class I-IV commodity storage covered under Chapter 14.

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Submitter Full Name: Tracey Bellamy
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Submittal Date: Wed May 22 16:03:12 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369252992672.xml

Public Input No. 574-NFPA 13-2013 [Section No. 14.4.1]

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For 25 ft Maximum Storage Height, 32 ft Maximum Ceiling Height, K16.8 Nominal K-Factor, modify Orientation as follows: Upright/ pendent"

14.4.1

Protection of palletized and solid-piled storage of Class I through Class IV commodities shall be in accordance with Table 14.4.1 .

Table 14.4.1 ESFR Protection of Palletized and Solid-Piled Storage of Class I Through Class IV Commodities

Commodity	Maximum Storage Height		Maximum Ceiling/Roof Height		Nominal K-Factor	Orientation	Minimum Operating Pressure	
	ft	m	ft	m			psi	bar
Class I, II, III, or IV, encapsulated and nonencapsulated (no open-top containers)	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4
					16.8 (240)	Upright/ pendent	35	2.4
					22.4 (320)	Pendent	25	1.7
					25.2 (360)	Pendent	15	1.0
	25	7.6	30	9.1	14.0 (200)	Upright/ pendent	50	3.4
					16.8 (240)	Upright/ pendent	35	2.4
					22.4 (320)	Pendent	25	1.7
					25.2 (360)	Pendent	15	1.0
			32	9.8	14.0 (200)	Upright/ pendent	60	4.1
					16.8 (240)	Pendent	42	2.9
	30	9.1	35	10.7	14.0 (200)	Upright/ pendent	75	5.2
					16.8 (240)	Upright/ pendent	52	3.6
					22.4 (320)	Pendent	35	2.4
					25.2 (360)	Pendent	20	1.4
	35	10.7	40	12.2	16.8 (240)	Upright/ pendent	52	3.6
					22.4 (320)	Pendent	40	2.8
					25.2 (360)	Pendent	25	1.7
	35	10.7	45	13.7	22.4 (320)	Pendent	40	2.8
					25.2 (360)	Pendent	40	2.8
	40	12.2	45	13.7	22.4 (320)	Pendent	40	2.8
					25.2 (360)	Pendent	40	2.8

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

It appears that the design indicated is supposed to apply to the upright sprinkler as well as the pendent sprinkler as this is the case for the design indicated for 30 ft storage in a 35 ft high ceiling.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Submittal Date: Tue Jun 04 08:29:16 EDT 2013

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Public Input No. 575-NFPA 13-2013 [Section No. 14.4.1]

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Delete the design guidelines indicated for 20 ft storage under a 25 ft high ceiling.

14.4.1

Protection of palletized and solid-piled storage of Class I through Class IV commodities shall be in accordance with Table 14.4.1 .

Table 14.4.1 ESFR Protection of Palletized and Solid-Piled Storage of Class I Through Class IV Commodities

Commodity	Maximum Storage Height		Maximum Ceiling/Roof Height		Nominal K-Factor	Orientation	Minimum Operating Pressure	
	ft	m	ft	m			psi	bar
Class I, II, III, or IV, encapsulated and nonencapsulated (no open-top containers)	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4
					16.8 (240)	Upright/ pendent	35	2.4
					22.4 (320)	Pendent	25	1.7
					25.2 (360)	Pendent	15	1.0
	25	7.6	30	9.1	14.0 (200)	Upright/ pendent	50	3.4
					16.8 (240)	Upright/ pendent	35	2.4
					22.4 (320)	Pendent	25	1.7
					25.2 (360)	Pendent	15	1.0
			32	9.8	14.0 (200)	Upright/ pendent	60	4.1
					16.8 (240)	Pendent	42	2.9
	30	9.1	35	10.7	14.0 (200)	Upright/ pendent	75	5.2
					16.8 (240)	Upright/ pendent	52	3.6
					22.4 (320)	Pendent	35	2.4
					25.2 (360)	Pendent	20	1.4
	35	10.7	40	12.2	16.8 (240)	Upright/ pendent	52	3.6
					22.4 (320)	Pendent	40	2.8
					25.2 (360)	Pendent	25	1.7
	35	10.7	45	13.7	22.4 (320)	Pendent	40	2.8
					25.2 (360)	Pendent	40	2.8
	40	12.2	45	13.7	22.4 (320)	Pendent	40	2.8
					25.2 (360)	Pendent	40	2.8

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

The design guidelines for 20 ft high storage under a 25 ft high ceiling match those indicated for 25 ft storage under a 30 ft high ceiling and are thus redundant.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Submittal Date: Tue Jun 04 08:33:53 EDT 2013

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Public Input No. 292-NFPA 13-2013 [Section No. 15.2.2]

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15.2.2*

Protection for plastic and rubber commodities shall be in accordance with Section 15.2 . The decision tree shown in Figure 15.2.2 shall be used to determine the protection in each specific situation

;

.

15.2.2.1 Protection for Group A plastic commodities shall be subject to the following limitations:

(1) Commodities that are stored palletized, solid piled, or in bin boxes up to 25 ft (7.6 m) in height.

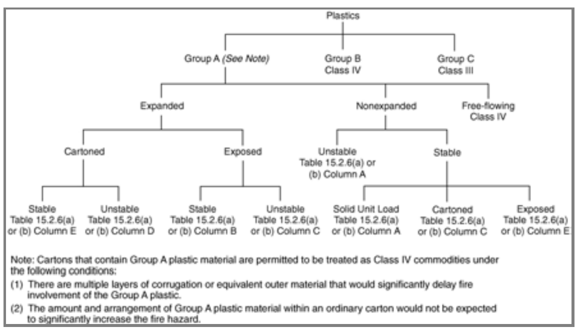
(2) Commodities that are stored in shelf storage up to 15 ft (4.6 m) in height.

(3) Commodities that are stored using back-to-back shelf storage up to 15 ft (4.6 m) in height. The minimum aisle width shall be 60 in. (1524 mm). The design criteria shall be in accordance with Table 15.2.2. The back-to-back shelf shall have a full height solid vertical transverse barrier of ⅜ in. (9.5 mm) plywood or particleboard, 22 gauge sheet metal, or equivalent, from face of aisle to face of aisle, spaced at a maximum 45 ft (13.7 m) interval. The transverse barrier shall be permitted to terminate at the longitudinal barrier.

Table 15.2.2 Back-to-Back Shelf Storage of Cartoned Unexpanded Group A Plastics

Storage Height		Ceiling Height		Protection	
ft	m	ft	m		
Over 5 up to 8	1.5/2.4	Up to 14	4.3	Ordinary Hazard Group 2	
Up to 12	3.7	Up to 15	4.6	0.45 gpm/ft ^{2} over 2500 ft ^{2}	18.3 mm/min/232 m ^{2}
Up to 12	3.7	Up to 30	9.1	0.6 gpm/ft ^{2} over 2500 ft ^{2}	24.5 mm/min/232 m ^{2}
Up to 15	4.6	Up to 30	9.1	0.7 gpm/ft ^{2} over 2500 ft ^{2}	28.5 mm/min/232 m ^{2}

Figure 15.2.2 Decision Tree.



Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

As currently written it is unclear which sections in Chapter 15 are referring to plastic and rubber commodities in general and which sections are speaking specifically to plastics and rubber that fit the Group A plastic classification. Further, since the majority of Chapter 15 (ie. everything after 15.2.5) actually deals with just Group A commodities, the text seems to suggest that all rubber commodities are considered to be Group A plastics.
Because 5.6.4 explains which rubber products are Group A and which are classified as Class B, it is not necessary to repeatedly refer to “rubber” after 15.2.2.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:30:43 EDT 2013

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Public Input No. 293-NFPA 13-2013 [Sections 15.2.6, 15.2.7]

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Sections 15.2.6, 15.2.7

15.2.6*

Design areas and densities for the appropriate storage configuration of Group A plastic commodities shall be selected from Table 15.2.6(a) or Table 15.2.6(b) as appropriate.

Table 15.2.6(a) Design Densities for Palletized, Solid-Piled, Bin Box, or Shelf Storage of Plastic and Rubber Commodities (U.S. Customary Units)

Maximum Storage Height (ft)	Roof/Ceiling Height (ft)	Density (gpm/ft^2) A	B	C	D	E
>5 to ≤12	Up to 15	0.2	EH2	0.3	EH1	EH2
	>15 to 20	0.3	0.6	0.5	EH2	EH2
	>20 to 32	0.4	0.8	0.6	0.45	0.7
15	Up to 20	0.3	0.6	0.5	0.4	0.45
	>20 to 25	0.4	0.8	0.6	0.45	0.7
	>25 to 35	0.45	0.9	0.7	0.55	0.85
20	Up to 25	0.4	0.8	0.6	0.45	0.7
	>25 to 30	0.45	0.9	0.7	0.55	0.85
	>30 to 35	0.6	1.2	0.85	0.7	1.1
25	Up to 30	0.45	0.9	0.7	0.55	0.85
	>30 to 35	0.6	1.2	0.85	0.7	1.1

Notes:

(1) Minimum clearance between sprinkler deflector and top of storage shall be maintained as required.

(2) Column designations correspond to the configuration of plastics storage as follows:

A: (1) Nonexpanded, unstable

(2) Nonexpanded, stable, solid unit load

B: Expanded, exposed, stable

C: (1) Expanded, exposed, unstable

(2) Nonexpanded, stable, cartoned

D: Expanded, cartoned, unstable

E: (1) Expanded, cartoned, stable

(2) Nonexpanded, stable, exposed

(3) EH1 = Density required by Figure 13.2.1 for Curve EH1

EH2 = Density required by Figure 13.2.1 for Curve EH2

(4) Roof/ceiling height >35 ft is not permitted.

Table 15.2.6(b) Design Densities for Palletized, Solid-Piled, Bin Box, or Shelf Storage of Plastic and Rubber Commodities (S.I. Units)

Maximum Storage Height (m)	Roof/Ceiling Height (m)	Density (mm/min) A	B	C	D	E
>1.5 to ≤3.6	Up to 4.6	8.2	EH2	12.2	EH1	EH2
	>4.6 to 6.1	12.2	24.4	20.4	EH2	EH2
	>6.1 to 9.8	16.3	32.6	24.4	18.3	28.5
4.6	Up to 6.1	12.2	24.4	20.4	16.3	18.3
	>6.1 to 7.6	16.3	32.6	24.4	18.3	28.5
	>7.6 to 10.7	18.3	36.7	28.5	22.4	34.6
6.1	Up to 7.6	16.3	32.6	24.4	18.3	28.5
	>7.6 to 9.1	18.3	36.7	28.5	22.4	34.6
	>9.1 to 10.7	24.4	49.0	34.6	28.5	44.8
7.6	Up to 9.1	18.3	36.7	28.5	22.4	34.6
	>9.1 to 10.7	24.4	49.0	34.6	28.5	44.8

Notes:

(1) Minimum clearance between sprinkler deflector and top of storage shall be maintained as required.

(2) Column designations correspond to the configuration of plastics storage as follows:

A: (1) Nonexpanded, unstable

(2) Nonexpanded, stable, solid unit load

B: Expanded, exposed, stable

C: (1) Expanded, exposed, unstable

(2) Nonexpanded, stable, cartoned

D: Expanded, cartoned, unstable

E: (1) Expanded, cartoned, stable

(2) Nonexpanded, stable, exposed

(3) EH1 = Density required by Figure 13.2.1 for Curve EH1

EH2 = Density required by Figure 13.2.1 for Curve EH2

(4) Roof/ceiling height >35 ft is not permitted.

15.2.7

The ceiling-only protection criteria specified in Chapter 17 for rack storage of plastic and rubber commodities shall be permitted to be used for solid-piled and palletized storage of the same commodity at the same height and clearance to ceiling.

Additional Proposed Changes

	File Name	Description	Approved
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Statement of Problem and Substantiation for Public Input

As currently written it is unclear which sections in Chapter 15 are referring to plastic and rubber commodities in general and which sections are speaking specifically to plastics and rubber that fit the Group A plastic classification. Further, since the majority of Chapter 15 (ie. everything after 15.2.5) actually deals with just Group A commodities, the text seems to suggest that all rubber commodities are considered to be Group A plastics.
Because 5.6.4 explains which rubber products are Group A and which are classified as Class B, it is not necessary to repeatedly refer to “rubber” after 15.2.2.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:32:21 EDT 2013

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Delete the design guidelines indicated for 20 ft storage.

15.4.1

Protection of palletized and solid-piled storage of cartoned or uncartoned unexpanded plastic and cartoned expanded or exposed expanded plastic shall be in accordance with Table 15.4.1 .

Table 15.4.1 ESFR Protection of Palletized and Solid-Piled Storage of Plastic and Rubber Commodities

Storage Arrangement	Commodity	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	Nominal K-Factor	Orientation	Minimum Operating Pressure psi	Minimum Operating Pressure bar
Palletized and solid-piled storage (no open-top containers)	Cartoned unexpanded plastic	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4
						16.8 (240)	Upright/ pendent	35	2.4
						22.4 (320)	Pendent	25	1.7
						25.2 (360)	Pendent	15	1.0
				30	9.1	14.0 (200)	Upright/ pendent	50	3.4
						16.8 (240)	Upright/ pendent	35	2.4
						22.4 (320)	Pendent	25	1.7
						25.2 (360)	Pendent	15	1.0
				35	10.7	14.0 (200)	Upright/ pendent	75	5.2
						16.8 (240)	Upright/ pendent	52	3.6
						22.4 (320)	Pendent	35	2.4
						25.2 (360)	Pendent	20	1.4
				40	12.2	16.8 (240)	Pendent	52	3.6
						22.4			

		40	12.2	(320)	Pendent	40	2.8
				25.2 (360)	Pendent	25	1.7
		45	13.7	22.4 (320)	Pendent	40	2.8
				25.2 (360)	Pendent	40	2.8
		30	9.1	14.0 (200)	Upright/ pendent	50	3.4
				16.8 (240)	Upright/ pendent	35	2.4
				22.4 (320)	Pendent	25	1.7
				25.2 (360)	Pendent	15	1.0
		32	9.8	14.0 (200)	Upright/ pendent	60	4.1
				16.8 (240)	Upright/ pendent	42	2.9
25	7.6	35	10.7	14.0 (200)	Upright or pendent	75	5.2
				16.8 (240)	Upright/ pendent	52	3.6
				22.4 (320)	Pendent	35	2.4
				25.2 (360)	Pendent	20	1.4
		40	12.2	16.8 (240)	Pendent	52	3.6
				22.4 (320)	Pendent	40	2.8
				25.2 (360)	Pendent	25	1.7
		45	13.7	22.4 (320)	Pendent	40	2.8
				25.2 (360)	Pendent	40	2.8
30	9.1	35	10.7	14.0 (200)	Upright/ pendent	75	5.2
				16.8 (240)	Upright/ pendent	52	3.6
				22.4 (320)	Pendent	35	2.4
				25.2 (360)	Pendent	20	1.4
		40	12.2	16.8 (240)	Pendent	52	3.6
				22.4 (320)	Pendent	40	2.8
				25.2 (360)	Pendent	25	1.7
		45	13.7	22.4 (320)	Pendent	40	2.8
				25.2 (360)	Pendent	40	2.8
35	10.7	40	12.2	16.8 (240)	Pendent	52	3.6
				22.4 (320)	Pendent	40	2.8
				25.2 (360)	Pendent	25	1.7
				22.4			

			45	13.7	(320)	Pendent	40	2.8
					25.2 (360)	Pendent	40	2.8
	40	12.2	45	13.7	22.4 (320)	Pendent	40	2.8
					25.2 (360)	Pendent	40	2.8
Exposed unexpanded plastic	20	6.1	25	7.6	14.0 (200)	Pendent	50	3.4
					16.8 (240)	Pendent	35	2.4
			30	9.1	14.0 (200)	Pendent	50	3.4
					16.8 (240)	Pendent	35	2.4
			35	10.7	14.0 (200)	Pendent	75	5.2
					16.8 (240)	Pendent	52	3.6
			40	12.2	16.8 (240)	Pendent	52	3.6
	25	7.6	30	9.1	14.0 (200)	Pendent	50	3.4
					16.8 (240)	Pendent	35	2.4
			32	9.8	14.0 (200)	Pendent	60	4.1
					16.8 (240)	Pendent	42	2.9
			35	10.7	14.0 (200)	Pendent	75	5.2
					16.8 (240)	Pendent	52	3.6
			40	12.2	16.8 (240)	Pendent	52	3.6
					22.4 (320)	Pendent	50	3.4
					25.2 (360)	Pendent	50	3.4
	30	9.1	35	10.7	14.0 (200)	Pendent	75	5.2
					16.8 (240)	Pendent	52	3.6
			40	12.2	16.8 (240)	Pendent	52	3.6
					22.4 (320)	Pendent	50	3.4
					25.2 (360)	Pendent	50	3.4
	35	10.7	40	12.2	16.8 (240)	Pendent	52	3.6
					22.4 (320)	Pendent	50	3.4
					25.2 (360)	Pendent	50	3.4
	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4
					16.8 (240)	Upright/ pendent	35	2.4
			30	9.1	14.0 (200)	Upright/ pendent	50	3.4
					16.8	Upright/		

Cartoned expanded plastic					(240)	pendent	35	2.4
			30	9.1	14.0 (200)	Upright/ pendent	50	3.4
					16.8 (240)	Upright/ pendent	35	2.4
	25	7.6	32	9.8	14.0 (200)	Pendent	60	4.1
					16.8 (240)	Upright/ pendent	42	2.9
Exposed* expanded plastic	25	7.6	40	12.2	25.2 (360)	Pendent	60	4.1

*Applies to closed array storage only.

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

The design guidelines for 20 ft high storage match those indicated for 25 ft storage and are thus redundant.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global

Submittal Date: Tue Jun 04 08:36:03 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370349363929.xml

Public Input No. 354-NFPA 13-2013 [New Section after 16.1.2.2]

16.1.2.3 Isolated High-Challenge Commodities
The protection of isolated high-challenge commodities requiring a greater level of protection than is available from the overhead sprinkler system shall be permitted to be protected in accordance with 16.1.2.3.1 through 16.1.2.3.9.

16.1.2.3.1 Where the storage rack will not be solely dedicated to the storage of high-challenge commodities then either of the following shall apply: (1) extend the protection prescribed by 16.1.2.3 horizontally one pallet load in all directions beyond the designated high-challenge commodities storage area, or (2) install a vertical barrier to segregate the high-challenge commodities from any adjacent commodities.

16.1.2.3.2 Commodities that can be protected by the ceiling-level sprinkler system shall be permitted to be stored vertically above as well as horizontally adjacent to the portions of the storage rack equipped prescribed by 16.1.2.3.

16.1.2.3.3 Horizontal Barriers
Horizontal barriers shall be installed at every tier level of the dedicated storage rack where the rack is equipped with solid shelves. Where the dedicated storage rack is open-frame, horizontal barriers shall be installed at vertical increments not exceeding 12 ft (3.6 m). The barriers shall span horizontally so that all flue spaces within the rack bay are covered. A maximum 3 in. (75 mm) wide gap shall be permitted at rack uprights.

16.1.2.3.3.1 The solid barrier shall be installed on a horizontal plane within a rack, beneath which in-rack sprinklers shall be installed. The barrier shall be constructed of minimum 22 ga (0.7 mm) sheet metal or minimum 3/8 in. (10 mm) plywood. The barrier shall extend to both ends and both aisle faces of the racks covering up both the longitudinal and transverse flue spaces of the rack bays in which they are installed. The barrier shall be fitted to within 3 in. (75 mm) of any vertical rack member or other equipment that would create an opening, such as vertical in-rack sprinkler pipe drops.

16.1.2.3.4 In-Rack Sprinklers
Minimum K8.0 (K115), quick-response sprinklers (ceiling-level or in-rack) shall be installed beneath each horizontal barrier. The deflector of the sprinkler shall be located as close to the underside of the horizontal barrier as possible.

16.1.2.3.4.1 For single-row racks, sprinklers shall be installed at each rack upright as well as at each rack mid-bay as shown in Figure 16.1.2.3.4.1. The maximum linear spacing between sprinklers shall not exceed 5 ft (1.5 m).

16.1.2.3.4.2 For double-row racks, sprinklers shall be installed at each rack upright within the longitudinal flue space as well as at the face of the rack and at the mid-bay face of each rack bay as shown in Figure 16.1.2.3.4.2. The maximum linear spacing between sprinklers shall not exceed 5 ft (1.5 m) at the rack face and 10 ft (3.0 m) within the longitudinal flue space.

16.1.2.3.4.3 For multiple-row racks, an alternating sprinkler arrangement shall be installed within adjacent transverse flue spaces as shown in Figure 16.1.2.3.4.3 with sprinklers at the face of each flue space. The maximum linear spacing between sprinklers at the face and each alternating bay shall not exceed 5 ft (1.5 m) and shall not exceed 10 ft (3.0 m) between sprinklers at every other bay.

16.1.2.3.5 The design of the an in-rack sprinkler system shall be based on a minimum flow of 60 gpm (230 L/min) from the most remote 6 sprinklers for single-row racks or the most remote 8 sprinklers for both double-row and multiple-row racks.

16.1.2.3.6 A hose demand allowance of 500 gpm (1,900 L/min) shall be included in the hydraulic design.

16.1.2.3.7 The demand duration shall provide for a minimum of 2 hours.

16.1.2.3.8 The in-rack sprinkler demand shall not be required to be hydraulically balanced with the ceiling-level sprinkler system.
.
16.1.2.3.9 Ceiling Sprinkler System
The ceiling-level sprinkler system shall be designed based on the highest commodity hazard not protected by the criteria prescribed by 16.1.2.3.

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPA_13_PI_Scheme_A_Figure_16.1.2.3.4.X.docx	Figures for use with proposed text	

Statement of Problem and Substantiation for Public Input

The introduction of Scheme A protection was semi incorporated into 16.1.6.6 last cycle for certain solid shelf arrangements; however, complete details of the use of such protection for higher hazard commodities was not included.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 16:18:47 EDT 2013

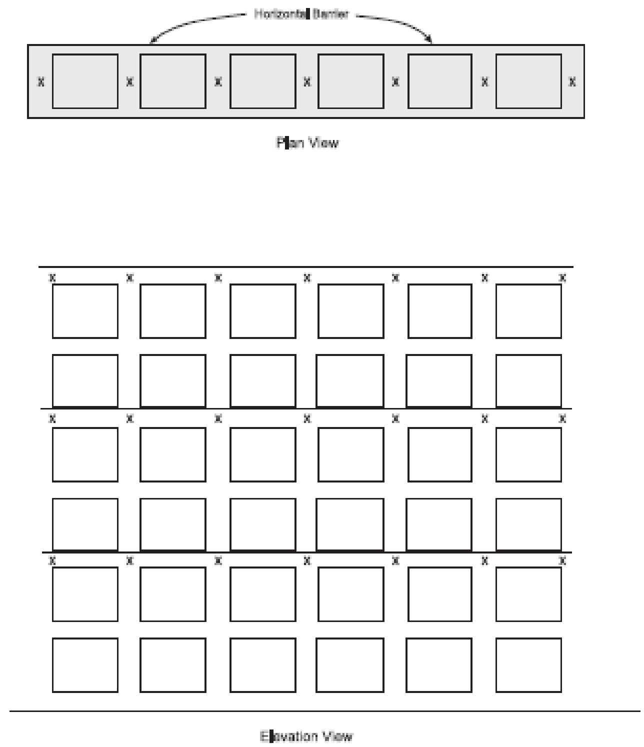

Figure 16.1.2.4.1

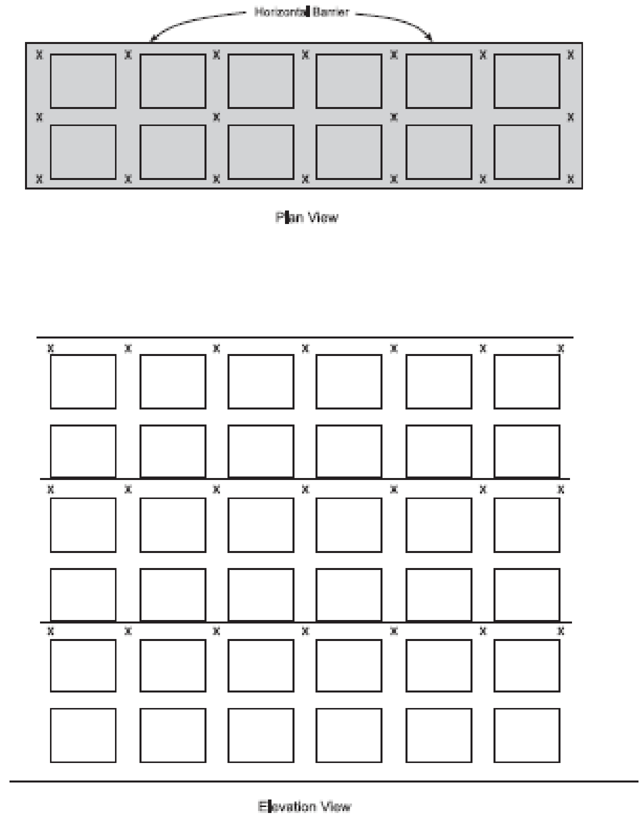

Figure 16.1.2.3.4.2

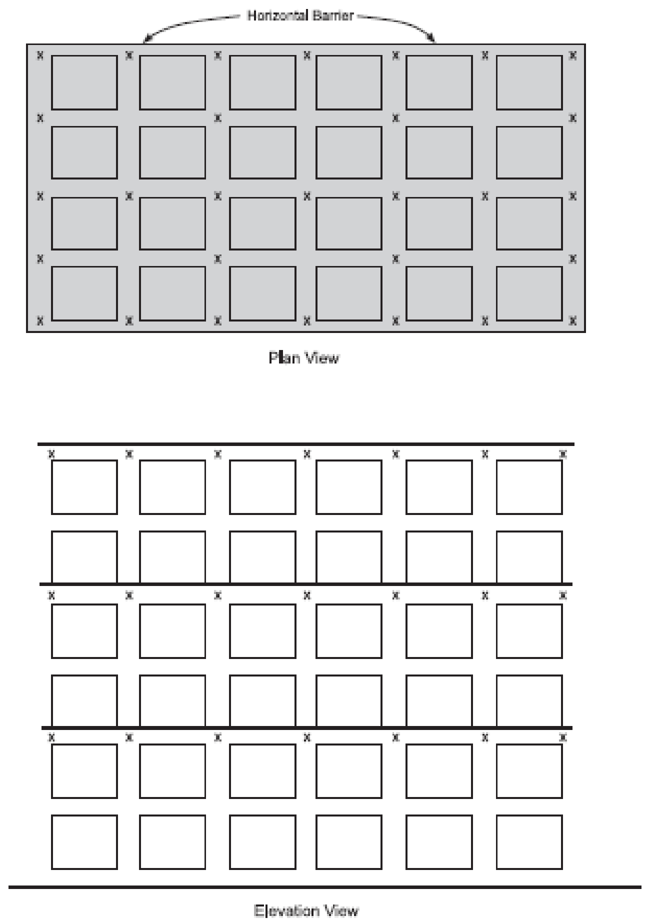

Figure 16.1.2.3.4.3

Public Input No. 352-NFPA 13-2013 [Section No. 16.1.4]

Original Hide Markup

16.1.4 Fire Protection of Steel Columns — Columns Within Storage Racks ~~of Class I Through Class IV and Plastic Commodities~~ .

See Section C.10 .

16.1.4.1

Where fireproofing of building columns is not provided and storage heights are in excess of 15 ft (4.6 m), protection of building columns within the rack structure or vertical rack members supporting the building shall be protected in accordance with one of the following:

(1) Sidewall sprinklers at the 15 ft (4.6 m) elevation, pointed toward one side of the steel column

(2) Provision of ceiling sprinkler density for a minimum of 2000 ft ^{2} (186 m ^{2}) with ordinary 165°F (74°C) or high-temperature 286°F (141°C) rated sprinklers as shown in Table 16.1.4.1 for storage heights above 15 ft (4.6 m), up to and including 20 ft (6.1 m)

(3) Provision of CMSA or ESFR ceiling sprinkler protection

Table 16.1.4.1 Ceiling Sprinkler Densities for Protection of Steel Building Columns

	Aisle Width			
	4 ft (1.2 m)		8 ft (2.4 m)	
Commodity Classification	gpm/ft ^{2}	(L/min)/m ^{2}	gpm/ft ^{2}	(L/min)/m ^{2}
Class I	0.37	15.1	0.33	13.5
Class II	0.44	17.9	0.37	15.1
Class III	0.49	20.0	0.42	17.1
Class IV	0.68	27.7	0.57	23.2

16.1.4.1.1

This protection shall not be required where storage in fixed racks is protected by in-rack sprinklers.

16.1.4.2

The flow from a column sprinkler(s) shall be permitted to be omitted from the sprinkler system hydraulic calculations.

Statement of Problem and Substantiation for Public Input

The Section does not apply to Group A Plastics and is limited to Class I-IV by inclusion in Chapter 16. The proposed change matches the title of 17.1.4 for consistency.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 16:06:47 EDT 2013

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Public Input No. 80-NFPA 13-2013 [Section No. 16.1.6]

Original Hide Markup

16.1.6 Solid ~~Shelf Rack~~ Shelving .

16.1.6.1

Where solid shelving in single-, double-, and multiple-row racks exceeds 20 ft^2 (1.86 m^2) but does not exceed 64 ft^2 (5.95 m^2) in area, sprinklers shall not be required below every shelf, but shall be installed at the ceiling and below shelves at intermediate levels not more than 6 ft (2 m) apart vertically. (See Section C.11 .)

16.1.6.2

Where solid shelving in single-, double-, and multiple-row racks exceeds 64 ft^2 (5.95 m^2) in area or where the levels of storage exceed 6 ft (2 m), sprinklers shall be installed at the ceiling and below each level of shelving.

16.1.6.3

Where multiple-row racks of any height have no longitudinal flue or where double-row racks with storage up 25 ft (7.6 m) in height have no longitudinal flue, the situation shall not be considered solid shelves where transverse flues exist at maximum 5 ft (1.5 m) intervals and additional in-rack sprinklers shall not be required in accordance with 16.1.6.1 and 16.1.6.2 .

16.1.6.4

The maximum horizontal spacing between in-rack sprinklers shall be 10 ft (3.1 m).

16.1.6.5

Where the criteria in 16.1.6.5 are not met, the water demand for the in-rack sprinklers shall be based on a minimum flow of 30 gpm (114 L/min) discharging from the following number of sprinklers balanced to the ceiling sprinkler demand in accordance with Section 23.8:

(1) Six sprinklers where only one level of in-rack sprinklers is installed to protect Class I, Class II, or Class III commodity

(2) Eight sprinklers where only one level of in-rack sprinklers is installed to protect Class IV commodity

(3) Ten sprinklers (five on each of the top two levels) where more than one level of in-rack sprinklers is installed to protect Class I, Class II, or Class III commodity

(4) Fourteen sprinklers (seven on each of the top two levels) when more than one level of in-rack sprinklers is installed to protect Class IV commodity

16.1.6.6

The water demand for in-rack sprinklers shall not be required to be balanced to the ceiling sprinkler demand where additional face sprinklers are installed under each solid shelf at rack uprights and the in-rack sprinklers are calculated to discharge at least 60 gpm (227 L/min) from eight sprinklers.

Statement of Problem and Substantiation for Public Input

The old term solid shelf rack is misleading and implies only the rack is an obstruction concern. Now that the issue of obstruction has been clarified by the newer definition of Solid Shelving (for which solid shelf rack is a subset), there is no need to retain this phrase. This change is editorial and provides better consistency throughout the document.

I modified only the title but the program underlined all the existing text.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 81-NFPA 13-2013 [Section No. 16.2.1.3.5]	
Public Input No. 82-NFPA 13-2013 [Section No. 17.1.5]	

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ

Submittal Date: Wed Feb 27 11:53:21 EST 2013

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Public Input No. 328-NFPA 13-2013 [Section No. 16.1.6.5]

Original Hide Markup

16.1.6.5

Where the criteria in 16.1.6. ~~5~~ 6 are not met, the water demand for the in-rack sprinklers shall be based on a minimum flow of 30 gpm (114 L/min) discharging from the following number of sprinklers balanced to the ceiling sprinkler demand in accordance with Section 23.8:

(1) Six sprinklers where only one level of in-rack sprinklers is installed to protect Class I, Class II, or Class III commodity

(2) Eight sprinklers where only one level of in-rack sprinklers is installed to protect Class IV commodity

(3) Ten sprinklers (five on each of the top two levels) where more than one level of in-rack sprinklers is installed to protect Class I, Class II, or Class III commodity

(4) Fourteen sprinklers (seven on each of the top two levels) when more than one level of in-rack sprinklers is installed to protect Class IV commodity

Statement of Problem and Substantiation for Public Input

Section should not reference itself. Correct the reference to 16.1.6.6.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 13:33:50 EDT 2013

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Public Input No. 93-NFPA 13-2013 [Sections 16.2.1.3.3.1, 16.2.1.3.3.2]

Original Hide Markup

Sections 16.2.1.3.3.1, 16.2.1.3.3.2

16.2.1.3.3.1 Multiple-Row Racks — Rack Depth Up to and Including 16 ft (4.9 m) with Aisles 8 ft (2.4 m) or Wider.

For Class I, Class II, Class III, or Class IV commodities, encapsulated or nonencapsulated, ceiling sprinkler water demand in terms of density [gpm/ft^2 (mm/min)] and area of sprinkler operation [ft^2 (m^2) of ceiling or roof] shall be selected from the density/area curves of Figure 16.2.1.3.2(a) through Figure 16.2.1.3.2(~~e~~ d) that are appropriate for each commodity and configuration as shown in Table 16.2.1.3.3.1 and shall be modified as appropriate by 16.2.1.3.4. The protection criteria shall apply to portable racks arranged in the same manner as ~~single~~ multiple - ~~or double-~~ row racks.

Table 16.2.1.3.3.1 Multiple-Row Racks — Rack Depth Up to and Including 16 ft (4.9 m), Aisles 8 ft (2.4 m) or Wider and Storage Height Over 12 ft (3.7 m) Up to 25 ft (7.6 m)

				Ceiling Sprinkler Water Demand							
				With In-Rack Sprinklers				Without In-Rack Sprinklers			
Height	Commodity Class	Encap-sulated	Sprinklers Mandatory In-Rack	Figure	Curves	Apply Figure 16.2.1.3.4.1	1.25 × Density	Figure	Curves	Apply Figure 16.2.1.3.4.1	1.25 × Density
Over 12 ft (3.7 m) up to and including 15 ft (4.6 m)	I	No	No	16.2.1.3.2(a)		Yes	No	16.2.1.3.2(a)	I and J	Yes	No
		Yes		16.2.1.3.2(a)			Yes	16.2.1.3.2(a)	I and J		Yes
	II	No		16.2.1.3.2(b)			No	16.2.1.3.2(b)	I and J	Yes	No
		Yes		16.2.1.3.2(b)	C and D		Yes	16.2.1.3.2(b)	I and J		Yes
	III	No	No	16.2.1.3.2(c)			No	16.2.1.3.2(c)	I and J	Yes	No
		Yes	1 level	16.2.1.3.2(c)			Yes		NA	NA	NA
	IV	No	No	16.2.1.3.2(d)			No	16.2.1.3.2(d)	C and D	No	No
		Yes	1 level	16.2.1.3.2(d)	A and B		1.50 × density		NA	NA	NA
Over 15 ft (4.6 m) up to and including 20 ft (6.1 m)	I	No	No	16.2.1.3.2(a)		Yes	No	16.2.1.3.2(a)	I and J	Yes	No
		Yes		16.2.1.3.2(a)			Yes	16.2.1.3.2(a)	I and J		Yes
	II	No		16.2.1.3.2(b)			No	16.2.1.3.2(b)	I and J	Yes	No
		Yes		16.2.1.3.2(b)	C and D		Yes	16.2.1.3.2(b)	I and J		Yes
	III	No	No	16.2.1.3.2(c)			No	16.2.1.3.2(c)	I and J	Yes	No
		Yes	1 level	16.2.1.3.2(c)			Yes				
	IV	No	1 level	16.2.1.3.2(d)			No	NA	NA	NA	NA
		Yes		16.2.1.3.2(d)	A nd B		1.50 × density				
Over 20 ft (6.1 m) up to and including 25 ft (7.6 m)	I	No	No	16.2.1.3.2(a)		No	No	16.2.1.3.2(a)	I and J	Yes	No
		Yes	1 level	16.2.1.3.2(a)			Yes				
	II	No	1 level	16.2.1.3.2(b)			No	NA	NA	NA	NA
		Yes		16.2.1.3.2(b)	C and D		Yes				
	III	No		16.2.1.3.2(c)			No				
		Yes		16.2.1.3.2(c)			Yes				
	IV	No		16.2.1.3.2(d)			No				
		Yes	2 levels	16.2.1.3.2(d)	A and B		1.50 × density				

NA: Not applicable.

16.2.1.3.3.2 Multiple-Row Racks — Rack Depth Over 16 ft (4.9 m) or Aisles More Narrow Than 8 ft (2.4 m).

For Class I, Class II, Class III, or Class IV commodities, encapsulated or nonencapsulated, ceiling sprinkler water demand in terms of density [gpm/ft^2 (mm/min)] and area of sprinkler operation [ft^2 (m^2) of ceiling or roof] shall be selected from the density/area curves of Figure 16.2.1.3.2(a) through Figure 16.2.1.3.2(g) that are appropriate for each commodity and configuration as shown in Table 16.2.1.3.3.2 and shall be modified as appropriate by 16.2.1.3.4. The protection criteria shall apply to portable racks arranged in the same manner as ~~single-, double-,~~ ~~or~~ multiple-row racks.

Table 16.2.1.3.3.2 Multiple-Row Racks — Rack Depth Over 16 ft (4.9 m) or Aisles Narrower Than 8 ft (2.4 m), Storage Height Over 12 ft (3.7 m) Up to and Including 25 ft (7.6 m)

				Ceiling Sprinkler Water Demand							
				With In-Rack Sprinklers				Without In-Rack Sprinklers			
Height	Commodity Class	Encap-sulated	Sprinklers Mandatory In-Rack	Figure	Curves	Apply Figure 16.2.1.3.4.1	1.25 × Density	Figure	Curves	Apply Figure 16.2.1.3.4.1	1.25 × Density
Over 12 ft (3.7 m) up to and including 15 ft (4.6 m)	I	No	No	16.2.1.3.2(a)	C and D	Yes	No	16.2.1.3.2(a)	I and J	Yes	No
		Yes		16.2.1.3.2(a)			Yes	16.2.1.3.2(a)	I and J		Yes
	II	No		16.2.1.3.2(b)			No	16.2.1.3.2(b)	I and J	Yes	No
		Yes		16.2.1.3.2(b)			Yes	16.2.1.3.2(b)	I and J		Yes
	III	No		16.2.1.3.2(c)			No	16.2.1.3.2(c)	I and J	Yes	No
		Yes	1 level	16.2.1.3.2(c)			Yes				
	IV	No	No	16.2.1.3.2(d)			No	16.2.1.3.2(d)	C and D	No	No
		Yes	1 level	16.2.1.3.2(d)			1.50 × density				
Over 15 ft (4.6 m) up to and including 20 ft (6.1 m)	I	No	1 level	16.2.1.3.2(a)	C and D	Yes	No	NA	NA	NA	NA
		Yes		16.2.1.3.2(a)			Yes				
	II	No		16.2.1.3.2(b)			No				
		Yes		16.2.1.3.2(b)			Yes				
	III	No		16.2.1.3.2(c)			No				
		Yes		16.2.1.3.2(c)			Yes				
	IV	No		16.2.1.3.2(d)			No				
		Yes		16.2.1.3.2(d)			1.50 × density				
Over 20 ft (6.1 m) up to and including 25 ft (7.6 m)	I	No	1 level	16.2.1.3.2(a)	C and D	No	No	NA	NA	NA	NA
		Yes		16.2.1.3.2(a)			Yes				
	II	No		16.2.1.3.2(b)			No				
		Yes		16.2.1.3.2(b)			Yes				
	III	No		16.2.1.3.2(c)			No				
		Yes		16.2.1.3.2(c)			Yes				
	IV	No	2 levels	16.2.1.3.2(d)			No				
		Yes		16.2.1.3.2(d)			1.50 × density				

NA: Not applicable.

Statement of Problem and Substantiation for Public Input

Editorial. Only Figures (a) through (d) apply to multiple row racks. Referencing multiple row instead of single and double-row as per section title.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Fri Mar 01 13:16:24 EST 2013

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Public Input No. 96-NFPA 13-2013 [New Section after 16.2.1.3.3.2]

TITLE OF NEW CONTENT

16.2.1.3.3.3 Where Class I, II, and III commodities is encapsulated, ceiling sprinkler density shall be 25% greater than for nonencapsulated.

16.2.1.3.3.4 Where Class IV commodities is encapsulated, ceiling sprinkler density shall be 50% greater than for nonencapsulated.

Statement of Problem and Substantiation for Public Input

Text needed to define criteria from Tables 16.2.1.3.3.1 and 6.2.1.3.3.2. Basically copied that provided in 16.3.1.1.1

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Fri Mar 01 13:59:32 EST 2013

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Public Input No. 384-NFPA 13-2013 [Section No. 16.2.1.3.4.3]

Original Hide Markup

16.2.1.3.4.3

For storage height over 12 ft (3.7 m) up to and including 20 ft (6.1 m) protected with ceiling sprinklers and with more than one level of in-rack sprinklers, but not in every tier, densities obtained from design curves and adjusted in accordance with Figure 16.2.1.3.4.1 shall be permitted to be reduced an additional 20 percent, as indicated in Table 16.2.1.3.4.3 .

Table 16.2.1.3.4.3 Adjustment to Ceiling Sprinkler Density for Storage Height and In-Rack Sprinklers

Storage Height	In-Rack Sprinklers	Apply Figure 16.2.1.3.4.1 for Storage Height Adjustment	Permitted Ceiling Sprinklers Density Adjustments Where In-Rack Sprinklers Are Installed
Over 12 ft (3.7 m) through 25 ft (7.6 m)	None	Yes	None
Over 12 ft (3.7 m) through 20 ft (6.1 m)	Minimum required	Yes	None
	More than minimum, but not in every tier	Yes	Reduce density 20% from that of minimum in-rack sprinklers
	In every tier except the top tier	Yes	Reduce density 40% from that of minimum in-rack sprinklers
Over 20 ft (6.1 m) through 24 ft (7.5 m)	Minimum required	No	None
	More than minimum, but not in every tier	No	Reduce density 20% from that of minimum in-rack sprinklers
	In every tier except the top tier	No	Reduce density 40% from that of minimum in-rack sprinklers

Statement of Problem and Substantiation for Public Input

The only two changes that have been proposed are to add "except the top tier" to the statement about putting in-rack sprinklers at every tier. The way the standard is written, in order to get the 40% reduction, you have to protect every tier, including the top tier with in-rack sprinklers. Most of the time, the rach structure does not easily allow for in-rack sprinklers to be protecting the top tier. We do not believe that the committee intended for in-rack sprinklers to protect the top tier, but that is how the language has been written. If the intent of the committee is to allow in-rack sprinklers to be omitted from the top tier while still permitting the 40% reduction, then this change needs to be made.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 15:17:38 EDT 2013

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Public Input No. 97-NFPA 13-2013 [Section No. 16.2.1.3.4.3]

Original | Hide Markup

16.2.1.3.4.3

For storage height over 12 ft (3.7 m) up to and including 20 ft (6.1 m) protected with ceiling sprinklers and with more than one level of in-rack sprinklers, but not in every tier, densities obtained from design curves and adjusted in accordance with Figure 16.2.1.3.4.1 shall be permitted to be reduced an additional 20 percent, as indicated in Table 16.2.1.3.4.3.

Table 16.2.1.3.4.3 Adjustment to Ceiling Sprinkler Density for Storage Height and In-Rack Sprinklers

Storage Height	In-Rack Sprinklers	Apply Figure 16.2.1.3.4.1 for Storage Height Adjustment	Permitted Ceiling Sprinklers Density Adjustments Where In-Rack Sprinklers Are Installed
Over 12 ft (3.7 m) through 25 ft (7.6 m)	None	Yes	None
Over 12 ft (3.7 m) through 20 ft (6.1 m)	Minimum required	Yes	None
	More than minimum, but not in every tier	Yes	Reduce density 20% from that of minimum in-rack sprinklers
	In every tier	Yes	Reduce density 40% from that of minimum in-rack sprinklers
Over 20 ft (6.1 m) through ~~24~~ 25 ft (7.5 m)	Minimum required	No	None
	More than minimum, but not in every tier	No	Reduce density 20% from that of minimum in-rack sprinklers
	In every tier	No	Reduce density 40% from that of minimum in-rack sprinklers

Statement of Problem and Substantiation for Public Input

corrects a typo

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Fri Mar 01 14:06:49 EST 2013

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Public Input No. 382-NFPA 13-2013 [Sections 16.2.1.3.4.5, 16.2.1.3.4.6]

Original | Hide Markup

Sections 16.2.1.3.4.5, 16.2.1.3.4.6

16.2.1.3.4.5

For storage height over 12 ft (3.7 m) up to and including 20 ft (6.1 m) protected with ceiling sprinklers and in-rack sprinklers at each tier except the top tier , densities obtained from design curves and adjusted in accordance with Figure 16.2.1.3.4.1 shall be permitted to be reduced an additional 40 percent, as indicated in Table 16.2.1.3.4.3 .

16.2.1.3.4.6

For storage height over 20 ft (6.1 m) up to and including 25 ft (7.6 m) protected with ceiling sprinklers and in-rack sprinklers at each tier except the top tier , densities obtained from design curves shall be permitted to be reduced 40 percent, as indicated in Table 16.2.1.3.4.3 . Densities shall not be adjusted in accordance with Figure 16.2.1.3.4.1 for storage height.

Statement of Problem and Substantiation for Public Input

All we are adding is "except the top tier" to the statement about putting in-rack sprinklers at every tier. The way the standard is written, in order to get the 40% reduction, you have to protect every tier, including the top tier with in-rack sprinklers. Most of the time, the rach structure does not easily allow for in-rack sprinklers to be protecting the top tier. We do not believe that the committee intended for in-rack sprinklers to protect the top tier, but that is how the language has been written. If the intent of the committee is to allow in-rack sprinklers to be omitted from the top tier while still permitting the 40% reduction, then this change needs to be made.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Thu May 23 15:10:22 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369336222675.xml

Public Input No. 98-NFPA 13-2013 [Sections 16.2.1.3.4.7(A), 16.2.1.3.4.7(B)]

Original | Hide Markup

Sections 16.2.1.3.4.7(A), 16.2.1.3.4.7(B)

(A)

The percentage shall be applied to the density determined in accordance with ~~Figure~~ 16.2.1.3.4. ~~1.~~

(B)

The increase in density shall not apply where the design basis includes in-rack sprinklers ~~are installed in accordance with Table 16~~ . ~~2.1.3.4.3.~~

Statement of Problem and Substantiation for Public Input

More clearly depicts intent.

Submitter Information Verification

Submitter Full Name:	Roland Huggins
Organization:	American Fire Sprinkler Associ
Submittal Date:	Fri Mar 01 15:07:03 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1362168423336.xml

Public Input No. 81-NFPA 13-2013 [Section No. 16.2.1.3.5]

Original Hide Markup

16.2.1.3.5

For solid ~~shelf rack storage~~ shelving , Table 16.2.1.3.2 shall be used to establish the density/area criteria and in-rack sprinklers shall be installed in accordance with 16.1.6.

Statement of Problem and Substantiation for Public Input

The old term solid shelf rack is misleading and implies only the rack is an obstruction concern. Now that the issue of obstruction has been clarified by the newer definition of Solid Shelving (for which solid shelf rack is a subset), there is no need to retain this phrase. This change is editorial and provides better consistency throughout the document.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Wed Feb 27 12:05:46 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361984746811.xml

Public Input No. 95-NFPA 13-2013 [Section No. 16.2.1.4.3.2]

Original Hide Markup

~~16.2.1.4.3.2~~ –

~~Where a storage rack, due to its length, requires less than the number of in-rack sprinklers specified in 16.2.1.4.3.1 (1) through 16.2.1.4.3.1 (4), only those in-rack sprinklers in a single rack shall be included in the calculation.~~

Statement of Problem and Substantiation for Public Input

Already addressed in the General section 16.1.8.3.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Fri Mar 01 13:35:08 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1362162908896.xml

Public Input No. 399-NFPA 13-2013 [New Section after 16.2.2.1]

16.2.2.1.1

Protection of solid shelf racks with CMSA sprinklers at the ceiling shall be permitted where in-rack sprinklers are installed in accordance with 16.1.6. In-rack sprinklers shall be installed in every level below the highest solid barrier.

Statement of Problem and Substantiation for Public Input

While developing the 2013 edition, the committee philosophically agreed that the use of CMSA and ESFR sprinklers to protect solid shelf racks was acceptable as long as in-rack sprinklers were installed, but this was not carried out consistently through the standard. This public input (along with others) attempts to clarify the situation by making it consistent throughout all CMSA and ESFR sections. At the same time, we need to clarify that if the solid shelves are not in the entire rack, that even the open shelves below the solid shelves need the extra in-rack sprinklers because the ceiling sprinkler discharge cannot get down through the rack structure.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 16:35:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369341324867.xml

Public Input No. 295-NFPA 13-2013 [Section No. 16.2.3.1]

Original | Hide Markup

16.2.3.1

Protection of single-, double-, and multiple-row rack storage of Class I through Class IV commodities shall be in accordance with Table 16.2.3.1.

Table 16.2.3.1 ESFR Sprinkler Protection of Rack Storage Without Solid Shelves of Class I Through Class IV Commodities Stored Up to and Including 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	Nominal K-Factor	Orientation	Minimum Operating Pressure psi	Minimum Operating Pressure bar	In-Rack Sprinkler Requirements
Single-row, double-row, and multiple-row racks (no open-top containers)	Class I, II, III, or IV, encapsulated or ~~unencapsulated~~ nonencapsulated	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
						16.8 (240)	Upright/ pendent	52	3.6	No
						22.4				

				(320)	Pendent	35	2.4	No
				25.2 (360)	Pendent	20	1.4	No
				16.8 (240)	Pendent	52	3.6	No
		40	12.2 or 12.1	22.4 (320)	Pendent	40	2.8	No
				25.2 (360)	Pendent	25	1.7	No
				14.0 (200)	Pendent	90	6.2	Yes
				16.8 (240)	Pendent	63	4.4	Yes
		45	13.7	22.4 (320)	Pendent	40	2.8	No
				25.2 (360)	Pendent	40	2.8	No
25	7.6			14.0 (200)	Upright/ pendent	50	3.4	No
				16.8 (240)	Upright/ pendent	35	2.4	No
		30	9.1	22.4 (320)	Pendent	25	1.7	No
				25.2 (360)	Pendent	15	1.0	No
				14.0 (200)	Upright/ pendent	60	4.1	No
		32	9.8	16.8 (240)	Upright/ pendent	42	2.9	No
				14.0 (200)	Upright/ pendent	75	5.2	No
				16.8 (240)	Upright/ pendent	52	3.6	No
		35	10.7	22.4 (320)	Pendent	35	2.4	No
				25.2 (360)	Pendent	20	1.4	No
				16.8 (240)	Pendent	52	3.6	No
		40	12.2 or 12.1	22.4 (320)	Pendent	40	2.8	No
				25.2 (360)	Pendent	25	1.7	No
				14.0 (200)	Pendent	90	6.2	Yes
				16.8 (240)	Pendent	63	4.4	Yes
		45	13.7	22.4 (320)	Pendent	40	2.8	No
				25.2 (360)	Pendent	40	2.8	No

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_11_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Editorial, for standardization - to use the same term as is used throughout the rest of the standard.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:36:33 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368552993781.xml

Public Input No. 577-NFPA 13-2013 [Section No. 16.2.3.1]

Original | Hide Markup

Add in a design into Table 16.2.3.1 for the following conditions: 20 ft Maximum Storage Height; 40 ft Maximum Ceiling / Roof Height; K14.0 Nominal K-Factor; Pendent Orientation; 75 psi Minimum Operating Pressure; Yes In-Rack Sprinkler Requirements.

16.2.3.1

Protection of single-, double-, and multiple-row rack storage of Class I through Class IV commodities shall be in accordance with Table 16.2.3.1 .

Table 16.2.3.1 ESFR Sprinkler Protection of Rack Storage Without Solid Shelves of Class I Through Class IV Commodities Stored Up to and Including 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	Nominal K-Factor	Orientation	Minimum Operating Pressure psi	Minimum Operating Pressure bar	In-Rack Sprinkler Requirements
Single-row, double-row, and multiple-row racks (no open-top containers)	Class I, II, III, or IV, encapsulated or unencapsulated	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
						16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
				40	12.2 or 12.1	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.4	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	40	2.8	No
		25	7.6			14.0 (200)	Upright/ pendent	50	3.4	No
				30	9.1	16.8 (240)	Upright/ pendent	35	2.4	No
						22.4				

		(320)	Pendent	25	1.7	No
		25.2 (360)	Pendent	15	1.0	No
32	9.8	14.0 (200)	Upright/ pendent	60	4.1	No
		16.8 (240)	Upright/ pendent	42	2.9	No
35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
		16.8 (240)	Upright/ pendent	52	3.6	No
		22.4 (320)	Pendent	35	2.4	No
		25.2 (360)	Pendent	20	1.4	No
40	12.2 or 12.1	16.8 (240)	Pendent	52	3.6	No
		22.4 (320)	Pendent	40	2.8	No
		25.2 (360)	Pendent	25	1.7	No
45	13.7	14.0 (200)	Pendent	90	6.2	Yes
		16.8 (240)	Pendent	63	4.4	Yes
		22.4 (320)	Pendent	40	2.8	No
		25.2 (360)	Pendent	40	2.8	No

Additional Proposed Changes

	File Name	Description	Approved
Open	Baker_s_Signed_Submittals.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The reason for the failed full-scale fire tests at UL for 20 ft of cartoned non-expanded plastics maintained in open-frame racks under a 40 ft high ceiling was due to excessive clearance, not the sprinkler's inability to protect storage 30 ft and higher. By requiring one level of in-rack sprinklers per Section 16.2.3.6, you allow the sprinkler to be maintained in buildings up to 40 ft high as well as address the high clearance issue by requiring a more stringent in-rack sprinkler demand than what is required for excessive clearance outlined in Section 12.1.3.4.4.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Submittal Date: Tue Jun 04 08:42:24 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370349744064.xml

Public Input No. 578-NFPA 13-2013 [Section No. 16.2.3.1]

Original Hide Markup

Add in a design into Table 16.2.3.1 for the following conditions: 25 ft Maximum Storage Height; 40 ft Maximum Ceiling / Roof Height; K14.0 Nominal K-Factor; Pendent Orientation; 75 psi Minimum Operating Pressure; Yes In-Rack Sprinkler Requirements.

16.2.3.1

Protection of single-, double-, and multiple-row rack storage of Class I through Class IV commodities shall be in accordance with Table 16.2.3.1 .

Table 16.2.3.1 ESFR Sprinkler Protection of Rack Storage Without Solid Shelves of Class I Through Class IV Commodities Stored Up to and Including 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	Nominal K-Factor	Orientation	Minimum Operating Pressure psi	Minimum Operating Pressure bar	In-Rack Sprinkler Requirements
Single-row, double-row, and multiple-row racks (no open-top containers)	Class I, II, III, or IV, encapsulated or unencapsulated	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
						16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
				40	12.2 or 12.1	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.4	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	40	2.8	No
		25	7.6	30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				32	9.8	14.0 (200)	Upright/ pendent	60	4.1	No
						16.8 (240)	Upright/ pendent	42	2.9	No
				35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
						16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
				40	12.2 or	16.8 (240)	Pendent	52	3.6	No
						22.4				

40	12.2 or 12.1	22.4 (320)	Pendent	40	2.8	No
		25.2 (360)	Pendent	25	1.7	No
45	13.7	14.0 (200)	Pendent	90	6.2	Yes
		16.8 (240)	Pendent	63	4.4	Yes
		22.4 (320)	Pendent	40	2.8	No
		25.2 (360)	Pendent	40	2.8	No

Additional Proposed Changes

	File Name	Description	Approved
Open	Baker_s_Signed_Submittals.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The reason for the failed full-scale fire tests at UL for 20 ft of cartoned non-expanded plastics maintained in open-frame racks under a 40 ft high ceiling was due to excessive clearance, not the sprinkler's inability to protect storage 30 ft and higher. By requiring one level of in-rack sprinklers per Section 16.2.3.6, you allow the sprinkler to be maintained in buildings up to 40 ft high as well as address the high clearance issue by requiring a more stringent in-rack sprinkler demand than what is required for excessive clearance outlined in Section 12.1.3.4.4. In addition, this level of in-rack sprinkler protection is what is indicated for a 45 ft high ceiling.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Submittal Date: Tue Jun 04 08:43:25 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370349805241.xml

Public Input No. 400-NFPA 13-2013 [Section No. 16.2.3.2]

Original | Hide Markup

16.2.3.2

ESFR sprinklers shall not be permitted to protect storage on solid shelf racks unless the solid shelf racks are protected with in-rack sprinklers in accordance with 16.1.6 . Where solid shelves are used, in-rack sprinklers shall be installed in every level below the highest solid barrier.

Statement of Problem and Substantiation for Public Input

We have proposed the new second sentance to clarify what to do when the whole rack is not solid shelves. Putting in-rack sprinklers just below the solid shelves is not sufficient if the solid shlves are blocking open racks farther below.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 16:45:03 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369341903132.xml

Public Input No. 401-NFPA 13-2013 [New Section after 16.3.2.1]

16.3.2.1.1

Protection of solid shelf racks with CMSA sprinklers at the ceiling shall be permitted where in-rack sprinklers are installed in accordance with 16.1.6. In-rack sprinklers shall be installed in every level below the highest solid barrier.

Statement of Problem and Substantiation for Public Input

While developing the 2013 edition, the committee philosophically agreed that the use of CMSA and ESFR sprinklers to protect solid shelf racks was acceptable as long as in-rack sprinklers were installed, but this was not carried out consistently through the standard. This public input (along with others) attempts to clarify the situation by making it consistent throughout all CMSA and ESFR sections. At the same time, we need to clarify that if the solid shelves are not in the entire rack, that even the open shelves below the solid shelves need the extra in-rack sprinklers because the ceiling sprinkler discharge cannot get down through the rack structure.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 16:50:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369342235159.xml

Public Input No. 407-NFPA 13-2013 [Section No. 16.3.2.2]

Original | Hide Markup

16.3.2.2
Where in-rack sprinklers are required by Table 16.3.2.1 , in-rack sprinkler spacing, design pressure, and hydraulic calculation criteria shall be in accordance with the requirements of 16.3. ~~1~~ 2 . ~~3~~ 7 as applicable for the commodity.

Statement of Problem and Substantiation for Public Input

The correction of the reference from 16.3.1.3 to 16.3.2.7 is impoartant. The in-rack rules for when CMSA sprinklers are at the ceiling are different than when standard spray sprinklers are at the ceiling. The section on CMSA sprinklers needs to reference the in-rack rules for when CMSA sprinklers are at the ceiling, not the section where standard spray sprinklers are at the ceiling.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri May 24 09:06:56 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369400816932.xml

Public Input No. 165-NFPA 13-2013 [Section No. 16.3.3.1]

Original | Hide Markup

16.3.3.1

Protection of single-, double-, and multiple-row rack storage of Class I through Class IV commodities shall be in accordance with Table 16.3.3.1.

Table 16.3.3.1 ESFR Sprinkler Protection of Rack Storage Without Solid Shelves of Class I Through Class IV Commodities Stored Over 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height		Maximum Ceiling/ Roof Height		Nominal K-Factor	Orientation	Minimum Operating Pressure		In-Rack Sprinkler Requirements	Hose Stream Allowance		Water Supply Duration
		ft	m	ft	m			psi	bar		gpm	L/min	(hours)
Single-, double-, and multiple-row rack (no open-top containers)	Class I, II, III, or IV, encapsulated or nonencapsulated	30	9.1	35	10.7	14.0 (200)	Upright/pendent	75	5.2	No	250	946	1
						16.8 (240)	Upright/ pendent	52	3.6	No			
						22.4 (320)	Pendent	35	2.4	No			
						25.2 (360)	Pendent	20	1.4	No			
				40	12.2	14.0 (200)	Pendent	75	5.2	No			
						16.8 (240)	Pendent	52	3.6	No			
						22.4 (320)	Pendent	40	2.8	No			
						25.2 (360)	Pendent	25	1.7	No			
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes			
						16.8 (240)	Pendent	63	4.3	Yes			
						22.4 (320)	Pendent	40	2.8	No			
						25.2 (360)	Pendent	40	2.8	No			
		35	10.7	40	12.2	14.0 (200)	Pendent	75	5.2	No			
						16.8 (240)	Pendent	52	3.6	No			
						22.4 (320)	Pendent	40	2.8	No			
						25.2 (360)	Pendent	25	1.7	No			
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes			
						16.8 (240)	Pendent	63	4.3	Yes			
						22.4 (320)	Pendent	40	2.8	No			
						25.2 (360)	Pendent	40	2.8	No			
		40	12.2	45	13.7	16.8 (240)	Pendent	63	4.3	Yes			
						22.4 (320)	Pendent	40	2.8	No			
						25.2 (360)	Pendent	40	2.8	No			

The option to use K=14.0 ESFR sprinklers to protect Class I-IV commodities in buildings up to 40 ft high without in-rack sprinklers should be removed from Table 16.3.3.1. (There are two instances where the table should be revised by removing this option.)

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Sides_Cover_Sheet.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

XL Global Asset Protection Services sponsored a single large-scale fire test on August 20, 2011 at Underwriter's Laboratories to develop data regarding the level of protection provided by nominal K=14.0 gpm/psi 1/2 pendant ESFR ceiling sprinklers operating at a discharge pressure of 75 psi. The sprinklers were installed to protect a double row rack storage arrangement of cartoned Class IV test commodity stored to 20 ft high under a 40 ft ceiling. The fire opened 18 sprinklers. A copy of the report is available upon required.

Submitter Information Verification

Submitter Full Name: Michael Sides
Organization: Global Asset Protection Services
Submittal Date: Tue Apr 02 09:52:52 EDT 2013

Copyright Assignment

Origin (from sources other than the submitter)

UL Technical Report for Projects 11CA29815, NC1838.

/TerraView/Content/13-2013.ditamap/2/C1364910772755.xml

Public Input No. 402-NFPA 13-2013 [New Section after 16.3.3.2]

16.3.3.2.1

Protection of solid shelf racks with ESFR sprinklers at the ceiling shall be permitted where in-rack sprinklers are installed in accordance with 16.1.6. In-rack sprinklers shall be installed in every level below the highest solid barrier.

Statement of Problem and Substantiation for Public Input

While developing the 2013 edition, the committee philosophically agreed that the use of CMSA and ESFR sprinklers to protect solid shelf racks was acceptable as long as in-rack sprinklers were installed, but this was not carried out consistently through the standard. This public input (along with others) attempts to clarify the situation by making it consistent throughout all CMSA and ESFR sections. At the same time, we need to clarify that if the solid shelves are not in the entire rack, that even the open shelves below the solid shelves need the extra in-rack sprinklers because the ceiling sprinkler discharge cannot get down through the rack structure.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 16:56:47 EDT 2013

Copyright Assignment

/TerraView/Content/13-2013.ditamap/2/C1369342607409.xml

Public Input No. 358-NFPA 13-2013 [Section No. 16.3.3.2]

Original Hide Markup

16.3.3.2

ESFR protection as defined shall not apply to the following:

(1) Rack storage involving solid shelves except for situations complying with 16.3.3.2.1

(2) Rack storage involving ~~combustible,~~ open-top cartons or containers

Statement of Problem and Substantiation for Public Input

For the solid shelf issue, we are proposing a whole new section to be consistent with decisions made in the 2013 cycle.

With respect to the open-top container issue, it does not matter whether the containers are combustible or not. The fact that they are open top containers causes a problem. The standard already says in other places that the rules do not apply to open top containers. This section confuses people because they think that ESFR sprinklers are a special exception that allows the protection of non-combustible open top containers.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 17:13:38 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369257218780.xml

Public Input No. 522-NFPA 13-2013 [Section No. 16.3.3.2]

Original Hide Markup

16.3.3.2

ESFR ~~protection as defined~~ sprinklers shall not ~~apply to the following:~~

- ~~Rack storage involving solid shelves~~

~~Rack storage involving combustible, open-top cartons or containers~~ be permitted to protect storage on solid shelf racks unless the solid shelf racks are protected with in-rack sprinklers in accordance with 16.1.6.

16.2.3.3

ESFR sprinklers shall no be permitted to protect storage with open top containers.

Statement of Problem and Substantiation for Public Input

The provisions of 16.3.3.2 and 16.2.3.2 should match.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 15:03:06 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370026986343.xml

Public Input No. 298-NFPA 13-2013 [Section No. 17.1.2.6]

Original Hide Markup

17.1.2.6

Sprinkler protection criteria for the storage of ~~materials~~ Group A plastic commodities on racks shall be in accordance with Section 17.2 for storage up to 25 ft (7.6 m) and Section 17.3 for storage over 25 ft (7.6 m).

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_12_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

As currently written it is unclear which sections in Chapter 17 are referring to plastic and rubber commodities in general and which sections are speaking specifically to materials that fit the Group A plastic classification. Section 17.1.2.6 is actually speaking to Group A plastics, as are all succeeding references to plastic throughout the rest of Chapter 17. For clarity, it should be specifically stated.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:40:20 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368553220018.xml

Public Input No. 368-NFPA 13-2013 [New Section after 17.1.2.7]

17.1.2.8 Isolated High-Challenge Commodities
The protection of isolated high-challenge commodities requiring a greater level of protection than is available from the overhead sprinkler system shall be permitted to be protected in accordance with 17.1.2.8.1 through 17.1.2.8.9.

17.1.2.8.1 Where the storage rack will not be solely dedicated to the storage of high-challenge commodities then either of the following shall apply: (1) extend the protection prescribed by 17.1.2.8 horizontally one pallet load in all directions beyond the designated high-challenge commodities storage area, or (2) install a vertical barrier to segregate the high-challenge commodities from any adjacent commodities.

17.1.2.8.2 Commodities that can be protected by the ceiling-level sprinkler system shall be permitted to be stored vertically above as well as horizontally adjacent to the portions of the storage rack equipped prescribed by 17.1.2.8.

17.1.2.8.3 Horizontal Barriers
Horizontal barriers shall be installed at every tier level of the dedicated storage rack where the rack is equipped with solid shelves. Where the dedicated storage rack is open-frame, horizontal barriers shall be installed at vertical increments not exceeding 12 ft (3.6 m). The barriers shall span horizontally so that all flue spaces within the rack bay are covered. A maximum 3 in. (75 mm) wide gap shall be permitted at rack uprights.

17.1.2.8.3.1 The solid barrier shall be installed on a horizontal plane within a rack, beneath which in-rack sprinklers shall be installed. The barrier shall be constructed of minimum 22 ga (0.7 mm) sheet metal or minimum 3/8 in. (10 mm) plywood. The barrier shall extend to both ends and both aisle faces of the racks covering up both the longitudinal and transverse flue spaces of the rack bays in which they are installed. The barrier shall be fitted to within 3 in. (75 mm) of any vertical rack member or other equipment that would create an opening, such as vertical in-rack sprinkler pipe drops.

17.1.2.8.4 In-Rack Sprinklers
Minimum K8.0 (K115), quick-response sprinklers (ceiling-level or in-rack) shall be installed beneath each horizontal barrier. The deflector of the sprinkler shall be located as close to the underside of the horizontal barrier as possible.

17.1.2.8.4.1 For single-row racks, sprinklers shall be installed at each rack upright as well as at each rack mid-bay as shown in Figure 17.1.2.8.4.1 The maximum linear spacing between sprinklers shall not exceed 5 ft (1.5 m).

17.1.2.8.4.2 For double-row racks, sprinklers shall be installed at each rack upright within the longitudinal flue space as well as at the face of the rack and at the mid-bay face of each rack bay as shown in Figure 17.1.2.8.4.2. The maximum linear spacing between sprinklers shall not exceed 5 ft (1.5 m) at the rack face and 10 ft (3.0 m) within the longitudinal flue space.

17.1.2.8.4.3 For multiple-row racks, an alternating sprinkler arrangement shall be installed within adjacent transverse flue spaces as shown in Figure 17.1.2.8.4.3 with sprinklers at the face of each flue space. The maximum linear spacing between sprinklers at the face and each alternating bay shall not exceed 5 ft (1.5 m) and shall not exceed 10 ft (3.0 m) between sprinklers at every other bay.

17.1.2.8.5 The design of the an in-rack sprinkler system shall be based on a minimum flow of 60 gpm (230 L/min) from the most remote 6 sprinklers for single-row racks or the most remote 8 sprinklers for both double-row and multiple-row racks.

17.1.2.8.6 A hose demand allowance of 500 gpm (1,900 L/min) shall be included in the hydraulic design.

17.1.2.8.7 The demand duration shall provide for a minimum of 2 hours.

17.1.2.8.8 The in-rack sprinkler demand shall not be required to be hydraulically balanced with the ceiling-level sprinkler system.
.
17.1.2.8.9 Ceiling Sprinkler System
The ceiling-level sprinkler system shall be designed based on the highest commodity hazard not protected by the criteria prescribed by 17.1.2.8.

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPA_13_PI_Scheme_A_Figure_17.1.2.8.4.X.docx	Figures to go with proposed text.	

Statement of Problem and Substantiation for Public Input

The introduction of Scheme A protection was semi incorporated into 17.1.5.7 last cycle for certain solid shelf arrangements; however, complete details of the use of such protection for higher hazard commodities was not included.

Submitter Information Verification

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Submittal Date: Thu May 23 12:23:34 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369326214353.xml

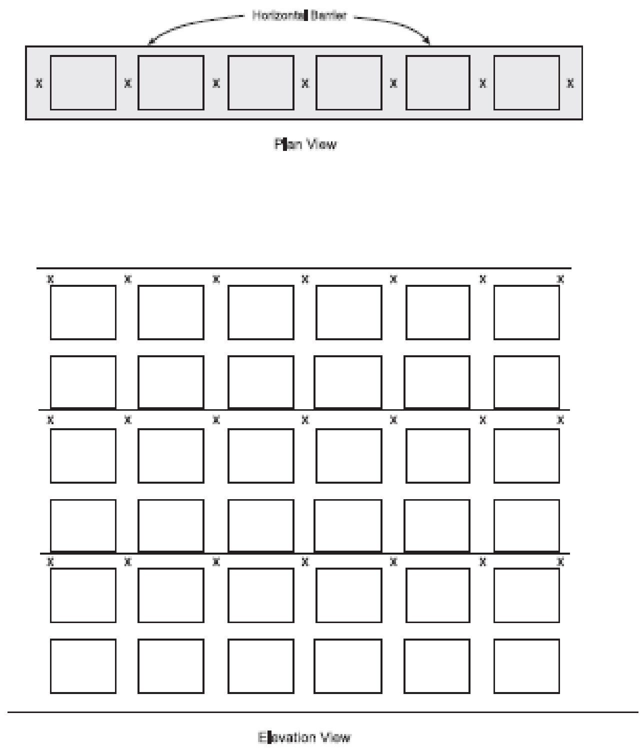

Figure 17.1.2.8.4.1

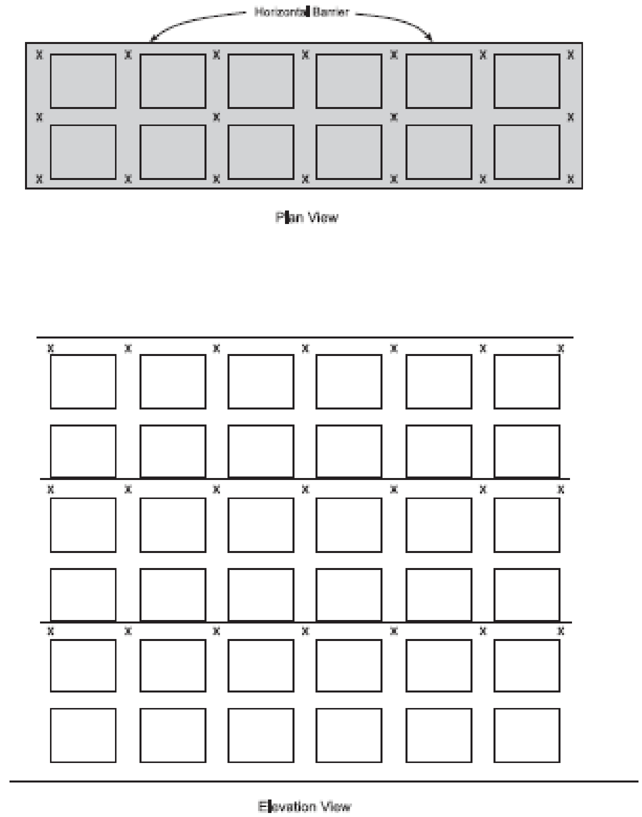

Figure 17.1.2.8.4.2

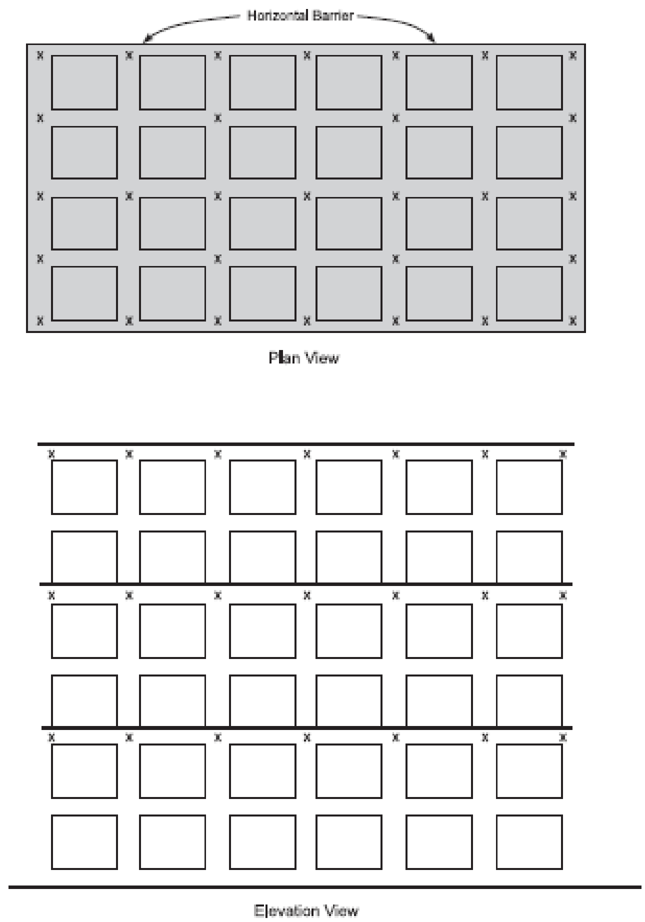

Figure 17.1.2.8.4.3

Public Input No. 82-NFPA 13-2013 [Section No. 17.1.5]

Original | Hide Markup

17.1.5 Solid ~~Shelf Rack~~ Shelving .

17.1.5.1

Where solid shelving in single-, double-, and multiple-row racks exceeds 20 ft ^{2} (1.86 m ^{2}) but does not exceed 64 ft ^{2} (5.95 m ^{2}) in area, sprinklers shall not be required below every shelf, but shall be installed at the ceiling and below shelves at intermediate levels not more than 6 ft (2 m) apart vertically. (See Section C.11 .)

17.1.5.2

Where solid shelving in single-, double-, and multiple-row racks exceeds 64 ft ^{2} (5.95 m ^{2}) in area or where the levels of storage exceed 6 ft (2 m), sprinklers shall be installed at the ceiling and below each level of shelving.

17.1.5.3

Where multiple-row racks of any height have no longitudinal flue or where double-row racks with storage up 25 ft (7.6 m) in height have no longitudinal flue, the situation shall not be considered solid shelves where transverse flues exist at maximum 5 ft (1.5 m) intervals and additional in-rack sprinklers shall not be required in accordance with 17.1.5.1 and 17.1.5.2 .

17.1.5.4

The maximum horizontal spacing between in-rack sprinklers shall be 5 ft (1.5 m).

17.1.5.5

Design criteria for combined ceiling and in-rack sprinklers shall be used for the storage configurations in 17.1.5.1 and 17.1.5.2 .

17.1.5.6

Where the criteria in 17.1.5.7 are not met, the water demand for the in-rack sprinklers shall be based on a minimum flow of 30 gpm (114 L/min) discharging from the following number of sprinklers balanced to the ceiling sprinkler demand in accordance with Section 23.8:

(1) Eight sprinklers where only one level of in-rack sprinklers is installed

(2) Fourteen sprinklers (seven on each of the top two levels) when more than one level of in-rack sprinklers is installed

17.1.5.7

The water demand for in-rack sprinklers shall not be required to be balanced to the ceiling sprinkler demand where additional face sprinklers are installed under each solid shelf at rack uprights and the in-rack sprinklers are calculated to discharge at least 60 gpm (227 L/min) from eight sprinklers.

Statement of Problem and Substantiation for Public Input

The old term solid shelf rack is misleading and implies only the rack is an obstruction concern. Now that the issue of obstruction has been clarified by the newer definition of Solid Shelving (for which solid shelf rack is a subset), there is no need to retain this phrase. This change is editorial and provides better consistency throughout the document.

Submitter Information Verification

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Organization: American Fire Sprinkler Associ

Submittal Date: Wed Feb 27 12:20:11 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361985611398.xml

Public Input No. 456-NFPA 13-2013 [Section No. 17.2.1.2.1]

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17.2.1.2.1

For Group A plastic commodities in cartons, encapsulated or nonencapsulated in single-, double-, and multiple-row racks, ceiling sprinkler water demand in terms of density [gpm/ft ^{2} (mm/min)] and area of operation [ft ^{2} (m ^{2})] shall be selected from Figure 17.2.1.2.1(a) through Figure 17.2.1.2.1(f) .

Figure 17.2.1.2.1(a) Storage 5 ft to 10 ft (1.5 m to 3.1 m) in Height with Up to 10 ft (3.1 m) Clearance to Ceiling.

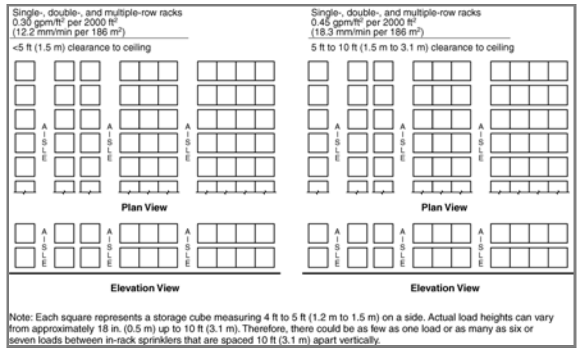
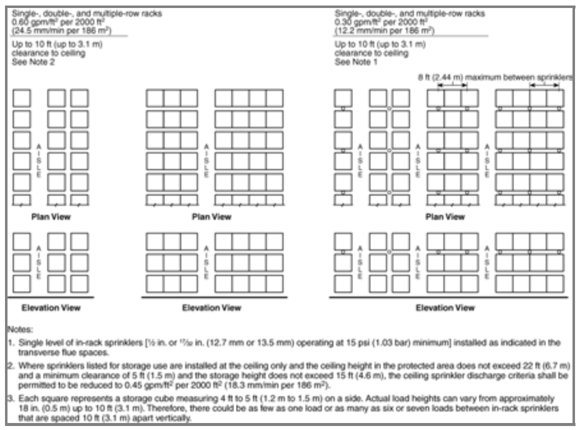


Figure 17.2.1.2.1(b) Storage 15 ft (4.6 m) in Height with Up to 10 ft (3.1 m) Clearance to Ceiling.



Modify Note 2 for Figure 17.2.1.2.1 (b) through (f) as follows: "Where ~~sprinklers listed for storage use~~ control mode density/area sprinklers are installed at the ceiling only and the ceiling height in the protected area does not exceed 22 ft (6.7 m) and a minimum clearance of 5 ft (1.5 m) and the storage height does not exceed 15 ft (4.6 m), the ceiling sprinkler discharge criteria shall be permitted to be reduced to 0.45 gpm/ft ^{2} per 2000 ft ^{2} (18.3 mm/min per 186 m ^{2})."

Figure 17.2.1.2.1(c) Storage 20 ft (6.1 m) in Height with <5 ft (1.5 m) Clearance to Ceiling.

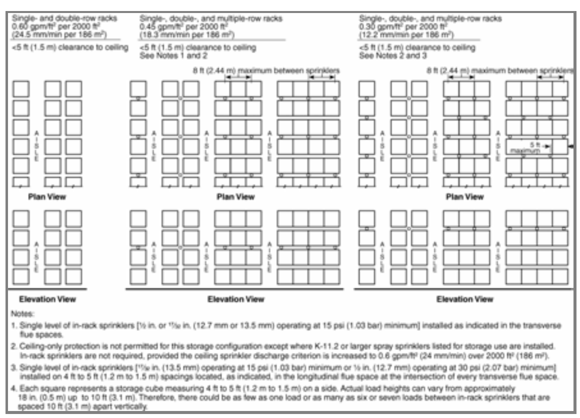
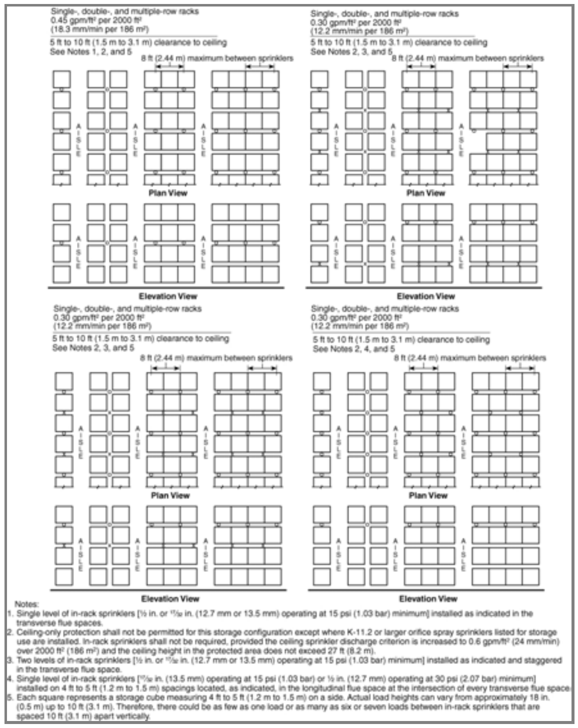
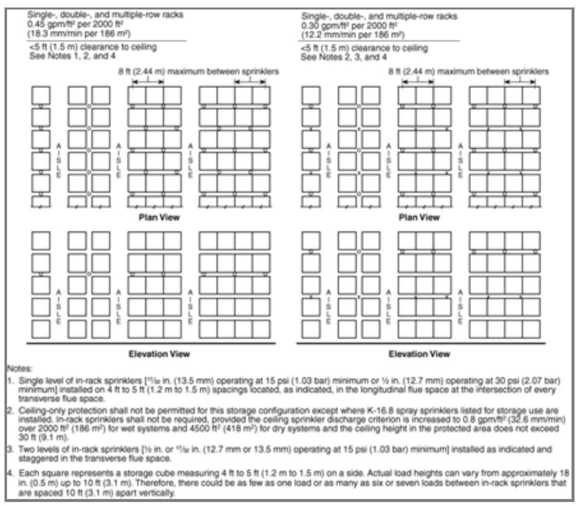


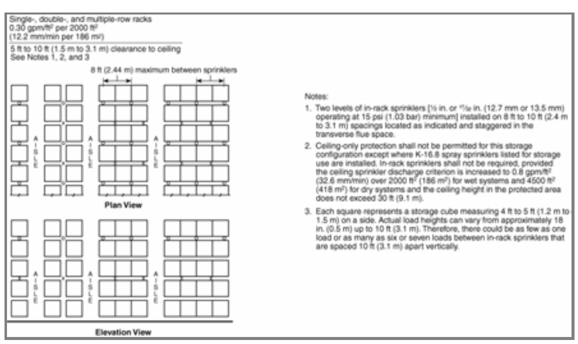
Figure 17.2.1.2.1(d) Storage 20 ft (6.1 m) in Height with 5 ft to 10 ft (1.5 m to 3.1 m) Clearance to Ceiling.



[Figure 17.2.1.2.1(e) Storage 25 ft (7.6 m) in Height with <5 ft (1.5 m) Clearance to Ceiling.](#) [(See Note 2.)](#)



[Figure 17.2.1.2.1(f) Storage 25 ft (7.6 m) in Height with 5 ft to 10 ft (1.5 m to 3.1 m) Clearance to Ceiling.](#) [(See Note 2.)](#)



Statement of Problem and Substantiation for Public Input

This is an editorial correction to update Note 2 of Figures 17.2.1.2.1 (b) through (f) replacing "sprinklers listed for storage use" with "control mode density/area sprinklers." As the terminology has evolved through the years, this note was not adjusted. Therefore, it needs this clarification.

This public input was developed by the UL/FM/NFSA Standards Review Committee.

Submitter Information Verification

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Organization: National Fire Sprinkler Association
Affilliation: NFSA
Submittal Date: Wed May 29 16:55:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369860948970.xml

Public Input No. 166-NFPA 13-2013 [Section No. 17.2.1.4]

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17.2.1.4*

Exposed unexpanded Group A plastics protected with control mode density/area sprinklers shall be protected in accordance with one of the following:

(1) Maximum 10 ft (3 m) storage in a maximum 20 ft (6.1 m) high building with ceiling sprinklers designed for a minimum 0.8 gpm/ft^2 (32.6 mm/min) density over 2500 ft^2 (232 m^2) and no in-rack sprinklers required as shown in Figure 17.2.1.4(a)

(2) Maximum 10 ft (3 m) storage in a maximum 20 ft (6.1 m) high building with ceiling sprinklers designed for a minimum 0.45 gpm/ft^2 (18.3 mm/min) density over 2000 ft^2 (186 m^2) and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(b)

(3) Maximum 10 ft storage in a maximum 20 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(c)

(4) Maximum 15 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.45 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(d)

(5) Maximum 15 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(e)

(6) Maximum 20 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.6 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(f)

(7) Maximum 20 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.45 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(g)

(8) Maximum 20 ft storage in a maximum 30 ft high building with ceiling sprinklers designed for a minimum 0.8 gpm/ft^2 density over 1500 ft^2 and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(h)

(9) Maximum 20 ft storage in a maximum 30 ft high building with ceiling sprinklers designed for a minimum 0.6 gpm/ft^2 density over 1500 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(i)

(10) Maximum 20 ft storage in a maximum 30 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft^2 density over 2000 ft^2 and two levels of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(j)

(11) Maximum 25 ft storage in a maximum 35 ft high building with ceiling sprinklers designed for a minimum 0.8 gpm/ft^2 density over 1500 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(k)

(12) Maximum 25 ft storage in a maximum 35 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft^2 density over 2000 ft^2 and two levels of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(l)

Figure 17.2.1.4(a) Exposed Nonexpanded Plastics up to 10 ft in Height in up to a 20 ft High Building with No In-Rack Sprinklers.

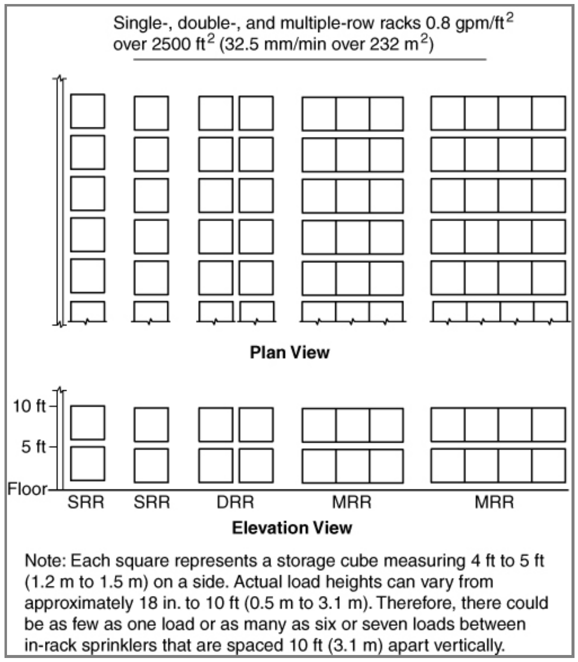


Figure 17.2.1.4(b) Exposed Nonexpanded Plastics up to 10 ft in Height in up to a 20 ft High Building with One Level of In-Rack Sprinklers.

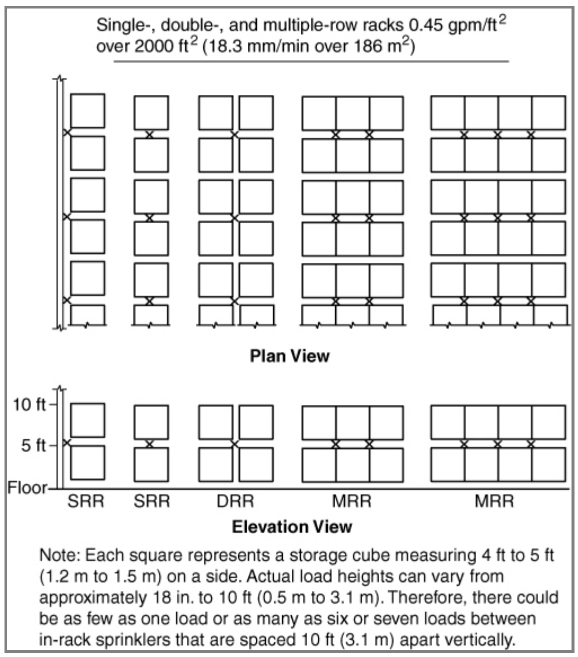


Figure 17.2.1.4(c) Exposed Nonexpanded Plastics up to 10 ft in Height in up to a 20 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

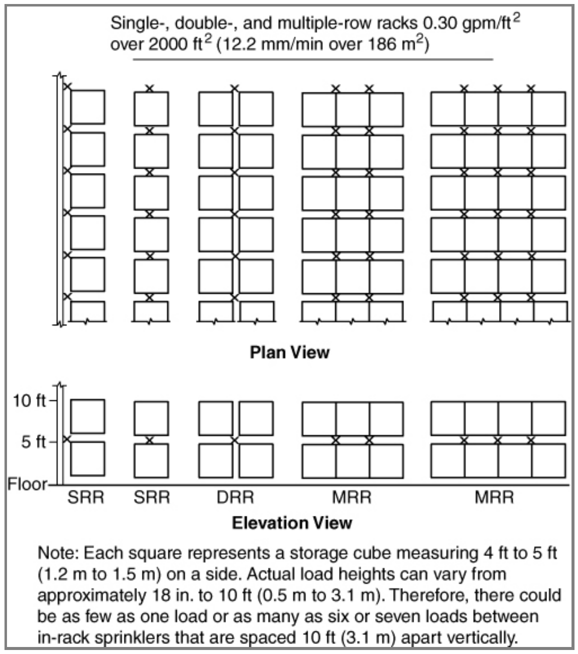


Figure 17.2.1.4(d) Exposed Nonexpanded Plastics up to 15 ft in Height in up to a 25 ft High Building with One Level of In-Rack Sprinklers.

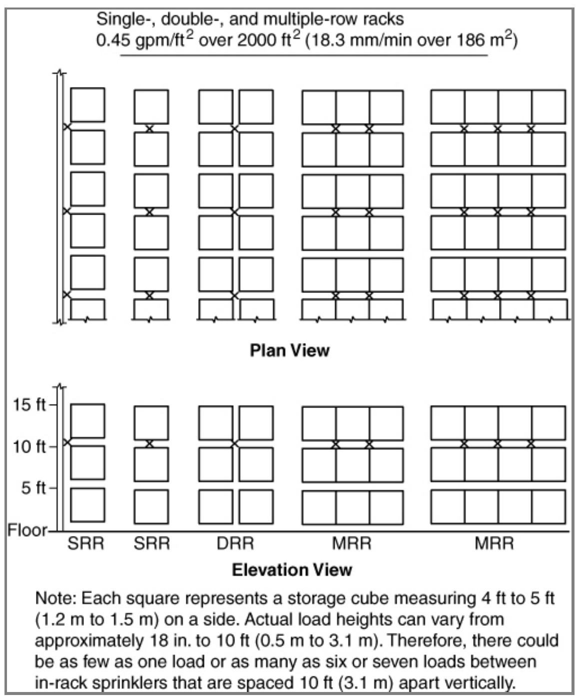


Figure 17.2.1.4(e) Exposed Nonexpanded Plastics up to 15 ft in Height in up to a 25 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

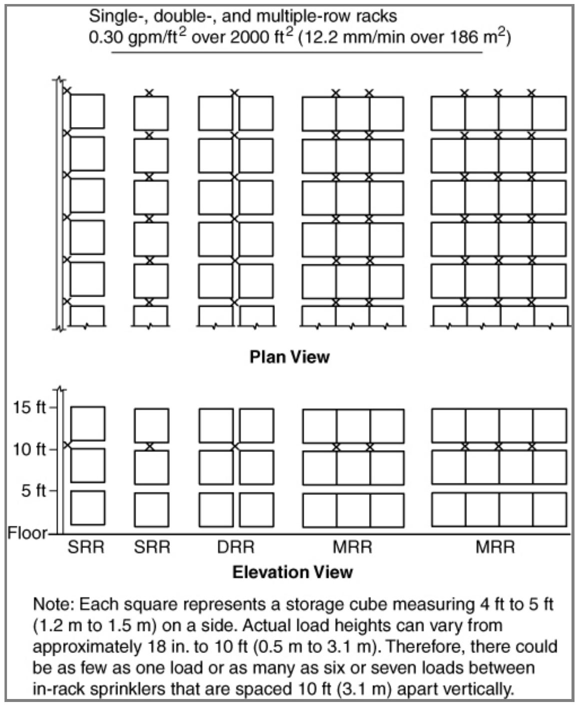
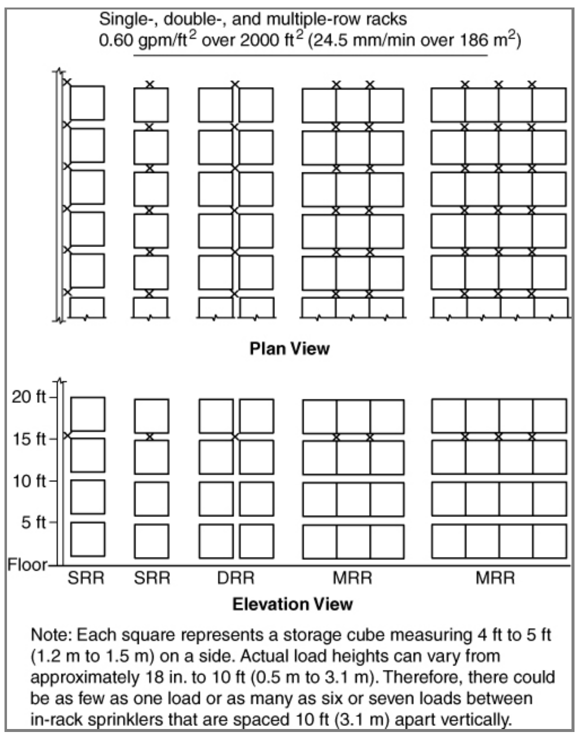


Figure 17.2.1.4(f) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 25 ft High Building with One Level of In-Rack Sprinklers.



Revise Figure 17.2.1.4(f) so that it accurately displays the required position(s) of in-rack sprinklers as described in Section 17.2.1.4(6).

Figure 17.2.1.4(g) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 25 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

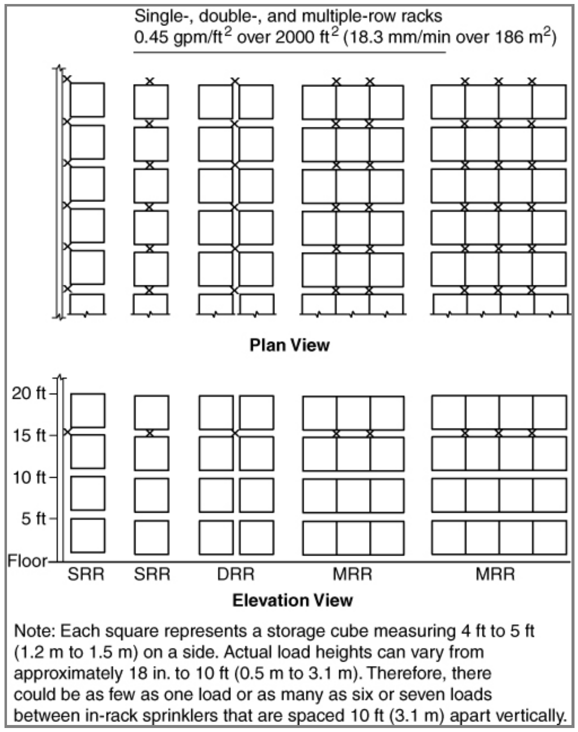


Figure 17.2.1.4(h) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 30 ft High Building with One Level of In-Rack Sprinklers.

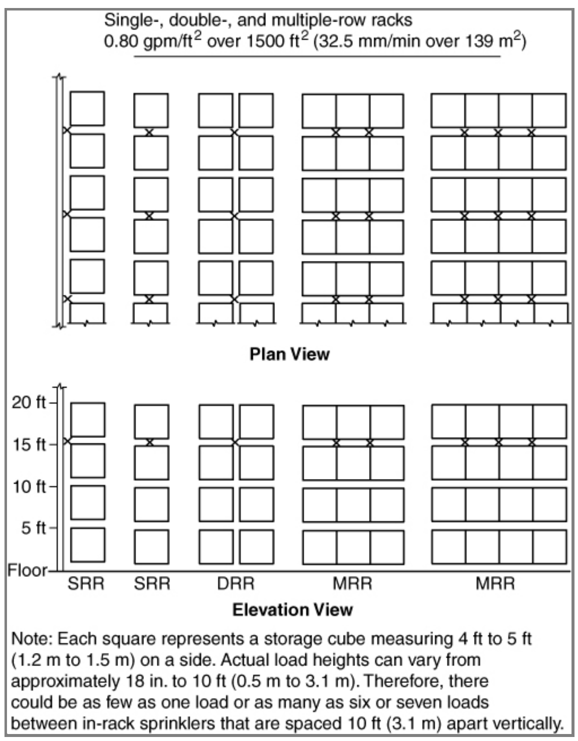


Figure 17.2.1.4(i) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 30 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

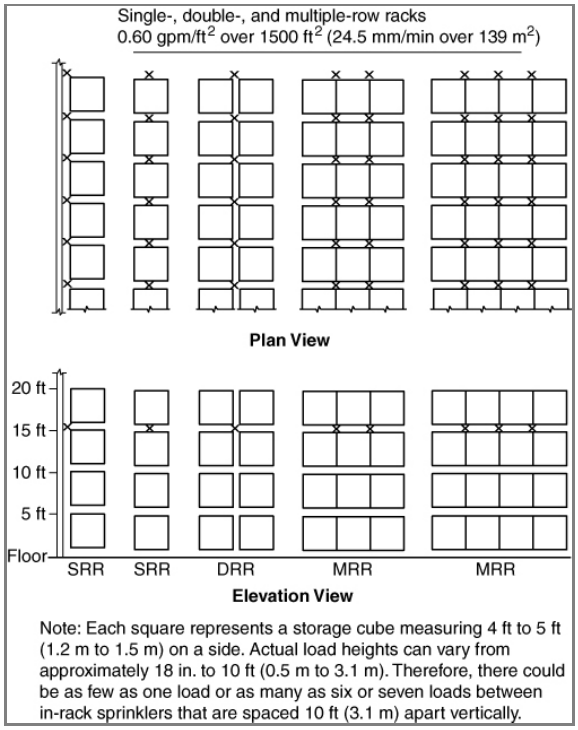


Figure 17.2.1.4(j) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 30 ft High Building with Two Levels of Closely Spaced In-Rack Sprinklers.

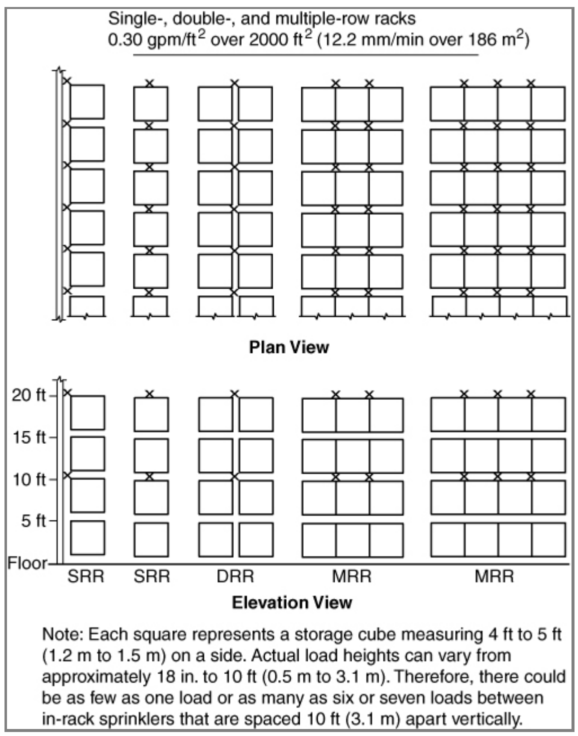


Figure 17.2.1.4(k) Exposed Nonexpanded Plastics up to 25 ft in Height in up to a 35 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

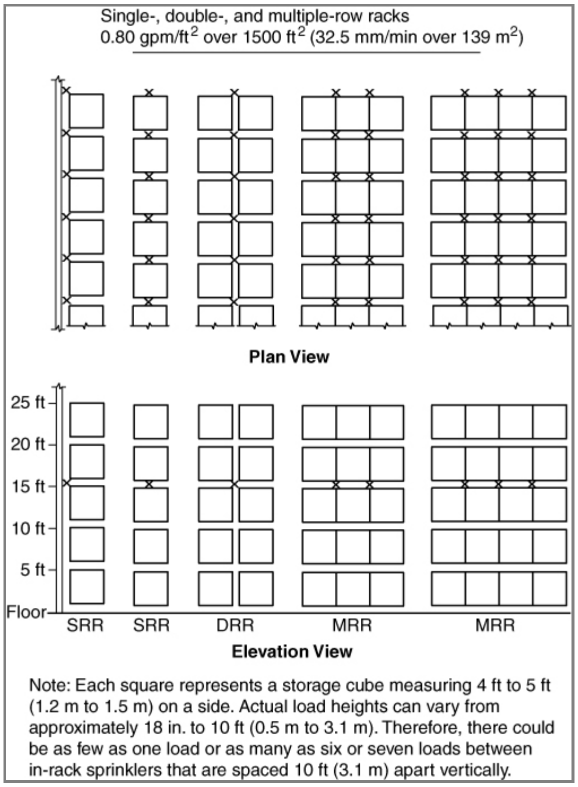
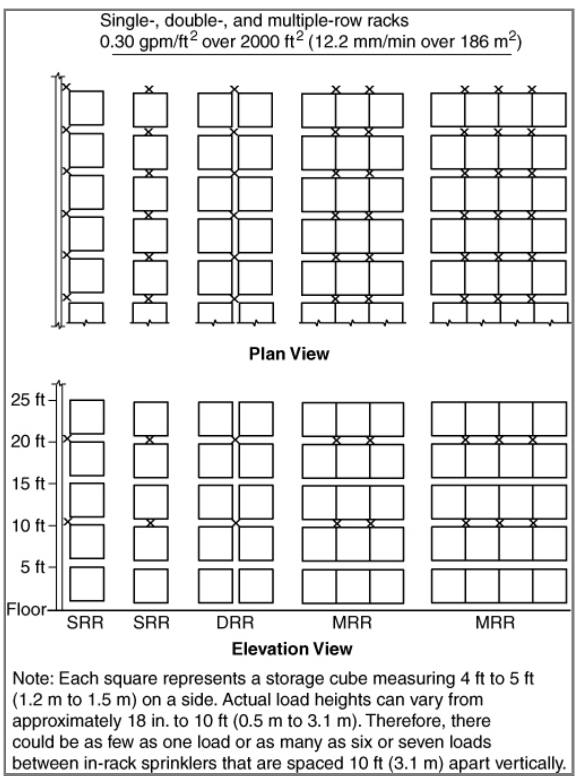


Figure 17.2.1.4(l) Exposed Nonexpanded Plastics up to 25 ft in Height in up to a 35 ft High Building with Two Levels of Closely Spaced In-Rack Sprinklers.



Additional Proposed Changes

	File Name	Description	Approved
Open	13_Sides_Cover_Sheet.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Section 17.2.1.4(6) indicates, "Maximum 20 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum density of 0.60 gpm/ft2 over 2000 ft2 and one level of in-rack sprinklers required at alternative transverse flues as shown in Figure 17.2.1.4(f).
Figure 17.2.1.4(f) should be revised to show in-rack sprinklers positioned in alternate transverse flues.

Submitter Information Verification

Submitter Full Name: Michael Sides
Organization: Global Asset Protection Services
Submittal Date: Tue Apr 02 09:58:53 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364911133700.xml

Public Input No. 273-NFPA 13-2013 [Section No. 17.2.1.4]

Original Hide Markup

17.2.1.4*

Exposed unexpanded Group A plastics protected with control mode density/area sprinklers shall be protected in accordance with one of the following:

(1) Maximum 10 ft (3 m) storage in a maximum 20 ft (6.1 m) high building with ceiling sprinklers designed for a minimum 0.8 gpm/ft^2 (32.6 mm/min) density over 2500 ft^2 (232 m^2) and no in-rack sprinklers required as shown in Figure 17.2.1.4(a)

(2) Maximum 10 ft (3 m) storage in a maximum 20 ft (6.1 m) high building with ceiling sprinklers designed for a minimum 0.45 gpm/ft^2 (18.3 mm/min) density over 2000 ft^2 (186 m^2) and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(b)

(3) Maximum 10 ft storage in a maximum 20 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(c)

(4) Maximum 15 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.45 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(d)

(5) Maximum 15 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(e)

(6) Maximum 20 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.6 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(f)

(7) Maximum 20 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.45 gpm/ft^2 density over 2000 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(g)

(8) Maximum 20 ft storage in a maximum 30 ft high building with ceiling sprinklers designed for a minimum 0.8 gpm/ft^2 density over 1500 ft^2 and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(h)

(9) Maximum 20 ft storage in a maximum 30 ft high building with ceiling sprinklers designed for a minimum 0.6 gpm/ft^2 density over 1500 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(i)

(10) Maximum 20 ft storage in a maximum 30 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft^2 density over 2000 ft^2 and two levels of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(j)

(11) Maximum 25 ft storage in a maximum 35 ft high building with ceiling sprinklers designed for a minimum 0.8 gpm/ft^2 density over 1500 ft^2 and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(k)

(12) Maximum 25 ft storage in a maximum 35 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft^2 density over 2000 ft^2 and two levels of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(l)

Proposal: Include metric conversion numbers also for options (3) - (12)

Figure 17.2.1.4(a) Exposed Nonexpanded Plastics up to 10 ft in Height in up to a 20 ft High Building with No In-Rack Sprinklers.

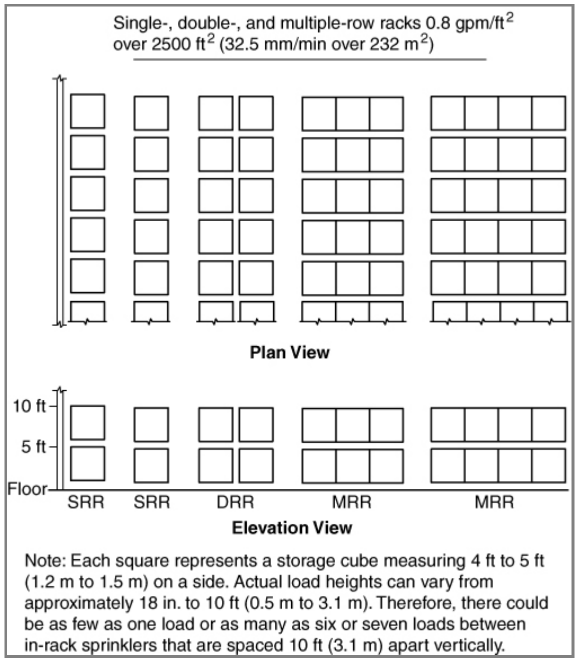


Figure 17.2.1.4(b) Exposed Nonexpanded Plastics up to 10 ft in Height in up to a 20 ft High Building with One Level of In-Rack Sprinklers.

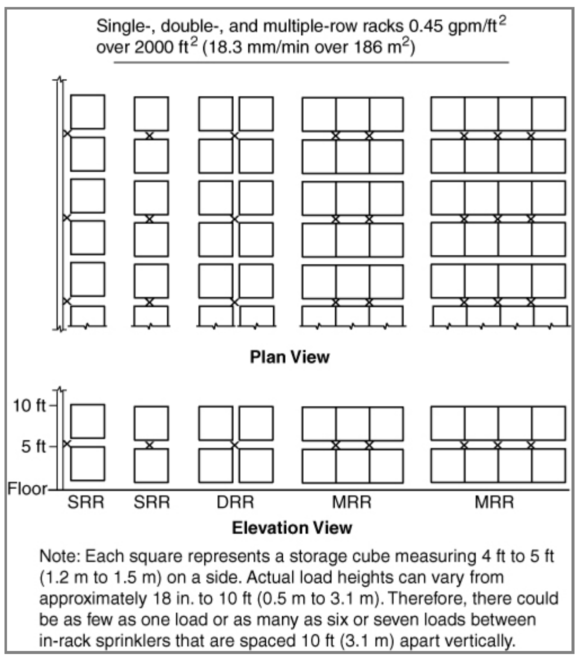


Figure 17.2.1.4(c) Exposed Nonexpanded Plastics up to 10 ft in Height in up to a 20 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

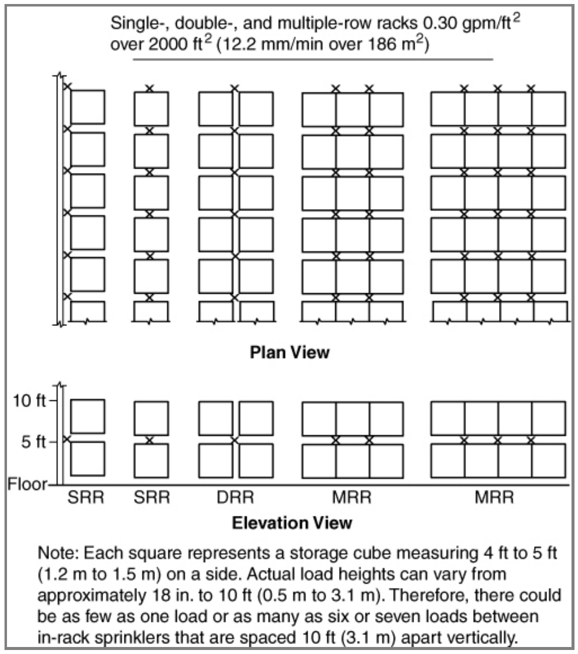


Figure 17.2.1.4(d) Exposed Nonexpanded Plastics up to 15 ft in Height in up to a 25 ft High Building with One Level of In-Rack Sprinklers.

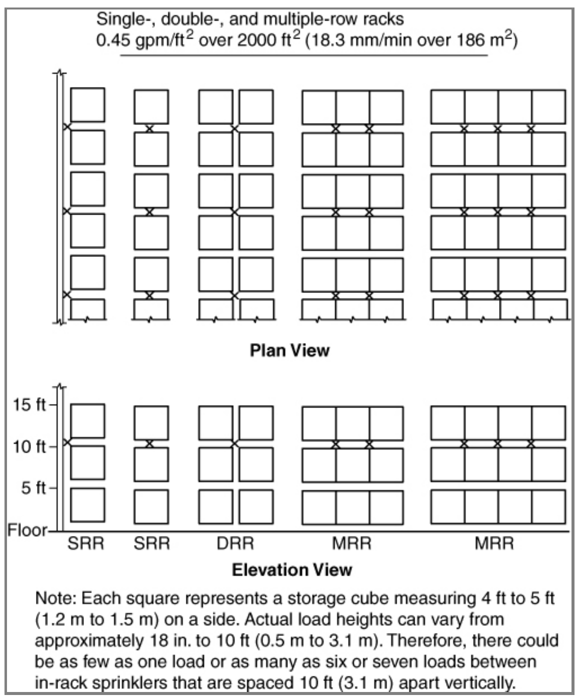


Figure 17.2.1.4(e) Exposed Nonexpanded Plastics up to 15 ft in Height in up to a 25 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

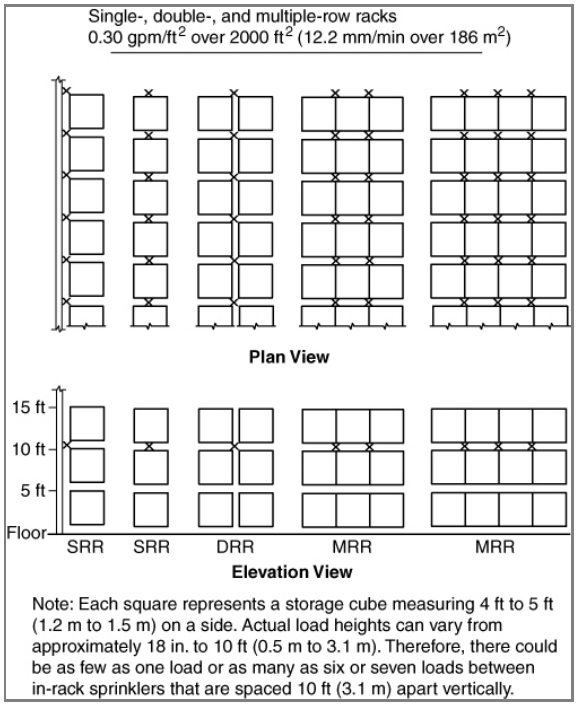


Figure 17.2.1.4(f) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 25 ft High Building with One Level of In-Rack Sprinklers.

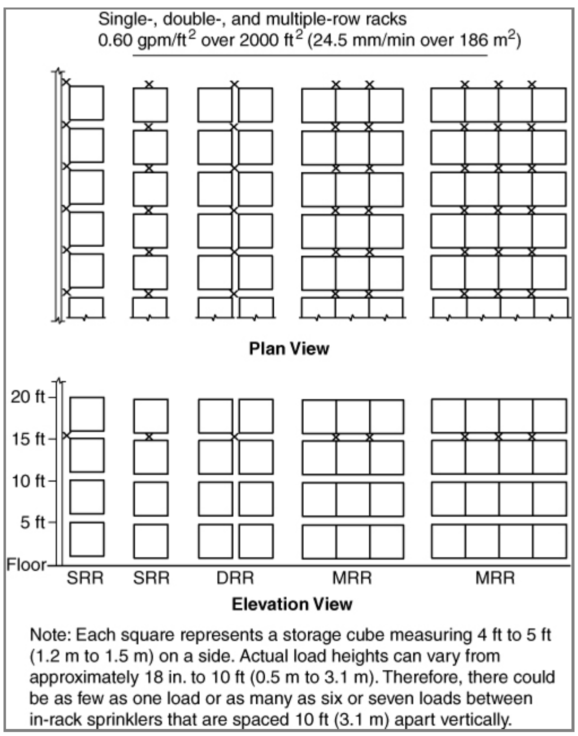


Figure 17.2.1.4(g) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 25 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

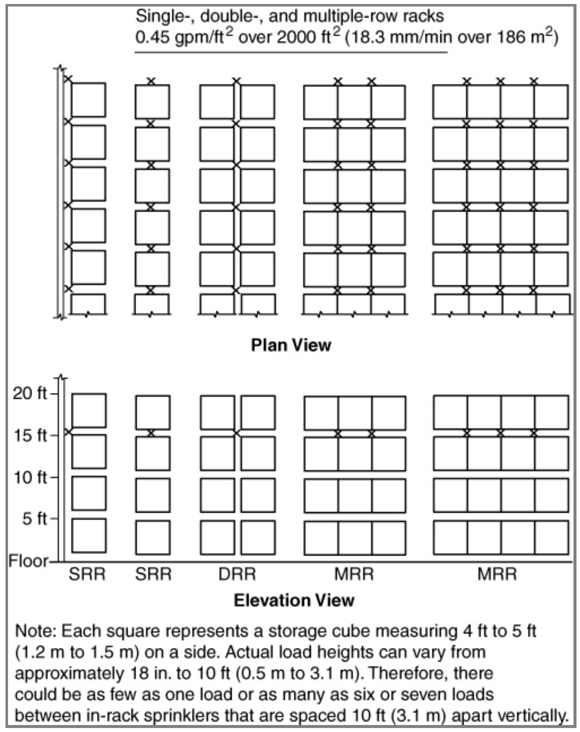


Figure 17.2.1.4(h) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 30 ft High Building with One Level of In-Rack Sprinklers.

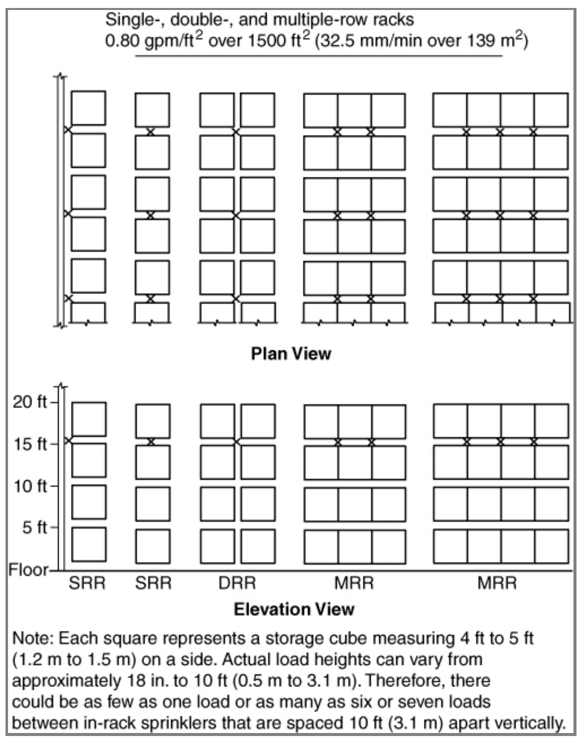


Figure 17.2.1.4(i) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 30 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

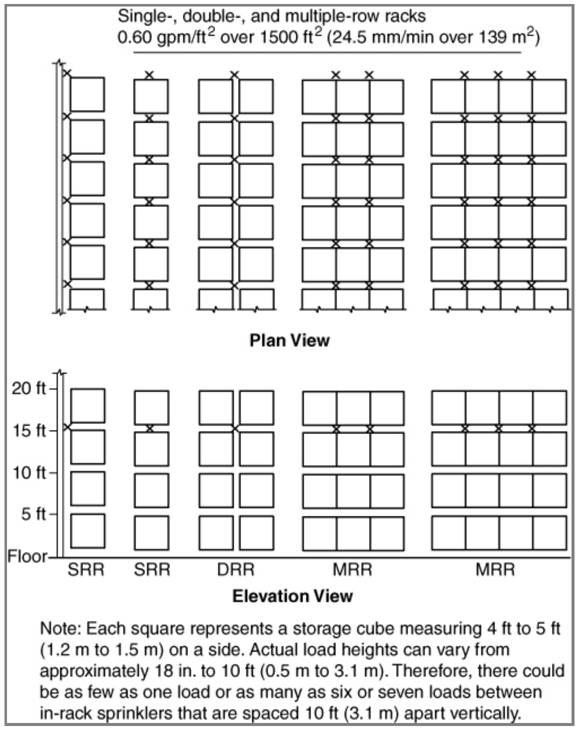


Figure 17.2.1.4(j) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 30 ft High Building with Two Levels of Closely Spaced In-Rack Sprinklers.

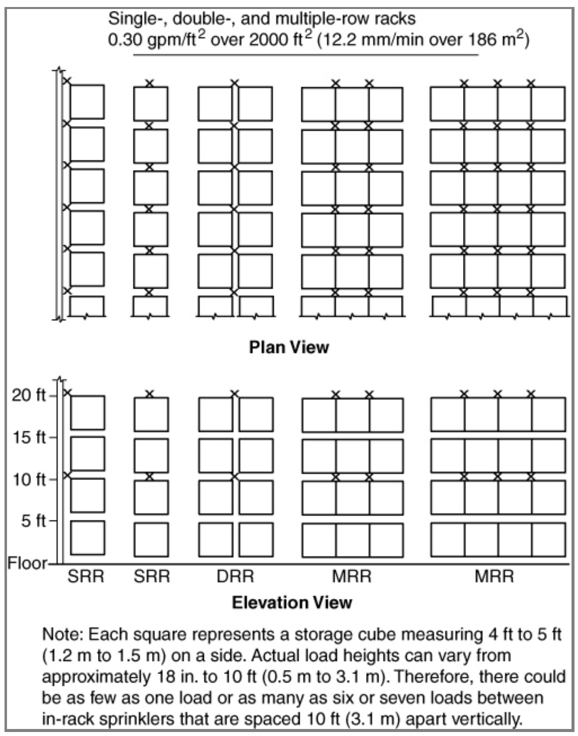


Figure 17.2.1.4(k) Exposed Nonexpanded Plastics up to 25 ft in Height in up to a 35 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

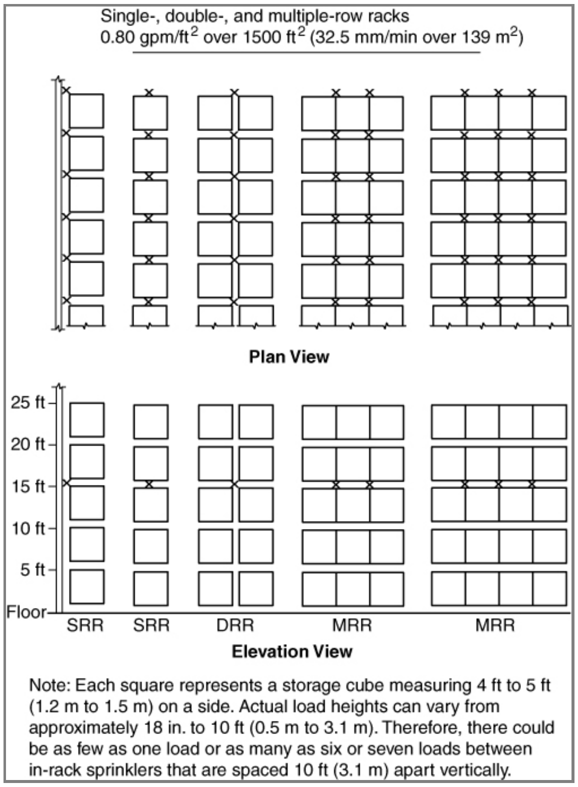
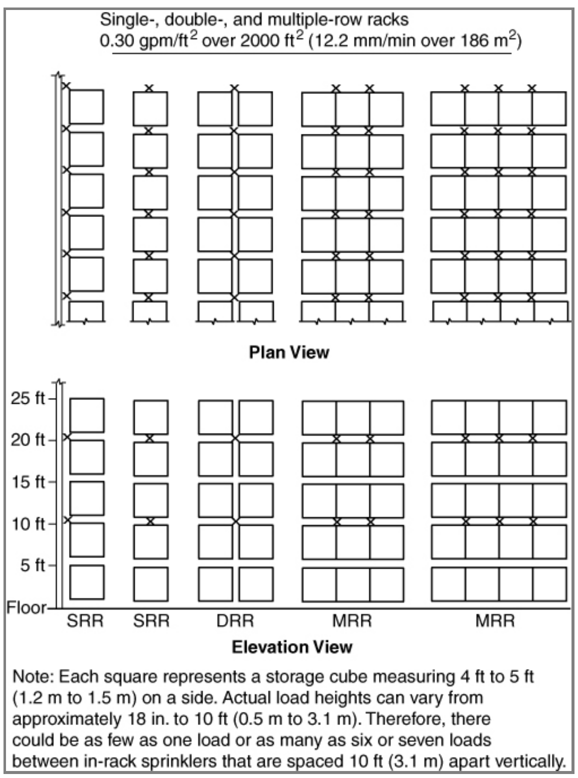


Figure 17.2.1.4(l) Exposed Nonexpanded Plastics up to 25 ft in Height in up to a 35 ft High Building with Two Levels of Closely Spaced In-Rack Sprinklers.



Statement of Problem and Substantiation for Public Input

Lack of consistency

Submitter Information Verification

Submitter Full Name: Bo Hjorth
Organization: AlbaCon AB
Submittal Date: Sun May 12 04:23:20 EDT 2013

Copyright Assignment

the Statement of Problem and Substantiation). I understand and intend that I acquire no rights, including rights as a joint author, in any publication of the NFPA in which this Public Input in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Input and that I have full power and authority to enter into this copyright assignment.

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/TerraView/Content/13-2013.ditamap/2/C1368347000543.xml

Public Input No. 408-NFPA 13-2013 [Section No. 17.2.1.4]

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17.2.1.4 *

Exposed unexpanded Group A plastics protected with control mode density/area sprinklers shall be protected in accordance with one of the following:

(1) Maximum 10 ft (3 m) storage in a maximum 20 ft (6.1 m) high building with ceiling sprinklers designed for a minimum 0.8 gpm/ft ^{2} (32.6 mm/min) density over 2500 ft ^{2} (232 m ^{2}) and no in-rack sprinklers required as shown in Figure 17.2.1.4(a)

(2) Maximum 10 ft (3 m) storage in a maximum 20 ft (6.1 m) high building with ceiling sprinklers designed for a minimum 0.45 gpm/ft ^{2} (18.3 mm/min) density over 2000 ft ^{2} (186 m ^{2}) and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(b)

(3) Maximum 10 ft storage in a maximum 20 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft ^{2} density over 2000 ft ^{2} and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(c)

(4) Maximum 15 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.45 gpm/ft ^{2} density over 2000 ft ^{2} and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(d)

(5) Maximum 15 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft ^{2} density over 2000 ft ^{2} and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(e)

(6) Maximum 20 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.6 gpm/ft ^{2} density over 2000 ft ^{2} and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(f)

(7) Maximum 20 ft storage in a maximum 25 ft high building with ceiling sprinklers designed for a minimum 0.45 gpm/ft ^{2} density over 2000 ft ^{2} and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(g)

(8) Maximum 20 ft storage in a maximum 30 ft high building with ceiling sprinklers designed for a minimum 0.8 gpm/ft ^{2} density over 1500 ft ^{2} and one level of in-rack sprinklers required at alternate transverse flues as shown in Figure 17.2.1.4(h)

(9) Maximum 20 ft storage in a maximum 30 ft high building with ceiling sprinklers designed for a minimum 0.6 gpm/ft ^{2} density over 1500 ft ^{2} and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(i)

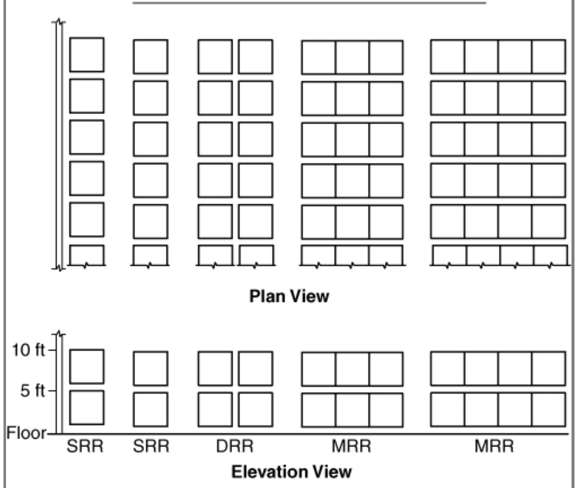
(10) Maximum 20 ft storage in a maximum 30 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft ^{2} density over 2000 ft ^{2} and two levels of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(j)

(11) Maximum 25 ft storage in a maximum 35 ft high building with ceiling sprinklers designed for a minimum 0.8 gpm/ft ^{2} density over 1500 ft ^{2} and one level of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(k)

(12) Maximum 25 ft storage in a maximum 35 ft high building with ceiling sprinklers designed for a minimum 0.3 gpm/ft ^{2} density over 2000 ft ^{2} and two levels of in-rack sprinklers required in every transverse flue as shown in Figure 17.2.1.4(l)

Figure 17.2.1.4(a) Exposed Nonexpanded Plastics up to 10 ft in Height in up to a 20 ft High Building with No In-Rack Sprinklers.

Single-, double-, and multiple-row racks 0.8 gpm/ft ^{2} over 2500 ft ^{2} (32.5 mm/min over 232 m ^{2})



Note: Each square represents a storage cube measuring 4 ft to 5 ft (1.2 m to 1.5 m) on a side. Actual load heights can vary from approximately 18 in. to 10 ft (0.5 m to 3.1 m). Therefore, there could be as few as one load or as many as six or seven loads between in-rack sprinklers that are spaced 10 ft (3.1 m) apart vertically.

Figure 17.2.1.4(b) Exposed Nonexpanded Plastics up to 10 ft in Height in up to a 20 ft High Building with One Level of In-Rack Sprinklers.

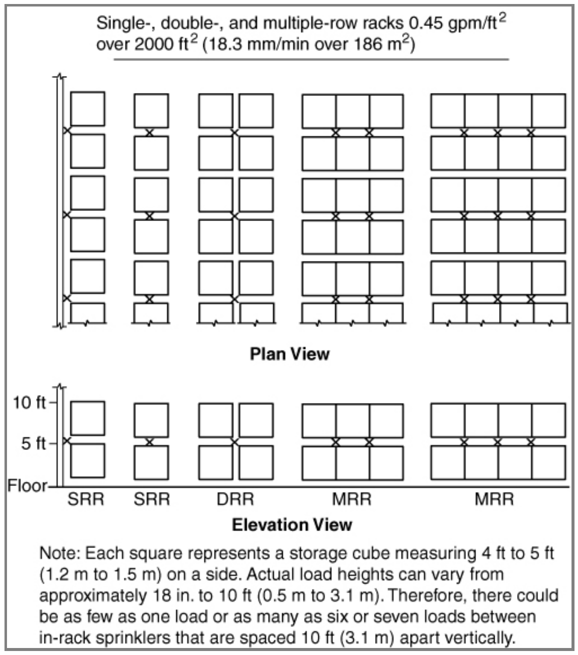


Figure 17.2.1.4(c) Exposed Nonexpanded Plastics up to 10 ft in Height in up to a 20 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

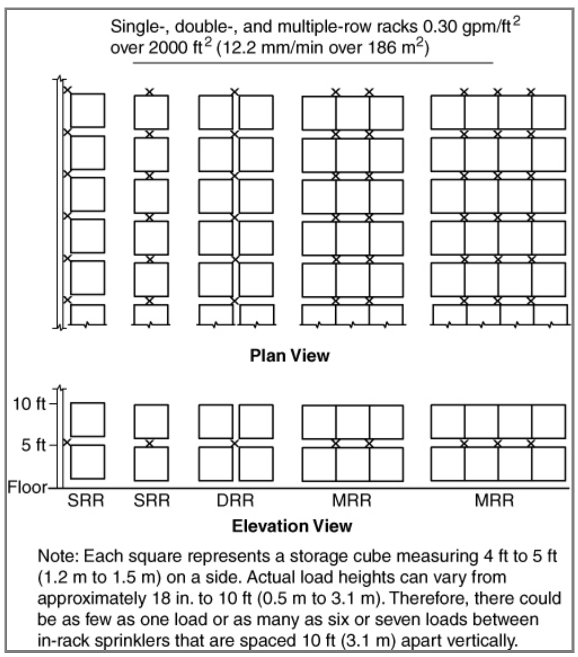


Figure 17.2.1.4(d) Exposed Nonexpanded Plastics up to 15 ft in Height in up to a 25 ft High Building with One Level of In-Rack Sprinklers.

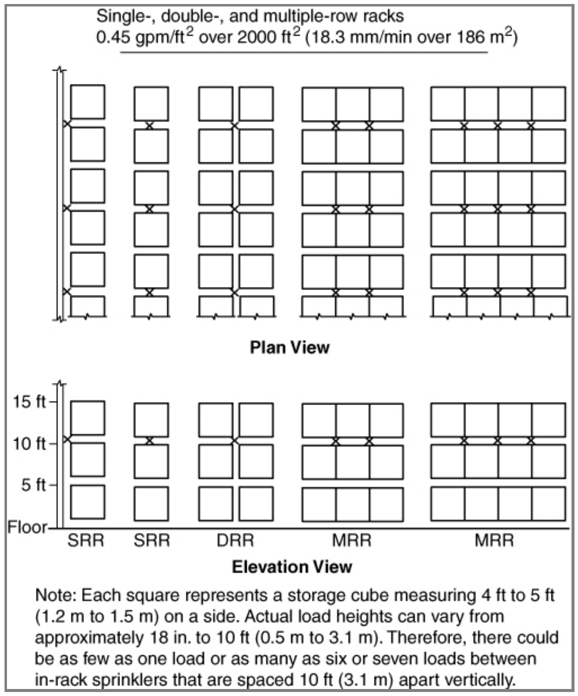


Figure 17.2.1.4(e) Exposed Nonexpanded Plastics up to 15 ft in Height in up to a 25 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

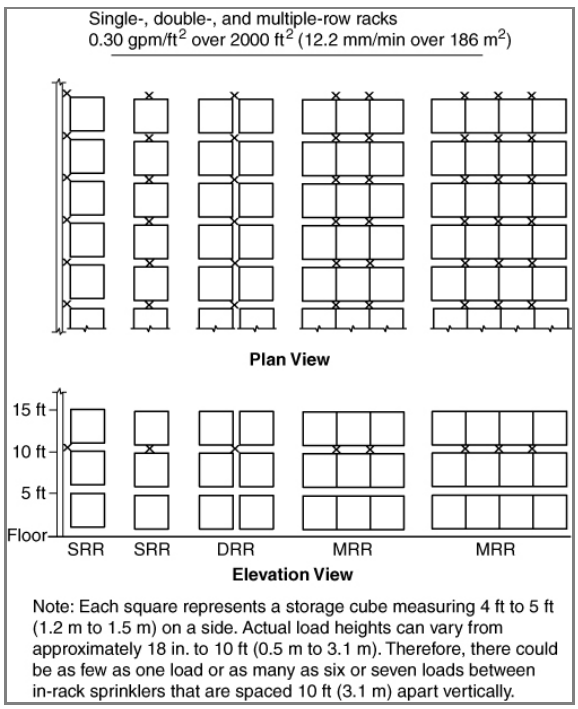
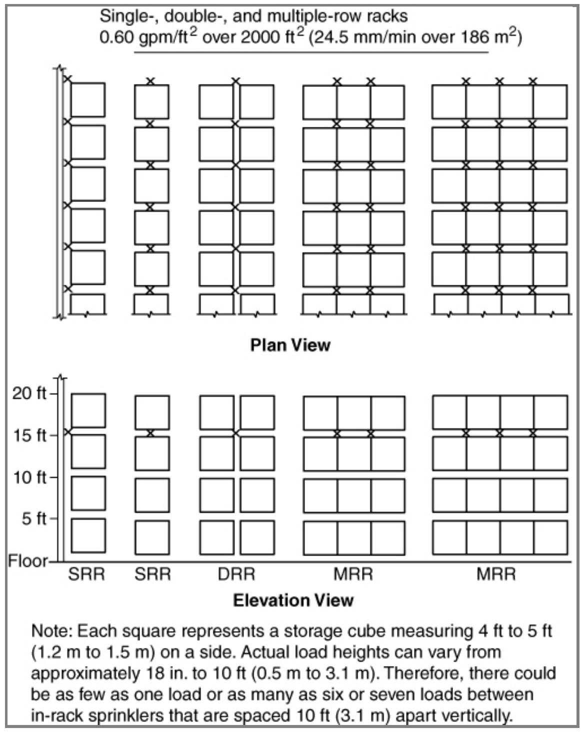


Figure 17.2.1.4(f) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 25 ft High Building with One Level of In-Rack Sprinklers.



[Replace Figure 17.2.1.4(f) with a new figure showing in-rack sprinklers at every other flue]

Figure 17.2.1.4(g) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 25 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

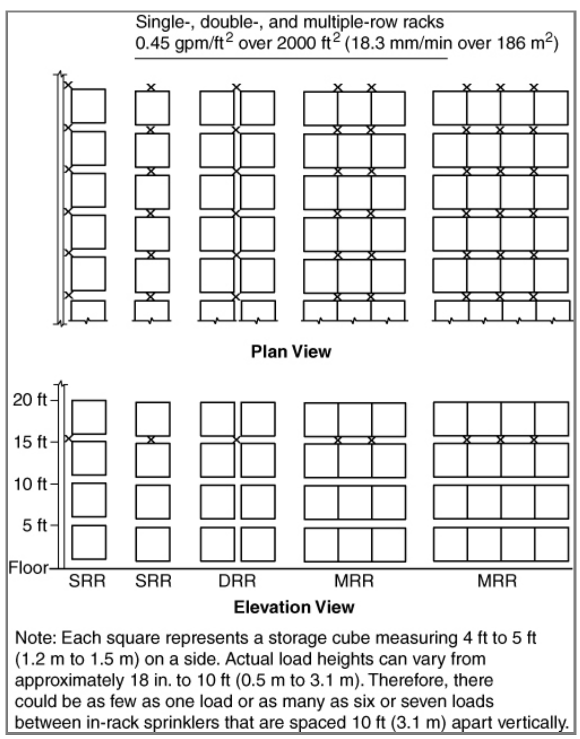


Figure 17.2.1.4(h) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 30 ft High Building with One Level of In-Rack Sprinklers.

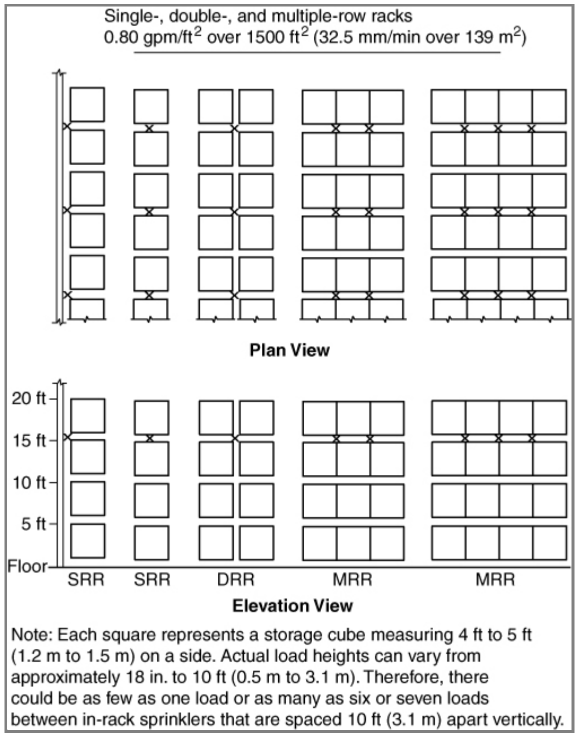


Figure 17.2.1.4(i) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 30 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

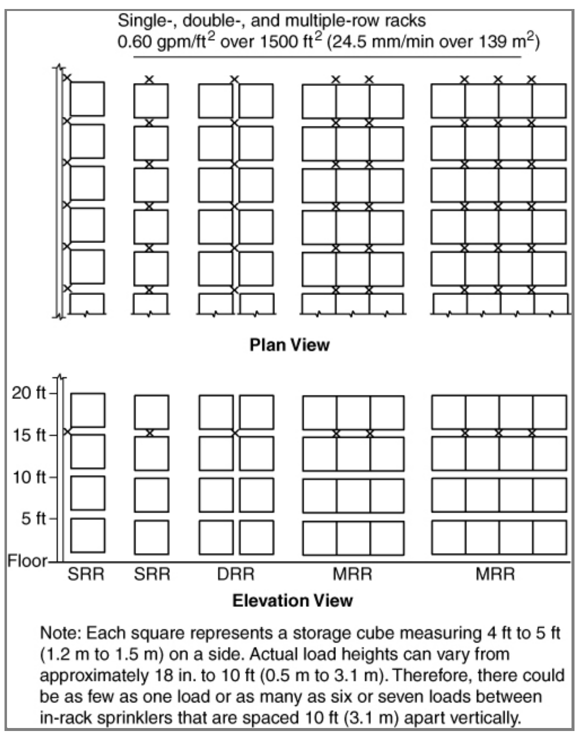


Figure 17.2.1.4(j) Exposed Nonexpanded Plastics up to 20 ft in Height in up to a 30 ft High Building with Two Levels of Closely Spaced In-Rack Sprinklers.

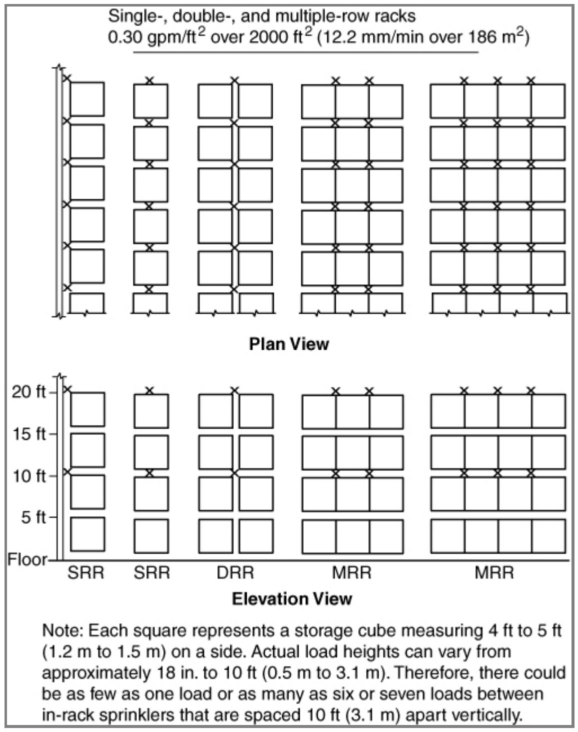


Figure 17.2.1.4(k) Exposed Nonexpanded Plastics up to 25 ft in Height in up to a 35 ft High Building with One Level of Closely Spaced In-Rack Sprinklers.

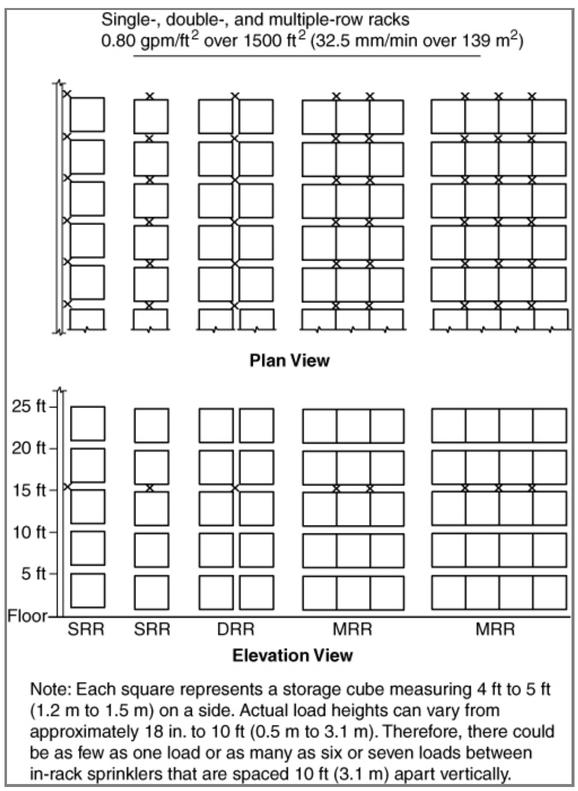
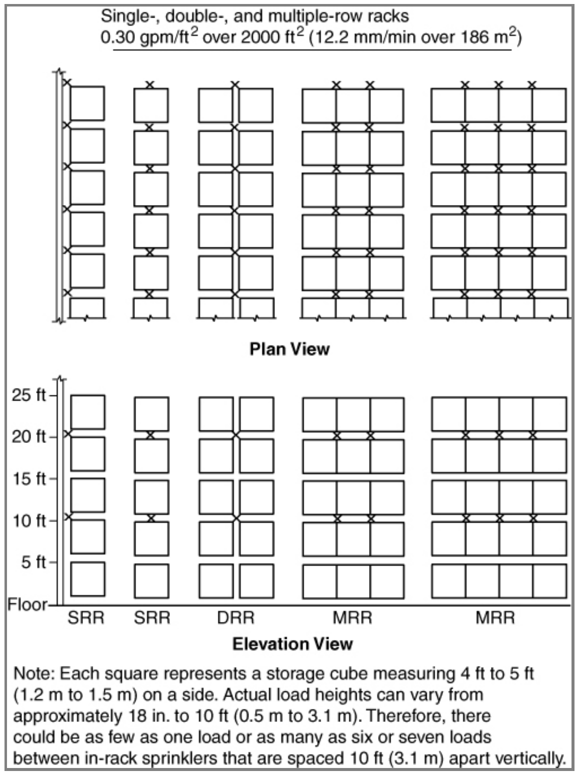


Figure 17.2.1.4(l) Exposed Nonexpanded Plastics up to 25 ft in Height in up to a 35 ft High Building with Two Levels of Closely Spaced In-Rack Sprinklers.



Additional Proposed Changes

File Name	Description	Approved
Open 17-2-1-4-f.tiff	This is the new Figure 17.2.1.4(f) that needs to replace the old one	

Statement of Problem and Substantiation for Public Input

The correct Figure 17.2.1.4(f) should only have in-rack sprinklers at every other flue space. This is the advantage to going to the 0.6 density at the ceiling. With in-rack sprinklers at every flue space, the 0.45 density of Figure 17.2.1.4(g) would be applicable. Note that the figure with the in-rack sprinklers every other flue space was originally submitted to the committee in the ROC for the 2013 edition, but somewhere in the re-drafting, the in-rack sprinklers were increased.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri May 24 09:26:17 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369401977165.xml

Public Input No. 403-NFPA 13-2013 [New Section after 17.2.2.1]

17.2.2.1.1

Protection of solid shelf racks with CMSA sprinklers at the ceiling shall be permitted where in-rack sprinklers are installed in accordance with 17.1.5. In-rack sprinklers shall be installed in every level below the highest solid barrier.

Statement of Problem and Substantiation for Public Input

While developing the 2013 edition, the committee philosophically agreed that the use of CMSA and ESFR sprinklers to protect solid shelf racks was acceptable as long as in-rack sprinklers were installed, but this was not carried out consistently through the standard. This public input (along with others) attempts to clarify the situation by making it consistent throughout all CMSA and ESFR sections. At the same time, we need to clarify that if the solid shelves are not in the entire rack, that even the open shelves below the solid shelves need the extra in-rack sprinklers because the ceiling sprinkler discharge cannot get down through the rack structure.

Submitter Information Verification

Submitter Full Name: Roland Asp

Organization: National Fire Sprinkler Association

Affilliation: NFSA E&S Committee

Submittal Date: Thu May 23 17:01:14 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369342874029.xml

Public Input No. 579-NFPA 13-2013 [Section No. 17.2.3.1]

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Add in a design into Table 17.2.3.1 for the following conditions: Cartoned non-expanded Commodity; 20 ft Maximum Storage Height; 40 ft Maximum Ceiling / Roof Height; K14.0 Nominal K-Factor; Pendent Orientation; 75 psi Minimum Operating Pressure; Yes In-Rack Sprinkler Requirements.

17.2.3.1

Protection of single-, double-, and multiple-row rack storage of cartoned or exposed nonexpanded plastic and cartoned expanded plastic shall be in accordance with Table 17.2.3.1 .

Table 17.2.3.1 ESFR Protection of Rack Storage Without Solid Shelves of Plastics Commodities Stored Up to and Including 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height		Maximum Ceiling/Roof Height		Nominal K-Factor	Orientation	Minimum Operating Pressure		In-Rack Sprinkler Requirements
		ft	m	ft	m			psi	bar	
Single-, double-, and multiple-row racks (no open-top containers)	Cartoned nonexpanded	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
						14.0 (200)	Upright/ pendent	75	5.2	No
						16.8	Upright/			

			35	10.7	(240)	Upright/ pendent	52	3.6	No
					22.4 (320)	Pendent	35	2.4	No
					25.2 (360)	Pendent	20	1.4	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
					22.4 (320)	Pendent	40	2.8	No
					25.2 (360)	Pendent	25	1.7	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
					22.4 (320)	Pendent	40	2.8	No
					25.2 (360)	Pendent	40	2.8	No
	25	7.6	30	9.1	14.0 (200)	Upright/pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
					22.4 (320)	Pendent	25	1.7	No
					25.2 (360)	Pendent	15	1.0	No
			32	9.8	14.0 (200)	Upright/ pendent	60	4.1	No
					16.8 (240)	Upright/ pendent	42	2.9	No
			35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
					16.8 (240)	Upright/ pendent	52	3.6	No
					22.4 (320)	Pendent	35	2.4	No
					25.2 (360)	Pendent	20	1.4	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
					22.4 (320)	Pendent	40	2.8	No
					25.2 (360)	Pendent	25	1.7	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
					22.4 (320)	Pendent	40	2.8	No
					25.2 (360)	Pendent	40	2.8	No
Exposed nonexpanded	20	6.1	25	7.6	14.0 (200)	Pendent	50	3.4	No
					16.8 (240)	Pendent	35	2.4	No
			30	9.1	14.0 (200)	Pendent	50	3.4	No
					16.8 (240)	Pendent	35	2.4	No
			35	10.7	14.0 (200)	Pendent	75	5.2	No
					16.8	Pendent	52	3.6	No

					(240)	Pendent	52	3.6	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
	25	7.6	30	9.1	14.0 (200)	Pendent	50	3.4	No
					16.8 (240)	Pendent	35	2.4	No
			32	9.8	14.0 (200)	Pendent	60	4.1	No
					16.8 (240)	Pendent	42	2.9	No
			35	10.7	14.0 (200)	Pendent	75	5.2	No
					16.8 (240)	Pendent	52	3.6	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
					22.4 (320)	Pendent	50	3.4	No
					25.2 (360)	Pendent	50	3.4	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
Cartoned expanded	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
			30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
	25	7.6	30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
			32	9.8	14.0 (200)	Pendent	60	4.1	No
					16.8 (240)	Upright/ pendent	42	2.9	No

17.2.3.1.1

ESFR protection as defined shall not apply to the following:

(1) Rack storage involving solid shelves

(2) Rack storage involving combustible, open-top cartons or containers

Additional Proposed Changes

	File Name	Description	Approved
Open	Baker_s_Signed_Submittals.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The reason for the failed full-scale fire tests at UL for 20 ft of cartoned non-expanded plastics maintained in open-frame racks under a 40 ft high ceiling was due to excessive clearance, not the sprinkler's inability to protect storage 30 ft and higher. By requiring one level of in-rack sprinklers per Section 17.2.3.4, you allow the sprinkler to be maintained in buildings up to 40 ft high as well as address the high clearance issue by requiring a more stringent in-rack sprinkler demand than what is required for excessive clearance outlined in Sections 12.1.3.4.5 and 12.1.3.4.6. In addition, this level of in-rack sprinkler protection is what is indicated for a 45 ft high ceiling.

Submitter Information Verification

Submitter Full Name: Weston Baker

Organization: FM Global

Submittal Date: Tue Jun 04 08:45:49 EDT 2013

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/TerraView/Content/13-2013.ditamap/2/C1370349949363.xml

Public Input No. 580-NFPA 13-2013 [Section No. 17.2.3.1]

Original Hide Markup

Add in a design into Table 17.2.3.1 for the following conditions: Cartoned non-expanded Commodity; 25 ft Maximum Storage Height; 40 ft Maximum Ceiling / Roof Height; K14.0 Nominal K-Factor; Pendent Orientation; 75 psi Minimum Operating Pressure; Yes In-Rack Sprinkler Requirements.

17.2.3.1

Protection of single-, double-, and multiple-row rack storage of cartoned or exposed nonexpanded plastic and cartoned expanded plastic shall be in accordance with Table 17.2.3.1 .

Table 17.2.3.1 ESFR Protection of Rack Storage Without Solid Shelves of Plastics Commodities Stored Up to and Including 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height		Maximum Ceiling/Roof Height		Nominal K-Factor	Orientation	Minimum Operating Pressure		In-Rack Sprinkler Requirements
		ft	m	ft	m			psi	bar	
Single-, double-, and multiple-row racks (no open-top containers)	Cartoned nonexpanded	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
						16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
				40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	40	2.8	No

					(360)				
	25	7.6	30	9.1	14.0 (200)	Upright/pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
					22.4 (320)	Pendent	25	1.7	No
					25.2 (360)	Pendent	15	1.0	No
			32	9.8	14.0 (200)	Upright/ pendent	60	4.1	No
					16.8 (240)	Upright/ pendent	42	2.9	No
			35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
					16.8 (240)	Upright/ pendent	52	3.6	No
					22.4 (320)	Pendent	35	2.4	No
					25.2 (360)	Pendent	20	1.4	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
					22.4 (320)	Pendent	40	2.8	No
					25.2 (360)	Pendent	25	1.7	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
					22.4 (320)	Pendent	40	2.8	No
					25.2 (360)	Pendent	40	2.8	No
Exposed nonexpanded	20	6.1	25	7.6	14.0 (200)	Pendent	50	3.4	No
					16.8 (240)	Pendent	35	2.4	No
			30	9.1	14.0 (200)	Pendent	50	3.4	No
					16.8 (240)	Pendent	35	2.4	No
			35	10.7	14.0 (200)	Pendent	75	5.2	No
					16.8 (240)	Pendent	52	3.6	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
	25	7.6	30	9.1	14.0 (200)	Pendent	50	3.4	No
					16.8 (240)	Pendent	35	2.4	No
			32	9.8	14.0 (200)	Pendent	60	4.1	No
					16.8 (240)	Pendent	42	2.9	No
			35	10.7	14.0 (200)	Pendent	75	5.2	No
					16.8 (240)	Pendent	52	3.6	No

					16.8 (240)	Pendent	52	3.6	No
			40	12.2	22.4 (320)	Pendent	50	3.4	No
					25.2 (360)	Pendent	50	3.4	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
Cartoned expanded	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
			30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
	25	7.6	30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
			32	9.8	14.0 (200)	Pendent	60	4.1	No
					16.8 (240)	Upright/ pendent	42	2.9	No

17.2.3.1.1

ESFR protection as defined shall not apply to the following:

(1) Rack storage involving solid shelves

(2) Rack storage involving combustible, open-top cartons or containers

Additional Proposed Changes

	File Name	Description	Approved
Open	Baker_s_Signed_Submittals.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The reason for the failed full-scale fire tests at UL for 20 ft of cartoned non-expanded plastics maintained in open-frame racks under a 40 ft high ceiling was due to excessive clearance, not the sprinkler's inability to protect storage 30 ft and higher. By requiring one level of in-rack sprinklers per Section 17.2.3.4, you allow the sprinkler to be maintained in buildings up to 40 ft high as well as address the high clearance issue by requiring a more stringent in-rack sprinkler demand than what is required for excessive clearance outlined in Sections 12.1.3.4.5 and 12.1.3.4.6. In addition, this level of in-rack sprinkler protection is what is indicated for a 45 ft high ceiling.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Submittal Date: Tue Jun 04 09:20:38 EDT 2013

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/TerraView/Content/13-2013.ditamap/2/C1370352038166.xml

Public Input No. 150-NFPA 13-2013 [Section No. 17.2.3.1 [Excluding any Sub-Sections]]

Original | Hide Markup

Protection of single-, double-, and multiple-row rack storage of cartoned or exposed nonexpanded plastic and cartoned expanded plastic shall be in accordance with Table 17.2.3.1.

Table 17.2.3.1 ESFR Protection of Rack Storage Without Solid Shelves of Plastics Commodities Stored Up to and Including 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	Nominal K-Factor	Orientation	Minimum Operating Pressure psi	Minimum Operating Pressure bar	In-Rack Sprinkler Requirements
Single-, double-, and multiple-row racks (no open-top containers)	Cartoned nonexpanded	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
						16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
				40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	40	2.8	No
		25	7.6	30	9.1	14.0 (200)	Upright/pendent	50	3.4	No
						16.8 (240)	Upright/ pendent	35	2.4	No
						22.4 (320)	Pendent	25	1.7	No
						25.2 (360)	Pendent	15	1.0	No
				32	9.8	14.0 (200)	Upright/ pendent	60	4.1	No
						16.8 (240)	Upright/ pendent	42	2.9	No
				35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
						16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
				40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
						14.0 (200)	Pendent	90	6.2	Yes
						16.8	Pendent	63	4.3	Yes

			45	13.7	(240)				
					22.4 (320)	Pendent	40	2.8	No
					25.2 (360)	Pendent	40	2.8	No
Exposed nonexpanded	20	6.1	25	7.6	14.0 (200)	Pendent	50	3.4	No
					16.8 (240)	Pendent	35	2.4	No
			30	9.1	14.0 (200)	Pendent	50	3.4	No
					16.8 (240)	Pendent	35	2.4	No
			35	10.7	14.0 (200)	Pendent	75	5.2	No
					16.8 (240)	Pendent	52	3.6	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
	25	7.6	30	9.1	14.0 (200)	Pendent	50	3.4	No
					16.8 (240)	Pendent	35	2.4	No
			32	9.8	14.0 (200)	Pendent	60	4.1	No
					16.8 (240)	Pendent	42	2.9	No
			35	10.7	14.0 (200)	Pendent	75	5.2	No
					16.8 (240)	Pendent	52	3.6	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
					22.4 (320)	Pendent	50	3.4	No
					25.2 (360)	Pendent	50	3.4	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
Cartoned expanded	20	6.1	25	7.6	14.0 (200)	Upright/ pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
			30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
	25	7.6	30	9.1	14.0 (200)	Upright/ pendent	50	3.4	No
					16.8 (240)	Upright/ pendent	35	2.4	No
			32	9.8	14.0 (200)	Pendent	60	4.1	No
					16.8 (240)	Upright/ pendent	42	2.9	No

Additional Proposed Changes

File Name	Description	Approved
Open Table_17.2.3.1.xls	Proposed addition for the protection of Exposed Expanded plastic supported by full scale fire testing by the Fire Protection Research Foundation. Additional testing is being planned to further support the changes proposed. Supporting material is provided.	
Open 13_PI150_Golinveaus_Supporting_RFExposedExpandedPlastics.pdf	RFExposedExpandedPlastics	

Statement of Problem and Substantiation for Public Input

The protection of Exposed Expanded plastics in Chapter 17 is currently not addressed, full scale fire testing Exposed plastics in rack storage has been completed by the Fire Protection Research Foundation. The testing shows that consideration should be given to the use of a K25.2 (360) ESFR utilizing a 15 sprinkler minimum design with noncombustible vertical barriers spaced at a maximum 16 ft. Additional fire tests by the Foundation are being discussed to provide more data during the Public Input phase of NFPA 13.

Submitter Information Verification

Submitter Full Name: James Golinveaux
Organization: Tyco Fire Protection Products
Submittal Date: Thu Mar 28 09:00:53 EDT 2013

Origin (from sources other than the submitter)

See the Supporting material RFExposedExpandedPlastics Report

/TerraView/Content/13-2013.ditamap/2/C1364475653318.xml

Public Input No. 404-NFPA 13-2013 [New Section after 17.2.3.1.1]

17.2.3.1.2

Protection of solid shelf racks with ESFR sprinklers at the ceiling shall be permitted where in-rack sprinklers are installed in accordance with 17.1.5. In-rack sprinklers shall be installed in every level below the highest solid barrier.

Statement of Problem and Substantiation for Public Input

While developing the 2013 edition, the committee philosophically agreed that the use of CMSA and ESFR sprinklers to protect solid shelf racks was acceptable as long as in-rack sprinklers were installed, but this was not carried out consistently through the standard. This public input (along with others) attempts to clarify the situation by making it consistent throughout all CMSA and ESFR sections. At the same time, we need to clarify that if the solid shelves are not in the entire rack, that even the open shelves below the solid shelves need the extra in-rack sprinklers because the ceiling sprinkler discharge cannot get down through the rack structure.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 17:08:17 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369343297239.xml

Public Input No. 359-NFPA 13-2013 [Section No. 17.2.3.1.1]

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17.2.3.1.1
ESFR protection as defined shall not apply to the following:

(1) Rack storage involving solid shelves except for the situation permitted by 17.2.3.1.2

(2) Rack storage involving ~~combustible,~~ open-top cartons or containers

Statement of Problem and Substantiation for Public Input

For the solid shelf issue, we are referencing a new section that will be proposed to be consistent with the decisions made in the 2013 cycle to allow ESFR sprinklers at the ceiling to protect solid shelves where in-rack sprinklers are installed.

With respect to the open-top container issue, it does not matter whether the containers are combustible or not. The fact that they are open top containers causes a problem. The standard already says in other places that the rules do not apply to open top containers. This section confuses people because they think that ESFR sprinklers are a special exception that allows the protection of non-combustible open top containers.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Wed May 22 17:17:14 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369257434182.xml

Add line to Table 17.2.3.1 ESFR Protection of Rack Storage Without Solid Shelves of Plastics Commodities Stored Up to and Including 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height		Maximum Ceiling/Roof Height		Nominal K-Factor	Orientation	Minimum Operating Pressure		In-Rack Sprinkler Requirements
		ft	m	ft	m			psi	bar	
	Exposed Expanded	35	10.7	40	12.2	25.2[1] (360)	pendent	60	4.1	No[1]

Note 1 - Minimum 15 sprinkler design area with Non-combustible vertical barriers spaced maximum 16 ft. on center .

Public Input No. 524-NFPA 13-2013 [Section No. 17.2.3.1.1]

Original | Hide Markup

17.2.3.1.1

ESFR ~~protection as defined~~

sprinklers shall not

~~apply to the following:~~

- ~~Rack storage involving solid shelves~~

~~Rack storage involving combustible, open-top cartons or containers~~

be permitted to protect storage on solid shelf racks unless the solid shelf racks are protected with in-rack sprinklers in accordance with 16.1.6.

17.2.3.1.2

ESFR sprinklers shall no be permitted to protect storage with open top containers.

Statement of Problem and Substantiation for Public Input

17.2.3.1.1 and 17.3.3.1.1 should match.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Fri May 31 15:07:08 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370027228771.xml

Public Input No. 405-NFPA 13-2013 [New Section after 17.3.2.1]

17.3.2.1.1

Protection of solid shelf racks with CMSA sprinklers at the ceiling shall be permitted where in-rack sprinklers are installed in accordance with 17.1.5. In-rack sprinklers shall be installed in every level below the highest solid barrier.

Statement of Problem and Substantiation for Public Input

While developing the 2013 edition, the committee philosophically agreed that the use of CMSA and ESFR sprinklers to protect solid shelf racks was acceptable as long as in-rack sprinklers were installed, but this was not carried out consistently through the standard. This public input (along with others) attempts to clarify the situation by making it consistent throughout all CMSA and ESFR sections. At the same time, we need to clarify that if the solid shelves are not in the entire rack, that even the open shelves below the solid shelves need the extra in-rack sprinklers because the ceiling sprinkler discharge cannot get down through the rack structure.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 17:14:29 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369343669774.xml

Public Input No. 581-NFPA 13-2013 [Section No. 17.3.3.1]

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Add in a design into Table 17.3.3.1 for the following conditions: Cartoned non-expanded Commodity; 30 ft Maximum Storage Height; 40 ft Maximum Ceiling / Roof Height; K14.0 Nominal K-Factor; Pendent Orientation; 75 psi Minimum Operating Pressure; Yes In-Rack Sprinkler Requirements.

17.3.3.1

Protection of single-, double-, and multiple-row rack storage of cartoned or exposed, nonexpanded plastic shall be in accordance with Table 17.3.3.1 .

Table 17.3.3.1 ESFR Protection of Rack Storage Without Solid Shelves of Plastics Commodities Stored Over 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height		Maximum Ceiling/Roof Height		Nominal K-Factor	Orientation	Minimum Operating Pressure		In-Rack Sprinkler Requirements
		ft	m	ft	m			psi	bar	
	Cartoned nonexpanded					14.0 (200)	Upright/ pendent	75	5.2	No
Single-, double-, and multiple-row racks (no open-top containers)						16.8 (240)	Upright/ pendent	52	3.6	No
				35	10.7	22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
						16.8 (240)	Pendent	52	3.6	No
		30	9.1	40	12.2	22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
						14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
				45	13.7	22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	40	2.8	No
						16.8 (240)	Pendent	52	3.6	No
				40	12.2	25.2 (360)	Pendent	25	1.7	No
						14.0 (200)	Pendent	90	6.2	Yes
		35	10.7			16.8 (240)	Pendent	63	4.3	Yes
				45	13.7	22.4 (320)	Pendent	40	2.8	No
						25.2 (320)	Pendent	40	2.8	No
						14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
		40	12.2	45	13.7	22.4 (320)	Pendent	40	2.8	No
						25.2 (320)	Pendent	40	2.8	No
	Exposed nonexpanded					14.0 (200)	Pendent	75	5.2	No
				35	10.7	16.8 (240)	Pendent	52	3.6	No
						16.8 (240)	Pendent	52	3.6	No
			9.1							

Storage Arrangement	Commodity	ft	m	ft	m	Nominal K-Factor	Orientation	psi	bar	In-Rack Sprinkler Requirements
		30		40	12.2	22.4 (320)	Pendent	50	3.4	No
						25.2 (320)	Pendent	50	3.4	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
				40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	50	3.4	No
		35	10.7			25.2 (320)	Pendent	50	3.4	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
		40	12.2	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes

17.3.3.1.1

ESFR sprinklers shall not be permitted to protect storage on solid shelf racks unless the solid shelf racks are protected with in-rack sprinklers in accordance with 17.1.5 .

17.3.3.1.2

ESFR sprinklers shall not be permitted to protect storage with open-top containers.

Additional Proposed Changes

	File Name	Description	Approved
Open	Baker_s_Signed_Submittals.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The reason for the failed full-scale fire tests at UL for 20 ft of cartoned non-expanded plastics maintained in open-frame racks under a 40 ft high ceiling was due to excessive clearance, not the sprinkler's inability to protect storage 30 ft and higher. By requiring one level of in-rack sprinklers per Section 17.3.3.4, you allow the sprinkler to be maintained in buildings up to 40 ft high. In addition, this level of in-rack sprinkler protection is what is indicated for a 45 ft high ceiling.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Submittal Date: Tue Jun 04 09:22:13 EDT 2013

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/TerraView/Content/13-2013.ditamap/2/C1370352133765.xml

Public Input No. 582-NFPA 13-2013 [Section No. 17.3.3.1]

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Add in a design into Table 17.3.3.1 for the following conditions: Cartoned non-expanded Commodity; 35 ft Maximum Storage Height; 40 ft Maximum Ceiling / Roof Height; K14.0 Nominal K-Factor; Pendent Orientation; 75 psi Minimum Operating Pressure; Yes In-Rack Sprinkler Requirements.

17.3.3.1

Protection of single-, double-, and multiple-row rack storage of cartoned or exposed, nonexpanded plastic shall be in accordance with Table 17.3.3.1 .

Table 17.3.3.1 ESFR Protection of Rack Storage Without Solid Shelves of Plastics Commodities Stored Over 25 ft (7.6 m) in Height

		Maximum Storage Height		Maximum Ceiling/Roof Height				Minimum Operating Pressure		In-Rack Sprinkler
Storage Arrangement	Commodity	ft	m	ft	m	Nominal K-Factor	Orientation	psi	bar	Requirements

	Cartoned nonexpanded					14.0 (200)	Upright/ pendent	75	5.2	No
Single-, double-, and multiple-row racks (no open-top containers)		30	9.1	35	10.7	16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
				40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	40	2.8	No
		35	10.7	40	12.2	16.8 (240)	Pendent	52	3.6	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (320)	Pendent	40	2.8	No
		40	12.2	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (320)	Pendent	40	2.8	No
	Exposed nonexpanded	30	9.1	35	10.7	14.0 (200)	Pendent	75	5.2	No
						16.8 (240)	Pendent	52	3.6	No
				40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	50	3.4	No
						25.2 (320)	Pendent	50	3.4	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
		35	10.7	40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	50	3.4	No
						25.2 (320)	Pendent	50	3.4	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes

						16.8 (240)	Pendent	63	4.3	Yes
		40	12.2	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes

17.3.3.1.1

ESFR sprinklers shall not be permitted to protect storage on solid shelf racks unless the solid shelf racks are protected with in-rack sprinklers in accordance with 17.1.5 .

17.3.3.1.2

ESFR sprinklers shall not be permitted to protect storage with open-top containers.

Additional Proposed Changes

	File Name	Description	Approved
Open	Baker_s_Signed_Submittals.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The reason for the failed full-scale fire tests at UL for 20 ft of cartoned non-expanded plastics maintained in open-frame racks under a 40 ft high ceiling was due to excessive clearance, not the sprinkler's inability to protect storage 30 ft and higher. By requiring one level of in-rack sprinklers per Section 17.3.3.4, you allow the sprinkler to be maintained in buildings up to 40 ft high. In addition, this level of in-rack sprinkler protection is what is indicated for a 45 ft high ceiling.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Submittal Date: Tue Jun 04 09:23:09 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370352189234.xml

Public Input No. 583-NFPA 13-2013 [Section No. 17.3.3.1]

Original | Hide Markup

Add in a design into Table 17.3.3.1 for the following conditions: Cartoned non-expanded Commodity; 30 ft Maximum Storage Height; 40 ft Maximum Ceiling / Roof Height; K14.0 Nominal K-Factor; Pendent Orientation; 75 psi Minimum Operating Pressure; No In-Rack Sprinkler Requirements.

17.3.3.1

Protection of single-, double-, and multiple-row rack storage of cartoned or exposed, nonexpanded plastic shall be in accordance with Table 17.3.3.1 .

Table 17.3.3.1 ESFR Protection of Rack Storage Without Solid Shelves of Plastics Commodities Stored Over 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	Nominal K-Factor	Orientation	Minimum Operating Pressure psi	Minimum Operating Pressure bar	In-Rack Sprinkler Requirements
Single-, double-, and multiple-row racks (no open-top containers)	Cartoned nonexpanded					14.0 (200)	Upright/ pendent	75	5.2	No
				35	10.7	16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
		30	9.1	40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
						14.0 (200)	Pendent	90	6.2	Yes

			45	13.7	16.8 (240)	Pendent	63	4.3	Yes
					22.4 (320)	Pendent	40	2.8	No
					25.2 (360)	Pendent	40	2.8	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
					25.2 (360)	Pendent	25	1.7	No
	35	10.7	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
					22.4 (320)	Pendent	40	2.8	No
					25.2 (320)	Pendent	40	2.8	No
	40	12.2	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
					22.4 (320)	Pendent	40	2.8	No
					25.2 (320)	Pendent	40	2.8	No
Exposed nonexpanded	30	9.1	35	10.7	14.0 (200)	Pendent	75	5.2	No
					16.8 (240)	Pendent	52	3.6	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
					22.4 (320)	Pendent	50	3.4	No
					25.2 (320)	Pendent	50	3.4	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
	35	10.7	40	12.2	16.8 (240)	Pendent	52	3.6	No
					22.4 (320)	Pendent	50	3.4	No
					25.2 (320)	Pendent	50	3.4	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
	40	12.2	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes

17.3.3.1.1

ESFR sprinklers shall not be permitted to protect storage on solid shelf racks unless the solid shelf racks are protected with in-rack sprinklers in accordance with 17.1.5 .

17.3.3.1.2

ESFR sprinklers shall not be permitted to protect storage with open-top containers.

Additional Proposed Changes

File Name	Description	Approved
Open Baker_s_Signed_Submittals.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This sprinkler failed two full-scale fire tests at UL when the storage was only 20 ft high due to excessive clearance. This sprinkler historically has provided acceptable test results for storage heights of 30 and 35 ft; therefore these storage heights under a 40 ft high ceiling should be considered acceptable and reinstated to avoid the sprinkler from being removed from warehouse facilities that meet these acceptable protection conditions.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Submittal Date: Tue Jun 04 09:24:25 EDT 2013

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Public Input No. 584-NFPA 13-2013 [Section No. 17.3.3.1]

Original | Hide Markup

Add in a design into Table 17.3.3.1 for the following conditions: Cartoned non-expanded Commodity; 35 ft Maximum Storage Height; 40 ft Maximum Ceiling / Roof Height; K14.0 Nominal K-Factor; Pendent Orientation; 75 psi Minimum Operating Pressure; No In-Rack Sprinkler Requirements.

17.3.3.1

Protection of single-, double-, and multiple-row rack storage of cartoned or exposed, nonexpanded plastic shall be in accordance with Table 17.3.3.1 .

Table 17.3.3.1 ESFR Protection of Rack Storage Without Solid Shelves of Plastics Commodities Stored Over 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	Nominal K-Factor	Orientation	Minimum Operating Pressure psi	Minimum Operating Pressure bar	In-Rack Sprinkler Requirements
Single-, double-, and multiple-row racks (no open-top containers)	Cartoned nonexpanded	30	9.1	35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
						16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
				40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	40	2.8	No
		35	10.7	40	12.2	16.8 (240)	Pendent	52	3.6	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2	Pendent	40	2.8	No

					(320)				
	40	12.2	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
					22.4 (320)	Pendent	40	2.8	No
					25.2 (320)	Pendent	40	2.8	No
Exposed nonexpanded	30	9.1	35	10.7	14.0 (200)	Pendent	75	5.2	No
					16.8 (240)	Pendent	52	3.6	No
			40	12.2	16.8 (240)	Pendent	52	3.6	No
					22.4 (320)	Pendent	50	3.4	No
					25.2 (320)	Pendent	50	3.4	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
	35	10.7	40	12.2	16.8 (240)	Pendent	52	3.6	No
					22.4 (320)	Pendent	50	3.4	No
					25.2 (320)	Pendent	50	3.4	No
			45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes
	40	12.2	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
					16.8 (240)	Pendent	63	4.3	Yes

17.3.3.1.1

ESFR sprinklers shall not be permitted to protect storage on solid shelf racks unless the solid shelf racks are protected with in-rack sprinklers in accordance with 17.1.5 .

17.3.3.1.2

ESFR sprinklers shall not be permitted to protect storage with open-top containers.

Additional Proposed Changes

	File Name	Description	Approved
Open	Baker_s_Signed_Submittals.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This sprinkler failed two full-scale fire tests at UL when the storage was only 20 ft high due to excessive clearance. This sprinkler historically has provided acceptable test results for storage heights of 30 and 35 ft; therefore these storage heights under a 40 ft high ceiling should be considered acceptable and reinstated to avoid the sprinkler from being removed from warehouse facilities that meet these acceptable protection conditions.

Submitter Information Verification

Submitter Full Name: Weston Baker
Organization: FM Global
Submittal Date: Tue Jun 04 09:25:32 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370352332076.xml

Public Input No. 274-NFPA 13-2013 [Section No. 17.3.3.1 [Excluding any Sub-Sections]]

Original | Hide Markup

Protection of single-, double-, and multiple-row rack storage of cartoned or exposed, nonexpanded plastic shall be in accordance with Table 17.3.3.1.

Table 17.3.3.1 ESFR Protection of Rack Storage Without Solid Shelves of Plastics Commodities Stored Over 25 ft (7.6 m) in Height

Storage Arrangement	Commodity	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	Nominal K-Factor	Orientation	Minimum Operating Pressure psi	Minimum Operating Pressure bar	In-Rack Sprinkler Requirements
Single-, double-, and multiple-row racks (no open-top containers)	Cartoned nonexpanded	30	9.1	35	10.7	14.0 (200)	Upright/ pendent	75	5.2	No
						16.8 (240)	Upright/ pendent	52	3.6	No
						22.4 (320)	Pendent	35	2.4	No
						25.2 (360)	Pendent	20	1.4	No
				40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (360)	Pendent	40	2.8	No
		35	10.7	40	12.2	16.8 (240)	Pendent	52	3.6	No
						25.2 (360)	Pendent	25	1.7	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (320)	Pendent	40	2.8	No
		40	12.2	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						22.4 (320)	Pendent	40	2.8	No
						25.2 (320)	Pendent	40	2.8	No
	Exposed nonexpanded			35	10.7	14.0 (200)	Pendent	75	5.2	No
						16.8 (240)	Pendent	52	3.6	No
		30	9.1	40	12.2	16.8 (240)	Pendent	52	3.6	No
						22.4 (320)	Pendent	50	3.4	No
						25.2 (320)	Pendent	50	3.4	No
				45	13.7	14.0 (200)	Pendent	90	6.2	Yes
						16.8 (240)	Pendent	63	4.3	Yes
						16.8 (240)	Pendent	52	3.6	No

		40	12.2	22.4 (320)	Pendent	50	3.4	No
35	10.7			25.2 (320)	Pendent	50	3.4	No
		45	13.7	14.0 (200)	Pendent	90	6.2	Yes
				16.8 (240)	Pendent	63	4.3	Yes
40	12.2	45	13.7	14.0 (200)	Pendent	90	6.2	Yes
				16.8 (240)	Pendent	63	4.3	Yes

Proposal: In the line for Cartoned nonexpanded plastics, 40 ft storage and 45 ft ceiling height, change metric value for K25.2, from 320 to 360.

Statement of Problem and Substantiation for Public Input

Incorrect value in current table

Submitter Information Verification

Submitter Full Name: Bo Hjorth
Organization: AlbaCon AB
Submittal Date: Sun May 12 04:29:40 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368347380096.xml

Public Input No. 406-NFPA 13-2013 [Section No. 17.3.3.1.1]

Original Hide Markup

17.3.3.1.1
ESFR sprinklers shall not be permitted to protect storage on solid shelf racks unless the solid shelf racks are protected with in-rack sprinklers in accordance with 17.1.5 . Where solid shelves are used, in-rack sprinklers shall be installed in every level below the highest solid barrier.

Statement of Problem and Substantiation for Public Input

Guidance is needed for dealing with the situation where the whole rack is not solid shelves. If there are open shelves below the solid shelves, they still need in-rack protection because the solid shelf is preventing water from getting down to the open shelves.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 17:17:46 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369343866184.xml

Public Input No. 281-NFPA 13-2013 [Section No. 20.2]

Original Hide Markup

20.2* Plastic Motor Vehicle Components.

~~Plastic~~ Group A plastic automotive components and associated packaging material shall be permitted to be protected in accordance with Table 20.2.

Table 20.2 ESFR Sprinkler Design Criteria K-25.2 (360) for Portable Racks (Closed Arraya) Without Solid Shelves Containing Automotive Components

Commodity	Maximum Storage Height		Maximum Ceiling/Roof Height		Type of System	Maximum Sprinkler Spacing[b]		Number of Design Sprinklers by Minimum Operating Pressure[c]		Maximum Deflector Distance Below Ceiling[d]		Hose Stream Allowance		Water Supply Duration
	ft	m	ft	m		ft^2	m^2	psi	bar	in.	mm	gpm	L/min	(hours)
Automotive components and associated packaging material	25	7.6	35	10.7	Wet	100	9.3	16 at 37 psi	16 at 2.5 bar	18	457	500	1900	2

[a]Portable rack array shall be tightly nested without any flue spaces.

[b]Sprinkler spacing can exceed 100 ft^2 (9.3 m^2) where sprinklers are listed for larger spacing.

[c]System hydraulic design shall also be capable of delivering a discharge density of 0.60 gpm/ft^2 (24.4 mm/m)in) over the most hydraulically remote 4000 ft^2 (372 m^2) area.

[d]Maximum deflector distance below ceiling shall be permitted to exceed 18 in. (456 mm) where sprinklers are listed for greater distances.

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_2_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This proposal is offered to correct a typographical error in 3.9.3.2, and for clarity. As per 5.6.4.4, it is only Group A plastics that are subdivided into expanded or nonexpanded categories, but as written, the text of 3.9.3.2, 20.2 and A.20.2 appears to be referring to all plastic classes.

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: Professional Loss Control

Submittal Date: Tue May 14 13:12:28 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368551548780.xml

Public Input No. 478-NFPA 13-2013 [Section No. 20.5.6.4 [Excluding any Sub-Sections]]

Original Hide Markup

~~In~~ 20.5.6.4 For double and multiple-row racks, in- rack sprinklers shall be installed in the transverse flues at each catwalk level and shall be staggered vertically. For single-row racks, in-rack sprinklers shall be installed in the transverse flue at each catwalk level.

20.5.6.4.1 For double- and multiple-row racks ~~S~~ s prinklers installed in the transverse flues shall be located not less than 18 in. (0.46 m) but not greater than 24 in. (0.61 m) from the face of the rack on the catwalk side. For single-row racks, sprinklers installed in the transverse flues shall be staggered horizontally such that the sprinkler at first level is not less than 18 in. (0.46 m) but not greater than 24 in. (0.61 m) from the face of the rack on the catwalk side. At the next level the sprinkler in the transverse flue shall be located not less than 6 in. (0.15 m) but not greater than 12 in. (0.30 m) from the back face of the rack. This staggering shall be repeated throughout all catwalk levels.

Statement of Problem and Substantiation for Public Input

In many instances a single row rack is located against the wall of a records center. There is no direction on how to protect these single row racks so this section develops a means of providing protection that is consistent with the means used for a double row rack. In rack sprinklers are provided at each catwalk level within the flue. On the one level they are provided in accordance with the double row rack design and on the alternate level they are extended so that they are near the back face of the rack thereby maintaining the sprinkler vertical spacing called out for double row racks. This alternate level sprinkler is placed closer to the back face so as to get some wetting on the back face itself.

Submitter Information Verification

Submitter Full Name: GERALD SCHULTZ
Organization: FPI CONSORTIUM
Submittal Date: Thu May 30 15:10:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369941041889.xml

Public Input No. 369-NFPA 13-2013 [Chapter 21 [Title Only]]

Original Hide Markup

Alternative ~~Sprinkler System Designs~~ Storage Design Approaches for Chapters 12 Through 20

Statement of Problem and Substantiation for Public Input

The Chapter uses the terms Design, Design Criteria and Protection Criteria with no specific distinction between each. This title change will clarify the intent along with a coordinating change with the individual Chapter Sections to use a single term.

Submitter Information Verification

Submitter Full Name: Steve Roszell
Organization: Telgian Corporation
Submittal Date: Thu May 23 13:45:08 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369331108784.xml

Public Input No. 386-NFPA 13-2013 [New Section after 21.1]

TITLE OF NEW CONTENT

21.1.9 (New) Listed storage sprinklers that are not specifically referenced in 21.2 and 21.3, but are tested in accordance with Chapter 21 with system design criteria based upon 21.1, 21.4 and 21.5 shall be permitted to be used in accordance with their listing limitations, where approved.

Statement of Problem and Substantiation for Public Input

As indicated by the Technical Committee action on Public Comment 13-303 for the 2013 Edition of NFPA 13, the manufacturer has the option to submit their sprinkler for inclusion in this Chapter. Also, new products are routinely developed between editions of this standard. With the reference to certain sprinkler products in Chapter 21, there could be confusion as to whether sprinklers that are not referenced in this chapter, but are tested as described herein, are permitted to be used. With this in mind, it is important to include a requirement indicating that sprinklers tested in accordance with this Chapter shall be permitted to be used when acceptable to the AHJ.

Submitter Information Verification

Submitter Full Name: Kerry Bell
Organization: UL LLC
Submittal Date: Thu May 23 15:31:51 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369337511680.xml

Public Input No. 370-NFPA 13-2013 [Sections 21.1.8.1, 21.1.8.2]

Original | Hide Markup

Sections 21.1.8.1, 21.1.8.2

21.1.8.1

Regardless of the number of sprinklers that operated during the worst-case full-scale fire test, the number in the sprinkler system demand shall be no less than one of the following:

(1) Twelve sprinklers for standard coverage sprinklers

- ~~Eight sprinklers for extended-coverage sprinklers based on a spacing of 12 ft × 12 ft (3.7 × 3.7 m)~~

(1) Six sprinklers for extended-coverage sprinklers

~~based on a spacing of 14 ft × 14 ft (4~~

(1) .

~~3 m × 4.3 m)~~

(1)

21.1.8.2

Once the number of sprinklers for a demand area has been established, the minimum operating area, based on the proposed sprinkler spacing, shall not be less than 768 ft^2 (71 m^2) for standard coverage sprinklers and 1024 ft^2 (95 m^2) for extended coverage sprinkler.

Statement of Problem and Substantiation for Public Input

The utilization of a differing minimum number of sprinklers based on the tested spacing of the sprinkler presents a problem when sprinklers tested at the larger spacing are installed at a spacing less than the maximum. At what point would 8 sprinklers be required rather than the minimum 6 sprinkler specified? This is better addressed by establishing a minimum design area for extended coverage sprinklers that would force the inclusion of additional sprinklers as the spacing is decreased.

The proposed design area for extended coverage sprinkler heads of 1024 ft2 is based on the previously applied minimum 8 sprinklers head design and a minimum coverage area of 128 ft2. This ensures additional sprinkler heads are included in the remote area when extended coverage heads become closely spaced.

Submitter Information Verification

Submitter Full Name: Steve Roszell
Organization: Telgian Corporation
Submittal Date: Thu May 23 13:59:03 EDT 2013

Public Input No. 376-NFPA 13-2013 [New Section after 21.1.8.2]

21.1.8.3

The design area and number of sprinkler heads calculated on a branch line shall be in accordance with 23.4.4.1.1 using an area of sprinkler operation equal to the required number of operating sprinklers and the maximum allowable coverage for the specific design criteria being utilized.

Statement of Problem and Substantiation for Public Input

There is currently no guidance on how to establish the length and shape of the design area for the criteria provided by Chapter 21. The proposed addition adds direction using the techniques applied in Chapter 23.

Submitter Information Verification

Submitter Full Name: Steve Roszell
Organization: Telgian Corporation
Submittal Date: Thu May 23 14:33:31 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369334011843.xml

Public Input No. 377-NFPA 13-2013 [Section No. 21.2]

Original Hide Markup

21.2 * ~~Sprinkler Protection~~ Sprinkler Design Criteria for Palletized, Solid-Piled, Bin Box, Shelf, or Back-to-Back Shelf Storage of Class I Through Class IV and Plastic Commodities.

21.2.1

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 21.2.1 .

Table 21.2.1 Extended Coverage, CMSA [K-factor 25.2 (360) Pendent] Sprinkler Design Criteria for Palletized and Solid-Piled Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (minutes)
Palletized and solid piled	Class I through IV and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	25.2 (360) Pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m)		60

21.2.2

Protection of palletized and solid-piled storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.2.2 .

Table 21.2.2 Palletized, Solid-Piled, Bin Box, Shelf, or Back-to-Back Shelf Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5

Statement of Problem and Substantiation for Public Input

Provides a consistent use of terminology with respect the application of the criteria.

Submitter Information Verification

Submitter Full Name: Steve Roszell

Organization: Telgian Corporation
Submittal Date: Thu May 23 14:39:27 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369334367982.xml

Public Input No. 379-NFPA 13-2013 [Section No. 21.2.1]

Original Hide Markup

21.2.1

Protection of palletized ~~and~~ solid-piled ~~storage~~ , bin-box, shelf, or back-to-back shelf storage of Class I through Class IV (encapsulated and ~~cartoned nonexpanded~~ nonencapsulated) and cartoned unexpanded Group A plastic commodities shall be permitted to be protected in accordance with Table 21.2.1 .

Table 21.2.1 Extended Coverage, CMSA [K-factor 25.2 (360) Pendent] Sprinkler Design Criteria for Palletized and Solid-Piled Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (minutes)
Palletized and solid piled	Class I through IV and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	25.2 (360) Pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m)		60

Statement of Problem and Substantiation for Public Input

The inclusion of the encapsulated and nonencapsulated designation is needed to make the description complete for Class I-IV Commodities. The inclusion of the Group A plastic designation is needed to ensure that Group B and Group C plastics that are not cartoned are allowed to be protected as a Class III or Class IV Commodity respectively. The additional of bin box, shelf and back-to-back shelf is intended to match that companion change for the new Table 21.2.1

Submitter Information Verification

Submitter Full Name: Steve Roszell
Organization: Telgian Corporation
Submittal Date: Thu May 23 14:46:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369334808302.xml

Public Input No. 508-NFPA 13-2013 [Section No. 21.2.1]

Original | Hide Markup

21.2.1

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 21.2.1.

Table 21.2.1 Extended Coverage, CMSA [K-factor 25.2 (360) Quick Response Pendent] Sprinkler Design Criteria for Palletized and Solid-Piled Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (minutes)
Palletized and solid piled	Class I through IV and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	25.2 (360) Pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m)		60

Statement of Problem and Substantiation for Public Input

clarifies the sprinkler being referred to so not to confuse with standard response sprinkler.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Fri May 31 14:20:00 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370024400308.xml

Public Input No. 374-NFPA 13-2013 [Sections 21.2.1, 21.2.2]

Original | Hide Markup

Sections 21.2.1, 21.2.2

21.2.1

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 21.2.1.

Table 21.2.1 Extended Coverage, CMSA [K-factor 25.2 (360) Pendent] Sprinkler Design Criteria for Palletized and Solid-Piled Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (minutes)
Palletized and solid piled	Class I through IV and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	25.2 (360) Pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m)		60

21.2.2

Protection of palletized and solid-piled storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.2.2.

Table 21.2.2 Palletized, Solid-Piled, Bin Box, Shelf, or Back-to-Back Shelf Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5

Additional Proposed Changes

	File Name	Description	Approved
Open	Proposed_Revisions_to_21-2_20130523.docx	Proposed Revisions to 21.2	
Open	Table_21-2-1_Public_Input_20130523.xlsx	Proposed Revisions to Table 21.2.1	

Statement of Problem and Substantiation for Public Input

During the revision cycle for NFPA 13-2013, there was some confusion as to the content of the text and tables associated with the nominal K=25.2 EC sprinklers which were introduced at the ROC stage. It appears to me that there are some inconsistencies within section 21.2, particularly within the Tables 21.2.1 and 21.2.2. The proposed revisions to Table 21.2.1 and the deletion of existing 21.2.2 and Table 21.2.2 are intended to eliminate these inconsistencies. The

revisions to Table 21.2.1 is intended to maintain consistency with the limitations for CMSA sprinklers referenced in Tables 14.3.1 and 15.3.1. I don't recall seeing any large scale fire test data on shelf or back-to-back shelf storage that would support protecting this type of fire risk.

Submitter Information Verification

Submitter Full Name: Kerry Bell
Organization: UL LLC
Submittal Date: Thu May 23 14:29:42 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369333782909.xml

Public Input No. 380-NFPA 13-2013 [Sections 21.2.1, 21.2.2]

Original Hide Markup

Sections 21.2.1, 21.2.2

~~21.2.1 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 21.2.1

~~. Table 21.2.1 Extended Coverage, CMSA [K-factor 25.2 (360) Pendent] Sprinkler~~

Design Criteria for Palletized

~~and Solid-Piled Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities Storage Arrangement Commodity Class Maximum Storage Height Maximum Ceiling/Roof Height K-Factor/Orientation Type of System Number of Design Sprinklers Minimum Operating Pressure Maximum Coverage Area Hose Stream Allowance Water Supply Duration (minutes) ft m ft m Palletized and solid piled Class I through IV and cartoned nonexpanded plastics 25 7.6 30 9.1 25.2 (360)~~

~~Pendent Wet 6 30 psi~~

~~(2.1 bar) 14 ft × 14 ft~~

~~(4.3 m × 4.3 m) 250 gpm (950 L/min) 60 30 9.1 35 10.6 25.2 (360)~~

~~Pendent Wet 8 40 psi~~

~~(2.8 bar) 12 ft × 12 ft~~

~~(3.7 m × 3.7 m) 60 - 21.2.2~~ –

~~Protection of palletized and solid-piled storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with~~ ~~Table 21.2.2~~ ~~.~~

~~Table 21.2.2 Palletized~~

, Solid-Piled, Bin Box, Shelf

~~,~~

or Back

~~-~~

to

~~-~~

Back Shelf Storage

~~of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities~~

Storage Arrangement	Commodity Class	Maximum Storage Height	Maximum Ceiling/Roof Height	Sprinkler Coverage/ K-

~~Factor~~

factor /

~~-~~

Orientation	Temperature Rating/ RTI (meter-seconds) 1/2	Type of System	Minimum Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (

~~hours~~

Minutes)	ft	m	ft	m

Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and

~~unencapsulated~~

nonencapsulated , and cartoned

~~nonexpanded plastics~~

~~20~~

unexpanded

~~6.1 30 9.1 25.2 (360) Upright/~~
~~pendent Wet~~

plastics	25	7. 6	30

~~psi~~

	9 .

~~(2.~~

1

~~bar) 12 ft × 12 ft~~
~~(3.7 m × 3.7 m)~~
~~144 ft ^{2} (13.4 m ^{2}) 250 gpm (950 L/min) 1 20 6.1 30 9.1 25.2 (360) Upright/~~
~~pendent~~

	Extended Coverage 25.2 (360) Upright/ Pendent	214?F (101?C) ≤50	Wet	6	30 psi

~~-~~

(2.1 bar)	14 ft

~~×~~

x 14 ft

~~-~~

(4.3 m

~~×~~

x 4.3 m)

~~-~~

196 ft ^{2} (18.2 m ^{2})	250 gpm (950 L/min)

~~1~~

60	
25	7.6

~~30 25 7.6 30 9.1 25.~~

35

~~9.1 25.2 (360) Upright/~~
~~pendent Wet 6 30 psi~~
~~(2.1 bar) 12 ft × 12 ft~~
~~(3.7 m × 3.7 m) 250 gpm (950 L/min) 1~~

10.6	Extended Coverage 25. 2 (360) Upright/

~~. pendent Wet 6 30 psi~~
~~(2.1 bar) 14 ft × 14 ft~~
~~(4.3 m × 4.3 m)~~
~~196 ft ^{2} (18.2 m ^{2}) 250 gpm (950 L/min) 1 25 7.6 35 11 25.2 (360) Upright/~~
~~pendent~~

Pendent	214?F (101?C) ≤50	Wet	8	40 psi

~~.~~

(2.8 bar)	12 ft

~~×~~

x 12 ft

~~.~~

(3.7 m

~~×~~

x 3.7 m)

~~.~~

144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)

~~1~~

60		
25	7.6	35

~~11~~

10.6	Extended Coverage 25.2 (360) Upright	214?F (101?C) ≤50	Wet	8	40 psi

~~.~~

(2.8 bar)	14 ft

~~×~~

x 14 ft

~~.~~

(4.3 m

*

x 4.3 m)

-

196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)

~~1.5~~

90		
30	9.1	35

~~11 pendent~~

10.6	Extended Coverage 25.2 (360) Upright/

-

Pendent	214?F (101?C) ≤50	Wet	8	40 psi

-

(2.8 bar)	12 ft

*

x 12 ft

-

(3.7 m

*

x 3.7 m)

-

144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)

~~1~~

60		
30	9.1	35

~~11~~

10.6	Extended Coverage 25.2 (360) Upright	214?F (101?C) ≤50	Wet	8	40 psi

-

(2.8 bar)	14 ft

*

x 14 ft

-

(4.3 m

~~*~~

x 4.3 m)

~~-~~

196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)

~~1.5~~

90

Additional Proposed Changes

	File Name	Description	Approved
Open	Table_21.2.1.docx	Revised Table	

Statement of Problem and Substantiation for Public Input

Tables 21.2.1 and 21.2.2 include redundant information, inconsistencies (Water Supply Duration) and slightly differential wording for the same material. Additional information has been added to address the type of coverage, temperature rating and RTI for the specified sprinklers.

With new combined Table 21.2.1 that includes the current Tables 21.2.1 and 21.2.2; Section 21.2.2 and Table 21.2.2 are no longer needed.

Submitter Information Verification

Submitter Full Name: Steve Roszell
Organization: Telgian Corporation
Submittal Date: Thu May 23 14:53:16 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369335196644.xml

Public Input No. 436-NFPA 13-2013 [Sections 21.2.1, 21.2.2]

Original Hide Markup

Sections 21.2.1, 21.2.2

21.2.1

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 21.2.1.

Table 21.2.1 Extended Coverage, CMSA [K-factor 25.2 (360) Pendent] Sprinkler Design Criteria for Palletized and Solid-Piled Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (minutes)
		ft	m	ft	m							
Palletized and solid piled	Class I through IV and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	25.2 (360) Pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m)		60

21.2.2

Protection of palletized and solid-piled storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.2.2.

Table 21.2.2 Palletized, Solid-Piled, Bin Box, Shelf, or Back-to-Back Shelf Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
		ft	m	ft	m							
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5

Statement of Problem and Substantiation for Public Input

Combine the Tables into one

Submitter Information Verification

Submitter Full Name: James Golinveaux

Organization: Tyco Fire Suppression & Buildi

Submittal Date: Wed May 29 11:01:39 EDT 2013

Copyright Assignment

/TerraView/Content/13-2013.ditamap/2/C1369839699645.xml

Public Input No. 517-NFPA 13-2013 [New Section after 21.2.2]

21.2.3

Protection of palletized and solid piled Storage of Class 1 through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.2.3

(Insert Table 21.2.3)

Statement of Problem and Substantiation for Public Input

added new Listed sprinkler protection to the tables

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Fri May 31 14:50:34 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370026234470.xml

Public Input No. 296-NFPA 13-2013 [Section No. 21.2.2]

Original Hide Markup

21.2.2

Protection of palletized and solid-piled storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.2.2.

Table 21.2.2 Palletized, Solid-Piled, Bin Box, Shelf, or Back-to-Back Shelf Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
		ft	m	ft	m							
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and ~~unencapsulated~~ nonencapsulated , and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_11_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Editorial, for standardization - to use the same term as is used throughout the rest of the standard.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:37:57 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368553077835.xml

Public Input No. 510-NFPA 13-2013 [Section No. 21.2.2]

Original | Hide Markup

21.2.2

Extended Coverage CMSA [K-factor 25.2 (360) Quick Response] Sprinkler Design Criteria for Protection of palletized and solid-piled storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.2.2.

Table 21.2.2 Palletized, Solid-Piled, Bin Box, Shelf, or Back-to-Back Shelf Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.8 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)	1.5

Statement of Problem and Substantiation for Public Input

to clarify the intended sprinkler so not to be confused with the standard response standard coverage CMSA K25 sprinkler.

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Fri May 31 14:26:52 EDT 2013

Public Input No. 378-NFPA 13-2013 [Section No. 21.3]

Original Hide Markup

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

21.3.1

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 21.3.1 .

Table 21.3.1 Extended Coverage, CMSA [K-Factor 25.2 (360) Pendent] Sprinkler Design Criteria for Single-, Double-, and Multiple-Row Racks Without Solid Shelves of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (minutes)
Single-, double-, and multiple-row racks without solid shelves (no open-top containers)	Class I through IV and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	25.2 (360) Pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m)		60

21.3.2

Protection of open-frame rack storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.3.2 .

Table 21.3.2 Sprinkler Protection Criteria for Open-Frame Rack Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Sprinkler protection criteria for open-frame rack storage	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5

Statement of Problem and Substantiation for Public Input

Provides a consistent use of terminology with respect the application of the criteria and the parent Section should be open to all forms of rack storage with the

individual sections limiting their usage to open rack, solid shelf, etc.

Submitter Information Verification

Submitter Full Name: Steve Roszell
Organization: Telgian Corporation
Submittal Date: Thu May 23 14:43:14 EDT 2013

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Public Input No. 383-NFPA 13-2013 [Section No. 21.3]

Original Hide Markup

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

21.3.1

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 21.3.1 .

Table 21.3.1 Extended Coverage, CMSA [K-Factor 25.2 (360) Pendent] Sprinkler Design Criteria for Single-, Double-, and Multiple-Row Racks Without Solid Shelves of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (minutes)
Single-, double-, and multiple-row racks without solid shelves (no open-top containers)	Class I through IV and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	25.2 (360) Pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m)		60

~~21.3.2~~

~~Protection of open-frame rack storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.3.2.~~

Table 21.3.2 Sprinkler Protection Criteria for Open-Frame Rack Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Sprinkler protection criteria for open-frame rack storage	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5

Additional Proposed Changes

File Name	Description	Approved

Open Table_21-3-1_Public_Input_20130523.xlsx Proposed Revisions to 21.3

Open Table_21-3-1_Public_Input_20130523.xlsx Revised Table 21.3.1

Statement of Problem and Substantiation for Public Input

During the revision cycle for NFPA 13-2013, there was some confusion as to the content of the text and tables associated with the nominal K=25.2 EC sprinklers which were introduced at the ROC stage. It appears to me that there are some inconsistencies within section 21.3, particularly within the Tables 21.3.1 and 21.3.2. The proposed revisions to Tables 21.3.1, and the deletion of existing 21.3.2 and Table 21.3.2 are intended to eliminate these inconsistencies. Reference to open-frame racks is not defined or generally referenced in NFPA 13.

Submitter Information Verification

Submitter Full Name: Kerry Bell
Organization: UL LLC
Submittal Date: Thu May 23 15:15:37 EDT 2013

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Public Input No. 501-NFPA 13-2013 [Section No. 21.3.1]

Original Hide Markup

21.3.1

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 21.3.1.

Table 21.3.1 Extended Coverage, CMSA [K-Factor 25.2 (360) Quick Response Pendent] Sprinkler Design Criteria for Single-, Double-, and Multiple-Row Racks Without Solid Shelves of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (minutes)
Single-, double-, and multiple-row racks without solid shelves (no open-top containers)	Class I through IV and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	25.2 (360) Pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m)		60

Statement of Problem and Substantiation for Public Input

describes sprinkler so not confuse with standard response K25.2

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Fri May 31 13:25:26 EDT 2013

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Public Input No. 392-NFPA 13-2013 [Sections 21.3.1, 21.3.2]

Original Hide Markup

Sections 21.3.1, 21.3.2

21.3.1

Protection of single-, double-, and multiple-row racks without solid shelves of Class I through Class IV (encapsulated and ~~cartoned nonexpanded~~ nonencapsulated) and cartoned unexpanded Group A plastic commodities shall be permitted to be protected in accordance with Table 21.3.1 .

Table 21.3.1 Extended Coverage, CMSA [K-Factor 25.2 (360) Pendent] Sprinkler Design Criteria for Single-, Double-, and Multiple-Row Racks Without Solid Shelves of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Table 21.3.1 Design Criteria for Single, Double and Multi-Row Racks Without Solid Shelves (Open-Frame Rack Storage)

Storage Arrangement	Commodity Class	Maximum Storage Height	Maximum Ceiling/Roof Height	Sprinkler Coverage/ K-

~~Factor~~

factor /

Orientation	Temperature Rating/ RTI (meter-seconds) 1/2	Type of System	Minimum Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (

~~minutes~~

Minutes)	ft	m	ft	m
Single				

, double

and multiple-row racks without solid shelves (

~~no~~

open-

~~top containers) Class I through IV and cartoned nonexpanded plastics 25 7.6 30 9.1 25.2 (360)~~

~~Pendent Wet 6 30 psi~~

~~(2.1 bar) 14 ft × 14 ft~~

~~(4.3 m × 4.3 m) 250 gpm (950 L/min) 60 30 9.1 35 10.6 25.2 (360)~~

~~Pendent Wet 8 40 psi~~

~~(2.8 bar) 12 ft × 12 ft~~

~~(3.7 m × 3.7 m) 60~~ - ~~21.3.2 –~~

~~Protection of open-frame rack storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.3.2 .~~

~~Table 21.3.2 Sprinkler Protection Criteria for Open-Frame Rack Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities~~

~~Storage Arrangement Commodity Class Maximum Storage Height Maximum Ceiling/Roof Height K-Factor/~~

~~Orientation Type of System Number of Design Sprinklers Minimum Operating Pressure Maximum Coverage Area Hose Stream Allowance Water Supply Duration (hours) ft m ft m Sprinkler protection criteria for open-frame rack storage~~

frame rack storage, no open top containers)	Class I through Class IV, encapsulated and

~~unencapsulated~~

nonencapsulated , and cartoned

~~nonexpanded~~

unexpanded

plastics

~~20~~

25	7. 6

~~.1~~

	30	9.1	Extended Coverage 25.2 (360) Upright/

~~. pendent Wet 6 30 psi (2.1 bar) 12 ft × 12 ft~~
~~(3.7 m × 3.7 m)~~
~~144 ft ^{2} (13.4 m ^{2}) 250 gpm (950 L/min) 1 20 6.1 30 9.1 25.2 (360) Upright/~~
~~pendent~~

Pendent	214?F (101?C) ≤50	Wet	6	30 psi (2.1 bar)	14 ft

~~×~~

x 14 ft

~~.~~

(4.3 m

~~×~~

x 4.3 m)

~~.~~

196 ft ^{2} (18.2 m ^{2})	250 gpm (950 L/min)

~~1~~

60	
25	7.6

~~30 25 7.6 30 9.1 25.~~

35

~~9.1 25.2 (360) Upright/~~
~~pendent Wet 6 30 psi (2.1 bar) 12 ft × 12 ft~~
~~(3.7 m × 3.7 m)~~
~~144 ft ^{2} (13.4 m ^{2}) 250 gpm (950 L/min) 1~~

10.6	Extended Coverage 25. 2 (360) Upright/

~~. pendent Wet 6 30 psi (2.1 bar) 14 ft × 14 ft~~
~~(4.3 m × 4.3 m)~~
~~196 ft ^{2} (18.2 m ^{2}) 250 gpm (950 L/min) 1 25 7.6 35 11 25.2 (360) Upright/~~
~~pendent~~

Pendent	214?F (101?C) ≤50	Wet	8	40 psi (2.

~~6~~

8 bar)	12 ft

~~×~~

x 12 ft

~~-~~

(3.7 m

~~*~~

x 3.7 m)

~~-~~

144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)

~~1~~

60		
25	7.6	35

~~11~~

10.6	Extended Coverage 25.2 (360) Upright	214?F (101?C) ≤50	Wet	8	40 psi (2.

~~6~~

8 bar)	14 ft

~~*~~

x 14 ft

~~-~~

(4.3 m

~~*~~

x 4.3 m)

~~-~~

196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)

~~1.5~~

90		
30	9.1	35

~~11 pendent~~

10.6	Extended Coverage 25.2 (360) Upright/

~~-~~

Pendent	214?F (101?C) ≤50	Wet	8	40 psi (2.

~~6~~

8 bar)	12 ft

~~*~~

x 12 ft

~~-~~

(3.7 m

~~*~~

x 3.7 m)

~~-~~

144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)

~~1~~

60		
30	9.1	35

~~11~~

10.6	Extended Coverage 25.2 (360) Upright	214?F (101?C) ≤50	Wet	8	40 psi (2.

~~6~~

8 bar)	14 ft

~~*~~

x 14 ft

~~-~~

(4.3 m

~~*~~

x 4.3 m)

~~-~~

196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)

~~1.5~~

90

Additional Proposed Changes

	File Name	Description	Approved
Open	Table_21.3.1.docx	Revised Table	

Statement of Problem and Substantiation for Public Input

The inclusion of the encapsulated and nonencapsulated designation is needed to make the description complete for Class I-IV Commodities. The inclusion of the Group A plastic designation is needed to ensure that Group B and Group C plastics that are not cartoned are allowed to be protected as a Class III or Class IV Commodity respectively.

Tables 21.3.1 and 21.3.2 include redundant information, inconsistencies (Water Supply Duration) and slightly differential wording for the same material. Additional information has been added to address the type of coverage , temperature rating and RTI for the specified sprinklers.

With new combined Table 21.3.1 that includes the current Tables 21.3.1 and 21.3.2 Section 21.3.1 and Table 21.3.2 are no longer needed.

Submitter Information Verification

Submitter Full Name: Steve Roszell
Organization: Telgian Corporation
Submittal Date: Thu May 23 15:44:17 EDT 2013

Revise Table 21.2.1, and delete existing 21.2.2 and Table 21.2.2

Substantiation – During the revision cycle for NFPA 13-2013, there was some confusion as to the content of the text and tables associated with the nominal K=25.2 EC sprinklers which were introduced at the ROC stage. It appears to me that there are some inconsistencies within section 21.2, particularly within the Tables 21.2.1 and 21.2.2. The proposed revisions to Table 21.2.1 and the deletion of existing 21.2.2 and Table 21.2.2 are intended to eliminate these inconsistencies. The revisions to Table 21.2.1 is intended to maintain consistency with the limitations for CMSA sprinklers referenced in Tables 14.3.1 and 15.3.1. I don't recall seeing any large scale fire test data on shelf or back-to-back shelf storage that would support protecting this type of fire risk.

Table 21.2.1 Extended Coverage CMSA Sprinkler Design Criteria for Palletized and Solid-Piled Storage of Class I Through IV and Cartoned Unexpanded Plastic

K-factor/Orientation	Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area
			ft	m	ft	m				
25.2 (360) Pendent	Palletized and solid piled	Class I through IV, encapsulated and unencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Wet	6	30 psi (2.1 bar)	14 ft X 14 ft (4.3 m x 4.3 m)
			30	9.1	35	10.6	Wet	8	40 psi (2.8 bar)	12 ft X 12 ft (3.7 m x 3.7 m)
25.2 (360) Upright	Palletized and solid piled	Class I through IV, encapsulated and unencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Wet	6	30 psi (2.1 bar)	14 ft X 14 ft (4.3 m x 4.3 m)
			30	9.1	35	10.6	Wet	8	40 psi (2.8 bar)	12 ft X 12 ft (3.7 m x 3.7 m)

Table 21.2.1 Design Criteria for Palletized, Solid-Piled, Bin Box, Shelf or Back to Back Shelf Storage

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	Sprinkler Coverage/ K-factor/ Orientation	Temperature Rating/ RTI (meter-seconds)$^{1/2}$	Type of System	Minimum Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (Minutes)
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and nonencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Extended Coverage 25.2 (360) Upright/ Pendent	214ºF (101ºC) ≤50	Wet	6	30 psi (2.1 bar)	14 ft x 14 ft (4.3 m x 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	60
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and nonencapsulated, and cartoned unexpanded plastics	25	7.6	35	10.6	Extended Coverage 25.2 (360) Upright/ Pendent	214ºF (101ºC) ≤50	Wet	8	40 psi (2.8 bar)	12 ft x 12 ft (3.7 m x 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	60
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and nonencapsulated, and cartoned unexpanded plastics	25	7.6	35	10.6	Extended Coverage 25.2 (360) Upright	214ºF (101ºC) ≤50	Wet	8	40 psi (2.8 bar)	14 ft x 14 ft (4.3 m x 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	90
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and nonencapsulated, and cartoned unexpanded plastics	30	9.1	35	10.6	Extended Coverage 25.2 (360) Upright/ Pendent	214ºF (101ºC) ≤50	Wet	8	40 psi (2.8 bar)	12 ft x 12 ft (3.7 m x 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	60
Palletized, solid-piled, bin box, shelf, or back-to-back shelf storage	Class I through Class IV, encapsulated and nonencapsulated, and cartoned unexpanded plastics	30	9.1	35	10.6	Extended Coverage 25.2 (360) Upright	214ºF (101ºC) ≤50	Wet	8	40 psi (2.8 bar)	14 ft x 14 ft (4.3 m x 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	90

Table 21.3.1 Extended Coverage CMSA Sprinkler Design Criteria for Rack Storage Without Solid Shelves of Class I Through IV and Cartoned Unexpanded Plastic Commodities

K-factor/Orientation	Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		Type of System	Number of Design Sprinkers	Minimum Operating Pressure	Maximum Coverage Area
			ft	m	ft	m				
25.2 (360) Pendent	Single-, double- and multiple-row racks without solid shelves (no open-top containers)	Class I through IV, encapsulated and unencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Wet	6	30 psi (2.1 bar)	14 ft X 14 ft (4.3 m x 4.3 m)
			30	9.1	35	10.6	Wet	8	40 psi (2.8 bar)	12 ft X 12 ft (3.7 m x 3.7 m)
25.2 (360) Upright	Single-, double- and multiple-row racks without solid shelves (no open-top containers)	Class I through IV, encapsulated and unencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Wet	6	30 psi (2.1 bar)	14 ft X 14 ft (4.3 m x 4.3 m)
			30	9.1	35	10.6	Wet	8	40 psi (2.8 bar)	12 ft X 12 ft (3.7 m x 3.7 m)

Table 21.3.1 Extended Coverage CMSA Sprinkler Design Criteria for Rack Storage Without Solid Shelves of Class I Through IV and Cartoned Unexpanded Plastic Commodities

K-factor/Orientation	Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area
			ft	m	ft	m				
25.2 (360) Pendent	Single-, double- and multiple-row racks without solid shelves (no open-top containers)	Class I through IV, encapsulated and unencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Wet	6	30 psi (2.1 bar)	14 ft X 14 ft (4.3 m x 4.3 m)
			30	9.1	35	10.6	Wet	8	40 psi (2.8 bar)	12 ft X 12 ft (3.7 m x 3.7 m)
25.2 (360) Upright	Single-, double- and multiple-row racks without solid shelves (no open-top containers)	Class I through IV, encapsulated and unencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Wet	6	30 psi (2.1 bar)	14 ft X 14 ft (4.3 m x 4.3 m)
			30	9.1	35	10.6	Wet	8	40 psi (2.8 bar)	12 ft X 12 ft (3.7 m x 3.7 m)

Table 21.3.1 Extended Coverage CMSA Sprinkler Design Criteria for Rack Storage Without Solid Shelves of Class I Through IV and Cartoned Unexpanded Plastic Commodities

K-factor/Orientation	Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area
			ft	m	ft	m				
25.2 (360) Pendent	Single-, double- and multiple-row racks without solid shelves (no open-top containers)	Class I through IV, encapsulated and unencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Wet	6	30 psi (2.1 bar)	14 ft X 14 ft (4.3 m x 4.3 m)
			30	9.1	35	10.6	Wet	8	40 psi (2.8 bar)	12 ft X 12 ft (3.7 m x 3.7 m)
25.2 (360) Upright	Single-, double- and multiple-row racks without solid shelves (no open-top containers)	Class I through IV, encapsulated and unencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Wet	6	30 psi (2.1 bar)	14 ft X 14 ft (4.3 m x 4.3 m)
			30	9.1	35	10.6	Wet	8	40 psi (2.8 bar)	12 ft X 12 ft (3.7 m x 3.7 m)

Table 21.3.1 Design Criteria for Single, Double and Multi-Row Racks Without Solid Shelves (Open-Frame Rack Storage)

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		Sprinkler Coverage/ K-factor/ Orientation	Temperature Rating/ RTI (meter-seconds)$^{1/2}$	Type of System	Minimum Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (Minutes)
		ft	m	ft	m								
Single, double and multiple-row racks without solid shelves (open-frame rack storage, no open top containers)	Class I through Class IV, encapsulated and nonencapsulated, and cartoned unexpanded plastics	25	7.6	30	9.1	Extended Coverage 25.2 (360) Upright/ Pendent	214ºF (101ºC) ≤50	Wet	6	30 psi (2.1 bar)	14 ft x 14 ft (4.3 m x 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	60
		25	7.6	35	10.6	Extended Coverage 25.2 (360) Upright/ Pendent	214ºF (101ºC) ≤50	Wet	8	40 psi (2.8 bar)	12 ft x 12 ft (3.7 m x 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	60
		25	7.6	35	10.6	Extended Coverage 25.2 (360) Upright	214ºF (101ºC) ≤50	Wet	8	40 psi (2.8 bar)	14 ft x 14 ft (4.3 m x 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	90
		30	9.1	35	10.6	Extended Coverage 25.2 (360) Upright/ Pendent	214ºF (101ºC) ≤50	Wet	8	40 psi (2.8 bar)	12 ft x 12 ft (3.7 m x 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	Extended Coverage 25.2 (360) Upright	214ºF (101ºC) ≤50	Wet	8	40 psi (2.8 bar)	14 ft x 14 ft (4.3 m x 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	90

Public Input No. 437-NFPA 13-2013 [Sections 21.3.1, 21.3.2]

Original | Hide Markup

Sections 21.3.1, 21.3.2

21.3.1

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 21.3.1.

Table 21.3.1 Extended Coverage, CMSA [K-Factor 25.2 (360) Pendent] Sprinkler Design Criteria for Single-, Double-, and Multiple-Row Racks Without Solid Shelves of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (minutes)
Single-, double-, and multiple-row racks without solid shelves (no open-top containers)	Class I through IV and cartoned nonexpanded plastics	25	7.6	30	9.1	25.2 (360) Pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m)	250 gpm (950 L/min)	60
		30	9.1	35	10.6	25.2 (360) Pendent	Wet	8	40 psi (2.8 bar)	12 ft × 12 ft (3.7 m × 3.7 m)		60

21.3.2

Protection of open-frame rack storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.3.2.

Table 21.3.2 Sprinkler Protection Criteria for Open-Frame Rack Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Sprinkler protection criteria for open-frame rack storage	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5

Statement of Problem and Substantiation for Public Input

Combine the tables into one

Submitter Information Verification

Submitter Full Name: James Golinveaux
Organization: Tyco Fire Suppression & Buildi
Submittal Date: Wed May 29 11:03:30 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369839810996.xml

Public Input No. 502-NFPA 13-2013 [New Section after 21.3.2]

21.3.3

Protection of open-framed rack storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.3.3.

(Insert Table 21.3.3)

Additional Proposed Changes

File Name	Description	Approved
PI_502-517.pdf	For PIs 502 and 507	

Statement of Problem and Substantiation for Public Input

Adding new Listed sprinkler criteria

Submitter Information Verification

Submitter Full Name: Peter Thomas
Organization: Victaulic Company
Submittal Date: Fri May 31 13:30:00 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370021400472.xml

Public Input No. 297-NFPA 13-2013 [Section No. 21.3.2]

Original Hide Markup

21.3.2

Protection of open-frame rack storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.3.2.

Table 21.3.2 Sprinkler Protection Criteria for Open-Frame Rack Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Sprinkler protection criteria for open-frame rack storage	Class I through Class IV, encapsulated and ~~unencapsulated~~ nonencapsulated , and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft^2 (13.4 m^2)	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft^2 (18.2 m^2)	500 gpm (1900 L/min)	1.5

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_11_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

Editorial, for standardization - to use the same term as is used throughout the rest of the standard.

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: Professional Loss Control

Submittal Date: Tue May 14 13:39:09 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368553149245.xml

Table 21.2.3 CMSA [K-factor 25.2 (360) Standard Response] Sprinkler Design Criteria for Palletized, Solid-Piled, Shelf or Bin-Box Storage of Class I through Class IV and Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-factor/ Orientation	Sprinkler Response Type/Temp.	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Palletized, Solid-Piled Shelf or Bin-Box Storage Arrangement	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	15	4.6	20	6.1	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	7 psi (0.5 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ Ord. Temp.	Wet	12	20 psi (1.4 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ High Temp.	Dry	20	7 psi (0.5 bar)	100 sq. ft. (9.3 sq. m)	500 gpm (1900 L/min)	2
		20	6.1	25	7.6	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	10 psi (0.7 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ Ord. Temp.	Wet	12	20 psi (1.4 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ High Temp.	Dry	20	10 psi (0.7 bar)	100 sq. ft. (9.3 sq. m)	500 gpm (1900 L/min)	2
		25	9.1	30	9.1	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	10 psi (0.7 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ Ord. Temp.	Wet	12	20 psi (1.4 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ High Temp.	Dry	25	10 psi (0.7 bar)	100 sq. ft. (9.3 sq. m)	500 gpm (1900 L/min)	2
		30	10.7	35	10.7	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	30 psi (2.1 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
		35	12.2	40	12.2	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	30 psi (2.1 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1

Table 21.3.3 CMSA [K-factor 25.2 (360) Standard Response] Sprinkler Design Criteria for Open-Frame Rack Storage of Class I through Class IV and Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-factor/ Orientation	Sprinkler Response Type/Temp.	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Sprinkler protection criteria for open-frame rack storage	Class III	35	10.7	40	12.2	25.2 (360)/ Upright	Standard/ High Temp.	Dry	24*	15	100 sq. ft. (9.3 sq. m)	500 gpm (1900 L/min)	2
		40	12.2	45	13.7	25.2 (360)/ Upright	Standard/ High Temp.	Dry	12**	50	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	15	4.6	20	6.1	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	7 psi (0.5 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ Ord. Temp.	Wet	12	20 psi (1.4 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ High Temp.	Dry	20	7 psi (0.5 bar)	100 sq. ft. (9.3 sq. m)	500 gpm (1900 L/min)	2
		20	6.1	25	7.6	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	10 psi (0.7 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ Ord. Temp.	Wet	12	20 psi (1.4 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ High Temp.	Dry	20	10 psi (0.7 bar)	100 sq. ft. (9.3 sq. m)	500 gpm (1900 L/min)	2
		25	7.6	30	9.1	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	10 psi (0.7 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ Ord. Temp.	Wet	12	20 psi (1.4 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
						25.2 (360)/ Upright	Standard/ High Temp.	Dry	35	15 psi (1.0 bar)	100 sq. ft. (9.3 sq. m)	500 gpm (1900 L/min)	2
		30	9.1	35	10.7	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	30 psi (2.1 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1
		35	10.7	40	12.2	25.2 (360)/ Pendent	Standard/ Ord. Temp.	Wet	12	30 psi (2.1 bar)	100 sq. ft. (9.3 sq. m)	250 gpm (950 L/min)	1

* 25 second delay time from initial sprinkler operation until full pressure is reached.

** 20 second delay time from first sprinkler activation to full water pressure.

V4601 - K25 PENDENT
V4603 - K25 UPRIGHT
BOTH STANDARD RESPONSE

FM APPROVALS
Project ID: 3036409

DATA TABLES

Data Table 1 Full Scale Fire Test Summary

	TEST #1
Date	7/21/09
Commodity/Fuel Type	Class 3
Arrangement or Storage Method	Double-Row Rack
Array Size (in pallet loads) L x W x H	8 x 2 x 7
Nominal Array Height (ft)	35
Nominal Clearance to Ceiling (ft)	5
Ignition Centered Below (Number of Sprinklers)	4
Nominal Aisle Width (ft)	4
Sprinkler Identification	V4603
Sprinkler Nominal Discharge Coefficient [gal/min/(psi)$^{1/2}$]	25.2
Sprinkler Nominal Temperature Rating (°F)	286
Sprinkler Nominal Spacing (ft x ft)	10 x 10
Constant Nominal Water Pressure (psi)	15[1]
Sprinkler Nominal Discharge Density (gal/min/ft^2)	0.98
Total Number of Sprinklers Opened	16
First Sprinkler Operation (min:sec)	1:43
Last Sprinkler Operation (min:sec)	2:44
Peak Steel Temperature (°F)	425.1
Peak Heat Flux (Btu/ft/sec)	0.94
Time of Aisle Jump (min:sec)	1:56
Equivalent Number of Pallet Loads Consumed	15
Test Duration (min:sec)	14:00

NOTE: The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing these sprinklers. Any deviations from the Data Sheets may drastically decrease the effectiveness of the sprinklers.

1. Twenty-five second delay time from initial sprinkler operation until full pressure is reached

FM APPROVALS
Project ID: 3033618

DATA TABLES

Data Table 1 Full Scale Fire Test Summary

	TEST #2	TEST #3	TEST #4
Date	6/19/08	6/24/08	6/26/08
Commodity/Fuel Type	Cartoned Unexpanded Plastic		
Arrangement or Storage Method	Double Row Rack		
Array Size (in pallet loads) L x W x H	8 x 2 x 4	8 x 2 x 4	8 x 2 x 5
Nominal Array Height (ft)	20	20	25
Nominal Clearance to Ceiling (ft)	10	10	5
Ignition Centered Below (Number of Sprinklers)	1	1	2
Nominal Aisle Width (ft)	8	8	8
Sprinkler Identification	V4603		
Sprinkler Nominal Discharge Coefficient [gal/min/(psi)$^{1/2}$]	25.2		
Sprinkler Nominal Temperature Rating (°F)	162		
Sprinkler Nominal Spacing (ft x ft)	8 x 10	10 x 10	10 x 10
Constant Nominal Water Pressure (psi)	20	20	20
Sprinkler Nominal Discharge Density (gal/min/ft^2)	1.41	1.13	1.13
Total Number of Sprinklers Opened	2	3	4
First Sprinkler Operation (min:sec)	1:22	1:12	1:26
Last Sprinkler Operation (min:sec)	5:26	15:30	2:44
Peak Steel Temperature (°F)	185.3	206.5	287.9
Peak Heat Flux (Btu/ft/sec)	1.61*	0.35	0.21
Time of Aisle Jump (min:sec)	No Jump	No Jump	No Jump
Equivalent Number of Pallet Loads Consumed	12.5	6.5	7
Test Duration (min:sec)	20:00	25:00	15:00

NOTE: The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing these sprinklers. Any deviations from the Data Sheets may drastically decrease the effectiveness of the sprinklers.

***The peak heat flux reading for Test 2 is higher than the normally acceptable 1.5 Btu/ft/sec limit (based on the critical incident radiant heat flux for ignition of dry cardboard). Test 3 was conducted as a repeat using a target array to the west in place of the heat flux gage and expanding the sprinkler spacing to 10 ft x 10 ft. In both Test 2 and Test 3, the second sprinkler to operate was to the west of ignition, but operated 2 minutes slower in Test 3. A third sprinkler to the west also operated in Test 3 that did not in Test 2. Due to the time, location and number of sprinklers that operated in Test 3, it was determined that the fire in Test 3 was equivalent to or more severe than the fire in Test 2. Since aisle jump did not occur in Test 3, the excessive peak heat flux recorded in Test 2 is deemed acceptable.**

DATA TABLES

Data Table 1 Full Scale Fire Test Summary

	TEST #1	TEST #2
Date	10/28/2010	11/05/2010
Commodity/Fuel Type	Standard Plastic	Standard Plastic
Arrangement or Storage Method	Double-Row Open Frame Rack Storage	Double-Row Open Frame Rack Storage
Array Size (in pallet loads) L x W x H	8 x 2 x 4	8 x 2 x 4
Nominal Array Height (ft)	20	20
Nominal Clearance to Ceiling (ft)	10	5
Ignition Centered Below (Number of Sprinklers)	1	2
Nominal Aisle Width (ft)	8	8
Sprinkler Identification	V4603	V4603
Sprinkler Nominal Discharge Coefficient [gal/min/(psi)$^{1/2}$]	25.2	25.2
Sprinkler Nominal Temperature Rating (°F)	162	162
Sprinkler Nominal Spacing (ft x ft)	10 x 10	10 x 10
Constant Nominal Water Pressure (psi)	10	7
Sprinkler Nominal Discharge Density (gal/min/ft^2)	0.80	0.67
Total Number of Sprinklers Opened	4	7
First Sprinkler Operation (min:sec)	1:14	1:40
Last Sprinkler Operation (min:sec)	17:33	4:09
Peak Steel Temperature (°F)	208	339
Peak Heat Flux (Btu/ft/sec)	1.04	0.06
Time of Aisle Jump (min:sec)	No jump	No jump
Equivalent Number of Pallet Loads Consumed	5.75	8.5
Test Duration (min:sec)	30:00	20:00

NOTE: The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing these sprinklers. Any deviations from the Data Sheets may drastically decrease the effectiveness of the sprinklers.

APPENDIX TABLES

Data Table 1 Full Scale Fire Test Summary

	TEST #1
Date	10/15/2010
Commodity/Fuel Type	Class 3
Arrangement or Storage Method	Double-Row Open Frame Rack Storage
Array Size (in pallet loads) L x W x H	8 x 2 x 8
Nominal Array Height (ft)	40
Nominal Clearance to Ceiling (ft)	5
Ignition Centered Below (Number of Sprinklers)	4
Nominal Aisle Width (ft)	6
Sprinkler Identification	V4603
Sprinkler Nominal Discharge Coefficient [gal/min/(psi)$^{1/2}$]	25.2
Sprinkler Nominal Temperature Rating (°F)	286
Sprinkler Nominal Spacing (ft x ft)	10 x 10
Constant Nominal Water Pressure (psi)	50 (see note 2)
Sprinkler Nominal Discharge Density (gal/min/ft^2)	1.78
Total Number of Sprinklers Opened	8
First Sprinkler Operation (min:sec)	1:55
Last Sprinkler Operation (min:sec)	3:13
Peak Steel Temperature (°F)	238.0
Peak Heat Flux (Btu/ft/sec)	1.05
Time of Aisle Jump (min:sec)	2:18
Equivalent Number of Pallet Loads Consumed	20
Test Duration (min:sec)	15:00

NOTES:

1. **The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing these sprinklers. Any deviations from the Data Sheets may drastically decrease the effectiveness of the sprinklers.**
2. **Twenty second delay time from first sprinkler activation to full water pressure**

DATA TABLES

Data Table 1 Full Scale Fire Test Summary

	TEST #1	TEST #2	TEST #4	TEST #5	TEST #7
Date	9/4/2007	9/6/2007	9/11/2007	9/13/2007	3/26/2008
Commodity/Fuel Type	Cartoned Unexpanded Plastic				
Arrangement or Storage Method	Double Row Rack				
Array Size (in pallet loads) L x W x H	8 x 2 x 7	8 x 2 x 6	8 x 2 x 3	8 x 2 x 4	8 x 2 x 5
Nominal Array Height (ft)	34	29	14	19	24
Nominal Clearance to Ceiling (ft)	6	11	16	11	6
Ignition Centered Below (Number of Sprinklers)	2	1	1	1	2
Nominal Aisle Width (ft)	4	4	8	8	8
Sprinkler Identification	V4601				
Sprinkler Nominal Discharge Coefficient [gal/min/(psi)$^{1/2}$]	K25.2				
Sprinkler Nominal Temperature Rating (°F)	162				
Sprinkler Deflector to Ceiling Distance (in.)	12				
Sprinkler Nominal Spacing (ft x ft)	10 x 10				
Constant Nominal Water Pressure (psi)	30	30	7	10	15
Sprinkler Nominal Discharge Density (gal/min/ft^2)	1.40	1.40	0.66	0.80	0.98
Total Number of Sprinklers Opened	3	1	4	1	5
First Sprinkler Operation (min:sec)	1:41	1:31	1:41	1:24	1:25
Last Sprinkler Operation (min:sec)	1:57	1:31	11:07	1:24	1:42
Peak Steel Temperature (°F)	162	106	148	118	180
Peak Heat Flux (Btu/ft/sec)	0.14	0.09	0.03	0.02	0.27
Time of Aisle Jump (min:sec)	Unknown*	NA	NA	NA	NA
Equivalent Number of Pallet Loads Consumed	7.5	3.5	9.5	4	3
Test Duration (min:sec)	15:00	23:00	20:00	20:00	10:00

NOTE: The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing these sprinklers. Any deviations from the Data Sheets may drastically decrease the effectiveness of the sprinklers.

***Evidence of aisle jump was observed during the post test inspection but not observed during the test due to visual obscuration by smoke and steam.**

Data Table 1 Full Scale Fire Test Summary (continued)

	TEST #8*
Date	3/31/2008
Commodity/Fuel Type	Cartoned Unexpanded Plastic
Arrangement or Storage Method	Double Row Rack
Array Size (in pallet loads) L x W x H	8 x 2 x 5
Nominal Array Height (ft)	24
Nominal Clearance to Ceiling (ft)	6
Ignition Centered Below (Number of Sprinklers)	2
Nominal Aisle Width (ft)	8
Sprinkler Identification	V4601
Sprinkler Nominal Discharge Coefficient [gal/min/(psi)$^{1/2}$]	25.2
Sprinkler Nominal Temperature Rating (°F)	162
Sprinkler Deflector to Ceiling Distance (in.)	18
Sprinkler Nominal Spacing (ft x ft)	10 x 10
Constant Nominal Water Pressure (psi)	15
Sprinkler Nominal Discharge Density (gal/min/ft^2)	0.98
Total Number of Sprinklers Opened	5
First Sprinkler Operation (min:sec)	1:48
Last Sprinkler Operation (min:sec)	2:05
Peak Steel Temperature (°F)	278
Peak Heat Flux (Btu/ft/sec)	0.39
Time of Aisle Jump (min:sec)	NA
Equivalent Number of Pallet Loads Consumed	5.5
Test Duration (min:sec)	15:00

NOTE: The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing these sprinklers. Any deviations from the Data Sheets may drastically decrease the effectiveness of the sprinklers.

***Deflector clearance of 18 inches was successful and accepted at up to 30 feet ceiling height.**

DATA TABLES

Data Table 1 Full Scale Fire Test Summary

	TEST #1
Date	9/24/2008
Commodity/Fuel Type	Cartoned Unexpanded Plastic
Arrangement or Storage Method	Double Row Rack
Array Size (in pallet loads) L x W x H	8 x 2 x 5
Nominal Array Height (ft)	25
Nominal Clearance to Ceiling (ft)	5
Ignition Centered Below (Number of Sprinklers)	2
Nominal Aisle Width (ft)	8
Sprinkler Identification	V4601
Sprinkler Nominal Discharge Coefficient [gal/min/(psi)$^{1/2}$]	25.2
Sprinkler Nominal Temperature Rating (°F)	162
Sprinkler Deflector to Ceiling Distance (in.)	18
Sprinkler Nominal Spacing (ft x ft)	8 x 12
Constant Nominal Water Pressure (psi)	15
Sprinkler Nominal Discharge Density (gal/min/ft^2)	1.02
Total Number of Sprinklers Opened	5
First Sprinkler Operation (min:sec)	1:59
Last Sprinkler Operation (min:sec)	2:57
Peak Steel Temperature (°F)	198.7
Peak Heat Flux (Btu/ft/sec)	0.178
Time of Aisle Jump (min:sec)	No Jump
Equivalent Number of Pallet Loads Consumed	9.5
Test Duration (min:sec)	12:00

NOTE: The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing these sprinklers. Any deviations from the Data Sheets may drastically decrease the effectiveness of the sprinklers.

Public Input No. 409-NFPA 13-2013 [Section No. 21.3.2]

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21.3.2

Protection of open-frame rack storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.3.2 .

Table 21.3.2 Sprinkler Protection Criteria ~~for Open-Frame Rack Storage of Class I~~ for Single, Double, and Multiple Row Racks Without Solid Shelves of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height ft	Maximum Storage Height m	Maximum Ceiling/Roof Height ft	Maximum Ceiling/Roof Height m	K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
Sprinkler protection criteria for ~~open-frame rack storage~~												
single, double and multiple row racks without solid shelves (no open-top containers)	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)	1.5
										12 ft × 12 ft		

30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	(3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)	1.5

Statement of Problem and Substantiation for Public Input

All we are trying to do is change the title of the table and the entry in the first column to match Table 21.3.1. The data in the tables is coming from different sources, but the terminology in the tables needs to be consistent.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri May 24 09:41:11 EDT 2013

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Public Input No. 500-NFPA 13-2013 [Section No. 21.3.2]

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21.3.2

Protection of open-frame rack storage of Class I through Class IV and plastic commodities shall be permitted to be protected in accordance with Table 21.3.2.

Table 21.3.~~2 Sprinkler~~ 2 Extended Coverage, CMSA [K-factor 25.2 (360), Quick Response] Sprinkler Protection Criteria for Open-Frame Rack Storage of Class I Through Class IV and Cartoned Unexpanded Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	Maximum Coverage Area	Hose Stream Allowance	Water Supply Duration (hours)
		ft	m	ft	m							
Sprinkler protection criteria for open-frame rack storage	Class I through Class IV, encapsulated and unencapsulated, and cartoned nonexpanded plastics	20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		20	6.1	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	30	9.1	25.2 (360) Upright/ pendent	Wet	6	30 psi (2.1 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		25	7.6	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)	1.5
		30	9.1	35	11	25.2 (360) Upright/ pendent	Wet	8	40 psi (2.6 bar)	12 ft × 12 ft (3.7 m × 3.7 m) 144 ft ^{2} (13.4 m ^{2})	250 gpm (950 L/min)	1
		30	9.1	35	11	25.2 (360) Upright	Wet	8	40 psi (2.6 bar)	14 ft × 14 ft (4.3 m × 4.3 m) 196 ft ^{2} (18.2 m ^{2})	500 gpm (1900 L/min)	1.5

Statement of Problem and Substantiation for Public Input

accurately describes sprinkler so not to confuse with standard response K25.2

Submitter Information Verification

Submitter Full Name: Peter Thomas

Organization: Victaulic Company

Submittal Date: Fri May 31 13:20:39 EDT 2013

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Public Input No. 265-NFPA 13-2013 [Section No. 21.4]

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21.4 Hose Stream Allowance and Water Supply Duration.

21.4.1

The minimum water supply requirements for a hydraulically designed occupancy hazard fire control sprinkler system shall be determined by adding the hose stream allowance from Table 21.4.1 to the water supply for sprinklers obtained from this chapter.

Table 21.4.1 Hose Stream Allowance ~~and Water Supply Duration~~

Sprinkler Type	Sprinkler Spacing Type	Number of Sprinklers in Design Area	Hose Stream Allowance gpm	Hose Stream Allowance L/min	~~Water Supply Duration (minutes)~~
Control mode density/area and CMSA	Standard	Up to 12	250	950	~~60~~
		Over 12 to 15	500	1900	~~90~~
		Over 15 to 25	500	1900	~~120~~
		Over 25	500	1900	~~150~~
	Extended coverage	Up to 6	250	950	~~60~~
		Up to 8 (144 ft^2)	250	950	~~60~~
		Over 6 to 8	500	1900	~~90~~
		Over 8 to 12	500	1900	~~120~~
		Over 12	500	1900	~~150~~
ESFR	Standard	Up to 12	250	950	~~60~~
		Over 12 to 15	500	1900	~~90~~
		Over 15 to 25	500	1900	~~120~~
		Over 25	500	1900	~~150~~

21.4.1.1

The water supply requirements for a hydraulically designed occupancy hazard fire control sprinkler system shall be available for the ~~minimum duration specified in Table 21.4.1 .~~ longest duration between the first and last sprinkler activation in the tests required by Section 21.1.6 mutiplied by 4 or 60 minutes, whichever is greater.

Statement of Problem and Substantiation for Public Input

This section was introduced in the 2013 edition and made the water supply duration dependent on the number of sprinklers in the design area. The number of sprinklers in the design area was intended as an indicator of the time that it takes for the sprinkler system to control a fire condition; however, the time between first sprinkler operation and fire control can vary considerably from the number of sprinklers in the design area.

Since Chapter 21 is based on performing full scale fire tests, the tests provide data on the time between the fire sprinkler activation and last sprinkler activation, so there is no need to use the number of sprinkler operated as a substitute for the amount of time needed to control a fire. We know the time required for fire control from the series of full scale fire tests required by Chapter 21. The proposed revisions would include a safety factor of 4 on the results of the tests and a minimum duration requirement of 60 minutes to allow time for first responders to intervene which has successfully been used by NFPA 13 for many years.

Appropriate water supply durations are especially important to the use of NFPA 13 outside of North America, where water storage tanks are more commonly required. Basing the required water supply duration on the actual time required to control the fire in the fire tests will use the best available data to prescribe the water supply duration.

Submitter Information Verification

Submitter Full Name: Steven Wolin
Organization: Code Consultants, Inc.
Submittal Date: Thu May 09 09:25:29 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368105929819.xml

Public Input No. 58-NFPA 13-2013 [Chapter 22]

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Chapter 22 Special Occupancy Requirements

22.1 General.

22.1.1 Application.

22.1.1.1

In addition to the requirements of Chapter 8, Chapters 11 through 22, and Chapter 23, the following special occupancy requirements shall apply.

22.1.1.1.1

All provisions of design criteria in this standard, including design area increases and reductions, shall also apply to these special occupancy requirements.

22.1.1.2

Where the requirements of the reference standard differ from the requirements of this standard, the reference standard shall take precedence.

22.1.2 Definitions.

For terms not defined in Chapter 3, the definitions of the reference standard shall apply.

22.2 Flammable and Combustible Liquids.

22.2.1 Design Requirements.

Sprinkler system discharge criteria for the protection of flammable and combustible liquids shall comply with NFPA 30.

22.2.2 Installation Requirements. (Reserved)

22.3 Aerosol Products.

22.3.1 Design Requirements.

Sprinkler system discharge criteria for the protection of aerosol products shall comply with NFPA 30B.

22.3.2 Installation Requirements.

(Reserved)

22.4 Spray Application Using Flammable or Combustible Materials.

22.4.1 Design Requirements.

22.4.1.1*

The automatic sprinkler system shall be a wet pipe system, a dry pipe system, a preaction system, or an open-head deluge system, whichever is most appropriate for the portion of the spray operation being protected. [33:9.4.1]

22.4.1.2

The automatic sprinkler system shall be designed for Extra Hazard (Group 2) occupancies as defined in NFPA 13.

Exception No. 1: For spray application of styrene cross-link thermoset resins, Section 17.3 of NFPA 33 shall apply.

Exception No. 2: Automatic sprinkler systems for powder coating operations shall be designed for Ordinary Hazard (Group 2), as defined in NFPA 13. [33:9.4.2]

22.4.1.3

The water supply shall be sufficient to supply all sprinklers likely to open in any one fire incident without depleting the available water for use in hose streams. [33:9.4.3]

22.4.1.4

Where sprinklers are installed to protect spray areas and mixing rooms only, water shall be permitted to be supplied from domestic water systems, provided the domestic supply can meet the design criteria of 22.4.1.2. [33:9.4.4]

22.4.1.5

The sprinkler system shall be controlled by a separate, listed indicating valve(s), operable from floor level. [33:9.4.5]

22.4.1.6

Automated liquid electrostatic spray application equipment that is unlisted shall be protected further by the following:

(1) In addition to meeting the requirements in 9.8.1 of NFPA 33, the optical flame detection system shall also activate one of the following over each zone in which fire has been detected:
    (a) An open head deluge system designed to discharge a minimum density of 24.4 mm/min (0.6 gpm/ft^2)
    (b) A carbon dioxide extinguishing system
    (c) A dry chemical extinguishing system
    (d) A gaseous agent extinguishing system

    [33:9.8.2(1)]

22.4.1.7

A wet pipe sprinkler system shall also be provided throughout the spray booth. This system shall meet all the applicable requirements of NFPA 13 for Extra Hazard (Group 2) occupancies. [33:9.8.2(3)]

22.4.2* Installation Requirements.

22.4.2.1*

Sprinkler systems protecting stacks or ducts shall meet all of the following requirements:

(1) Sprinklers shall be spaced no more than 3.7 m (12 ft) apart.

(2) If exhaust ducts are manifolded, a sprinkler shall be located in the manifold at the junction of each exhaust duct with the manifold.

(3) Sprinklers shall provide a minimum flow of 114 L/min (30 gpm) per head at a minimum of 1 bar (15 psi) pressure.

(4) Sprinklers shall be ordinary temperature rated, unless required to be higher due to operating temperatures measured in the ducts, in which case the operating temperature shall be at least 28°C (50°F) above the inside temperature of the duct.

[33:9.4.6]

22.4.2.1.1

Stacks and exhaust ducts shall be provided with access openings for inspection and cleaning of sprinklers. [33:9.4.6.1]

22.4.2.1.2

Sprinkler systems protecting stacks and ducts that are subject to freezing shall be of a nonfreezing type or be a manually controlled open-head system. [33:9.4.6.2]

22.4.2.2

Sprinklers shall be protected against overspray residue, either by location or covering, so that they will operate quickly in event of fire. [33:9.4.7]

22.4.2.2.1

Sprinklers shall be permitted to be covered only by cellophane bags having a thickness of 0.08 mm (0.003 in.) or less or by thin paper bags. These coverings shall be replaced frequently so that heavy deposits of residue do not accumulate. [33:9.4.7.1]

22.4.2.2.2

Sprinklers that have been painted or coated by overspray or residues shall be replaced with new sprinklers. [33:9.4.7.2]

22.5 Solvent Extraction Plants. [NFPA 36]

22.5.1* Design Requirements.

22.5.2 Installation Requirements. (Reserved)

22.6 Installation and Use of Stationary Combustion Engines and Gas Turbines.

22.6.1* Design Requirements.

Automatic sprinkler systems shall be designed to provide for a density of 0.3 gpm/ft^2 (12.2 mm/min) over the most remote 2500 ft^2 (230 m^2). [37:11.4.5.1]

22.6.2 Installation Requirements.

22.6.2.1

Sprinklers and spray nozzles shall be spaced at a 100 ft^2 (9 m^2) maximum area of coverage per sprinker or spray nozzle. [37:11.4.5.1.1]

22.6.2.2

Sprinkler and water spray system coverage shall be provided to all areas within the enclosure located within 20 ft (6 m) of the following:

(1) The engine

(2) The lubricating oil system

(3) The fuel system

[37:11.4.5.1.2]

22.6.2.3

Sprinklers and water spray nozzles shall not be directed at engine components that are susceptible to thermal shock or deformation. [37:11.4.5.2]

22.7 Nitrate Film.

22.7.1 Design Requirements.

22.7.1.1

Every room, except projection booths and rewinding rooms, where nitrate film is stored or handled in quantities greater than 51 lb (23 kg), or 10 standard rolls, shall be protected by an automatic sprinkler system that is installed in accordance with the requirements for Group II extra hazard occupancies. [40:5.1.2]

22.7.1.2

Water supplies for automatic sprinklers shall be based on 20 gpm (1.26 L/sec) per sprinkler for 20 minutes for the total number of sprinklers in one vault plus 25 percent of the sprinklers in the communicating fire area. [40:5.2.2]

22.7.1.3* Vaults Other Than Extended Term Storage Vaults.

[40:6.3] (See Figure A.22.7.1.3.) Fire protection in vaults shall be provided by a deluge system with directional nozzles meeting the criteria in 22.7.1.4. [40:6.3.7]

22.7.1.4

For extended term storage vaults in accordance with Section 6.5.5 of NFPA 40, fire protection shall be provided by a deluge system with directional nozzles installed in accordance with NFPA 15 and meeting the criteria in 22.7.1.5 through 22.7.1.11. [40:6.5.6]

22.7.1.5

Sprinkler systems in existing extended term storage vaults that were in compliance with the provisions of this standard at the time of installation shall be permitted to be continued in use. [40:6.5.6.1]

22.7.1.6

High-velocity open head nozzles each capable of providing a discharge rate of 1.26 L/sec (20 gpm) at a gauge pressure of 345 kPa (50 psi) shall be installed. [40:6.5.6.2]

22.7.1.7

The design shall be based on a discharge density of 28 mm/min (0.68 gpm/ft^2) over each face of storage racks. [40:6.5.6.3]

22.7.1.8*

The nozzles shall have a combined spray pattern capable of covering the face of the film storage racks. [40:6.5.6.4]

22.7.1.9

The nozzles shall be installed at the top of the storage shelf array, aimed at the opposite shelf array. [40:6.5.6.5]

22.7.1.10*

Nozzles shall be installed on opposite faces of the storage shelf array in a staggered pattern such that no nozzles are directly opposite one another. [40: 6.5.6.6]

22.7.1.11

The water supply duration shall be a minimum of 20 minutes. [40:6.5.6.7]

22.7.1.12

The deluge system shall be activated by a signal from one of the following: [40:6.5.6.8]

(1) An air sampling–type smoke detection system

(2) A fixed temperature heat sensitive cable

22.7.2 Installation Requirements.

22.7.2.1

In areas or rooms where nitrate film is handled, the area that is protected per sprinkler head shall not exceed 64 ft^2 (6 m^2) with sprinklers not being more than 8 ft (2.4 m) apart. [40:5.1.4]

22.7.2.2 Cabinet Protection.

[40:6.2.5]

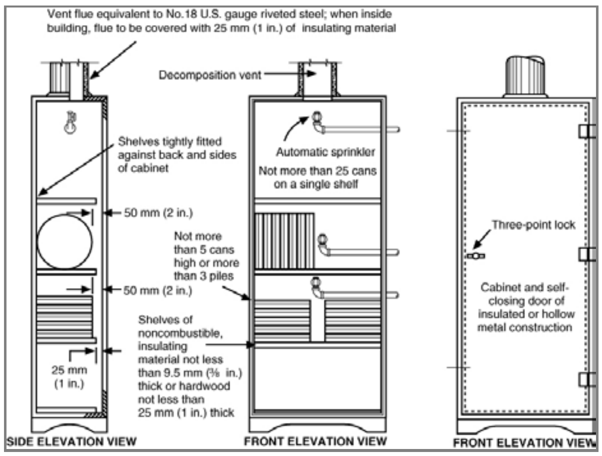
22.7.2.2.1

Cabinets having a capacity of more than 34 kg (75 lb), or 15 standard rolls, of film shall be provided with at least one automatic sprinkler head. [40:6.2.5.1]

22.7.2.2.2

Where cans are stored on more than one shelf, as shown in Figure 22.7.2.2.2 and as described in 6.2.6.2 or 6.2.6.3 of NFPA 40, one sprinkler shall be provided for each shelf. [40:6.2.5.2]

Figure 22.7.2.2.2 Standard Film Cabinet for Other Than Extended Term Storage Film. [40:Figure 6.2.1]



22.7.2.3 Motion Picture Film Laboratories.

In all cases, sprinklers shall be arranged so that not more than two machines are protected by any one sprinkler head. [40:9.2.5.2]

22.8 Laboratories Using Chemicals.

22.8.1 Design Requirements.

Automatic sprinkler system protection shall be required for all new laboratories in accordance with the following:

(1) Automatic sprinkler system protection for Class A and Class B laboratories shall be in accordance with NFPA 13 for ordinary hazard (Group 2) occupancies.

(2) Automatic sprinkler system protection for Class C and Class D laboratories shall be in accordance with NFPA 13 for ordinary hazard (Group 1) occupancies.

[45:6.2.1.1]

22.8.2 Installation Requirements.

Fire sprinklers in laboratory units shall be the quick response (QR) sprinkler type installed in accordance with NFPA 13. [45:6.2.1.2]

22.9 Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes.

22.9.1 Design Requirements.

22.9.1.1

The total gas capacity of nonliquefied flammable gas (e.g., acetylene) shall be permitted to be increased to 56.6 m^3 (2000 ft^3) per control area under one of the following conditions:

(1) In cylinder storage areas that are protected by an automatic sprinkler system and water supply designed in accordance with NFPA 13, furnishing a sprinkler discharge density of at least (10 L/min)/m^2 [(0.25 gal/min)/ft^2] over a minimum operating area of at least 279 m^2 (3000 ft^2) with sprinklers located not more than 6.1 m (20 ft) above the floor where the cylinders are stored.

(2) In cylinder storage areas that are protected by an automatic water spray fixed system of equal density, designed in accordance with NFPA 15

22.9.1.2

Oxygen cylinders connected to one manifold shall be limited to a total gas capacity of 42.5 m^3 (1500 ft^3). Two such manifolds with connected cylinders shall be permitted to be located in the same room, provided the building is protected throughout with an approved automatic sprinkler system designed in accordance with NFPA 13, furnishing a sprinkler discharge density of at least (10 L/min)/m^2 [(0.25 gal/min)/ft^2] over a minimum operating area of at least 279 m^2 (3000 ft^2) with sprinklers located not more than 6.1 m (20 ft) above the floor where the manifolds are located.

22.9.2 Installation Requirements.

22.9.2.1

In buildings protected by an automatic sprinkler system and water supply designed in accordance with NFPA 13 for an ordinary hazard or more hazardous occupancy, where the occupancy other than the cylinder storage is not more hazardous than ordinary hazard as defined in NFPA 13, the distance between designated storage areas shall be permitted to be reduced to 15.2 m (50 ft). If the occupancy in such protected buildings between the designated storage areas is free of combustible material, the distance shall be permitted to be reduced to 7.6 m (25 ft).

22.10 Acetylene Cylinder Charging Plants.

22.10.1 Design Requirements.

22.10.1.1

When sprinkler protection is provided, the area in which flammable compressed gases are stored or used shall be protected with a sprinkler system designed to be not less than that required by NFPA 13 for Extra Hazard Group 1 with a minimum design area of 2500 ft^2 (232.26 m^2). [51A:11.2.1.2]

22.10.2 Installation Requirements. (Reserved)

22.11 Compressed Gases and Cryogenic Fluids Code.

22.11.1 Design Criteria.

22.11.1.1

When sprinkler protection is required, the area in which compressed gases or cryogenic fluids are stored or used shall be protected with a sprinkler system designed to be not less than that required by NFPA 13 for Ordinary Hazard Group 2. [55:6.10.2.1]

22.11.1.2

When sprinkler protection is required, the area in which the flammable or pyrophoric compressed gases or cryogenic fluids are stored or used shall be protected with a sprinkler system designed to be not less than that required by NFPA 13 for Extra Hazard Group 1. [55:6.10.2.2]

22.11.2 Installation Requirements. (Reserved)

22.12 Utility LP-Gas Plants.

22.12.1 Design Requirements.

22.12.1.1

The design of fire water supply and distribution systems, where used, shall provide for the simultaneous supply of those fixed fire protection systems involved in the maximum single incident expected in the plant, including monitor nozzles, at their design flow and pressure. [59:13.4.2]

22.12.1.2

An additional supply of 1000 gal/min (63 L/sec) shall be available for hand hose streams for a period of not less than 2 hours. [59:13.4.2.1]

22.12.1.3

Manually actuated monitors shall be permitted to be used to augment hand hose streams. [59:13.4.2.2]

22.12.2 Installation Requirements. (Reserved)

22.13 Production, Storage, and Handling of Liquefied Natural Gas (LNG).

22.13.1 Design Requirements.

The fire water supply and distribution systems, if provided, shall simultaneously supply water to fixed fire protection systems, including monitor nozzles, at their design flow and pressure, involved in the maximum single incident expected in the plant plus an allowance of 1000 gpm (63 L/sec) for hand hose streams for not less than 2 hours. [59A:12.5.2]

22.13.2 Installation Requirements. (Reserved)

22.14 Protection of Information Technology Equipment.

22.14.1 Design Requirements. (Reserved)

22.14.2 Installation Requirements.

22.14.2.1*

Information technology equipment rooms and information technology equipment areas located in a sprinklered building shall be provided with an automatic sprinkler system. [75:8.1.1]

22.14.2.2

Sprinkler systems protecting information technology equipment areas shall be valved separately from other sprinkler systems. [75:8.1.3]

22.14.2.3*

An automatic sprinkler system or a gaseous fire extinguishing system shall be provided for the protection of the area below a raised floor in an information technology equipment room or information technology equipment area when one or more of the following exist:

(1) There is a critical need to protect data in the process, reduce equipment damage, and facilitate return to service.

(2) The area below the raised floor contains combustible material.

[75:8.1.1.2]

22.15 Standard on Incinerators, and Waste and Linen Handling Systems and Equipment.

22.15.1 Design Requirements. (Reserved)

22.15.2 Installation Requirements.

22.15.2.1

Automatic sprinklers shall be provided in incinerator rooms. [82:4.2.7.3]

22.15.2.2* Waste and Linen Chutes and Transport Systems.

[82:5]

22.15.2.2.1 Gravity Waste or Linen Chutes.

[82:5.2]

22.15.2.2.1.1

Gravity chutes shall be protected internally by automatic sprinklers unless they are lined in accordance with 5.2.2.6.1 in NFPA 82. [82:5.2.2.6.2; 82:5.2.6.1.1]

22.15.2.2.1.2

This protection requires that a sprinkler be installed at or above the top service opening of the chute. [82:5.2.6.1.2]

22.15.2.2.1.3 Chute Sprinkler Protection.

Automatic sprinklers installed in gravity chute service openings shall be recessed out of the chute area through which the material travels. [82:5.2.6.1.3]

22.15.2.2.1.4

In addition, a sprinkler shall be installed within the chute at alternate floor levels in buildings over two stories in height, with a mandatory sprinkler located at the lowest service level. [82:5.2.6.1.4]

22.15.2.2.1.5 Chute Room Automatic Sprinklers.

Automatic sprinklers shall be installed in chute terminal rooms. [82:5.2.6.2.1]

22.15.2.2.2 Full Pneumatic Waste and Linen Conveying Systems.

[82:5.3]

22.15.2.2.2.1

Full pneumatic-type risers shall be protected internally by automatic sprinklers. [82:5.3.4.1]

22.15.2.2.2.2

A sprinkler shall be required at or above the top loading station and at alternate floor levels in buildings over two stories in height, with a mandatory sprinkler located at the lowest loading station. [82:5.3.4.2]

22.15.2.2.2.3

Sprinklers shall be recessed out of the station area through which the material travels. [82:5.3.4.3]

22.15.2.2.3 Gravity Pneumatic Trash or Linen Conveying Systems.

[82:5.4]

22.15.2.2.3.1 Chute Automatic Sprinklers.

Where material is to be stored at the bottom of the chute and above the riser discharge damper (above the transport tee), automatic sprinklers shall be installed below the last service door on the chute. [82:5.4.2.3]

22.15.2.2.3.2

Automatic sprinklers shall be installed in chute discharge rooms. [82:5.4.2.4.3]

22.15.2.3 Waste Handling Systems.

22.15.2.3.1

Automatic sprinklers shall be installed in rooms where waste handling systems and equipment are used to transport waste from interim storage areas to waste processing equipment, such as incinerators. [82:6.4.1]

22.15.2.3.2

In locations or rooms where waste handling systems and equipment are used for interim storage of waste only, the rooms shall be sprinklered in accordance with requirements specified in 22.15.2.4. [82:6.4.2]

22.15.2.4 Waste Compactors.

[82:7]

22.15.2.4.1

All chute-fed compactors shall have an automatic sprinkler with a minimum 13 mm (½ in.) orifice installed in the hopper of the compactor. [82:7.2.1]

22.15.2.4.2

Sprinklers shall be ordinary temperature-rated sprinklers. [82:7.2.1.1]

22.15.2.4.3

Sprinklers shall be supplied by a minimum of 1 in. (25.4 mm) ferrous piping or ¾ in. (19 mm) copper tubing line from the domestic cold water supply or by the building fire sprinkler system. [82:7.2.1.2]

22.15.2.4.4

Sprinkler water pipe shall be protected from freezing in outdoor installations. [82:7.2.1.3]

22.15.2.4.5

Hand-fed compactors located within a building and not operated in conjunction with a chute shall not require installation of an automatic sprinkler in the hopper. [82:7.2.2]

22.15.2.5

Waste and recyclables storage rooms shall be provided with automatic sprinklers. [82:8.3]

22.15.2.6

Rooms in which waste processing equipment is located shall be installed with automatic sprinklers. [82:9.4.1]

22.16 Standard for Ovens and Furnaces.

22.16.1 Design Requirements. (Reserved)

22.16.2 Installation Requirements.

22.16.2.1*

Where automatic sprinklers are provided, they shall be installed in accordance with NFPA 13, unless otherwise permitted by 22.16.2.2. [86:9.2.1]

22.16.2.2

Where sprinklers that protect only ovens are installed and connection to a reliable fire protection water supply is not feasible, a domestic water supply connection shall be permitted to supply these sprinklers subject to the approval of the authority having jurisdiction. [86:9.2.2]

22.16.2.3

Where sprinklers are selected for the protection of ovens, furnaces, or related equipment, the use of closed-head sprinkler systems shall be prohibited and only deluge sprinkler systems shall be used where the following conditions exist:

(1) In equipment where temperatures can exceed 625°F (329°C)

(2) Where flash fire conditions can occur

[86:9.3.3]

22.16.2.4

Furnaces shall be located so as to minimize exposure to power equipment, process equipment, and sprinkler risers. [86:5.1.3.1]

22.16.2.5

Where water from a fixed protection system could come in contact with molten materials, such as molten salt or molten metal, shielding shall be provided to prevent water from contacting the molten material. [86:9.3.1]

22.16.2.6*

Galvanized pipe shall not be used in sprinkler or water spray systems in ovens, furnaces, or related equipment. [86:9.3.2]

22.17 Health Care Facilities Code, Hyperbaric Chambers.

22.17.1 Design Requirements.

22.17.1.1

A fixed water deluge extinguishing system shall be installed in all chamber compartments that are designed for manned operations. [99:14.2.5.2]

22.17.1.2

In chambers that consist of more than one chamber compartment (lock), the design of the deluge system shall meet the requirements of 22.17.1.1 when the chamber compartments are at different depths (pressures). [99:14.2.5.2.1]

22.17.1.3

The deluge system in different compartments (locks) shall operate independently or simultaneously. [99:14.2.5.2.2]

22.17.1.4

Fixed deluge systems shall not be required in chamber compartments that are used strictly as personnel transfer compartments (locks) and for no other purposes. [99:14.2.5.2.3]

22.17.1.5*

Manual activation and deactivation deluge controls shall be located at the operator's console and in each chamber compartment (lock) containing a deluge system. [99:14.2.5.2.4]

22.17.1.6

Controls shall be designed to prevent unintended activation. [99:14.2.5.2.4.1]

22.17.1.7

Water shall be delivered from the fixed discharge nozzles as specified in 22.17.1.9 within 3 seconds of activation of any affiliated deluge control. [99:14.2.5.2.5]

22.17.1.8*

Average spray density at floor level shall be not less than 2 gpm/ft^2 (81.5 L/min/m^2), with no floor area larger than 10.76 ft^2 (1 m^2) receiving less than 1 gpm/ft^2 (40.75 L/min/m^2). [99:14.2.5.2.6]

22.17.1.9

Water shall be available in the deluge system to maintain the flow specified in 22.17.1.8 simultaneously in each chamber compartment (lock) containing the deluge system for 1 minute. [99:14.2.5.2.7]

22.17.1.10

The limit on maximum extinguishment duration shall be governed by the chamber capacity (bilge capacity also, if so equipped) or its drainage system, or both. [99:14.2.5.2.7.1]

22.17.1.11

The deluge system shall have stored pressure to operate for at least 15 seconds without electrical branch power. [99:14.2.5.2.8]

22.17.2 Installation Requirements. (Reserved)

22.18 Fixed Guideway Transit and Passenger Rail Systems.

22.18.1 Design Requirements.

22.18.1.1

Other fire suppression systems, if approved, shall be permitted to be substituted for automatic sprinkler systems in the areas listed in 22.18.2.1. [130:5.7.3.4]

22.18.2 Installation Requirements.

22.18.2.1

An automatic sprinkler protection system shall be provided in areas of stations used for concessions, in storage areas, in trash rooms, and in the steel truss area of all escalators and other similar areas with combustible loadings, except trainways. [130:5.7.3.1]

22.18.2.2

Sprinkler protection shall be permitted to be omitted in areas of open stations remotely located from public spaces. [130:5.7.3.1.1]

22.18.2.3

Installation of sprinkler systems shall comply with NFPA 13 or applicable local codes as required. [130:5.7.3.2]

22.18.2.4

A sprinkler system waterflow alarm and supervisory signal service shall be installed. [130:5.7.3.3]

22.19 Motion Picture and Television Production Studio Soundstages, Approved Production Facilities, and Production Locations.

22.19.1

The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if approved mitigation is employed. [140:4.11.1.3.1]

22.19.2

The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if the building sprinkler system meets the design criteria for Extra Hazard, Group 2. [140:4.11.1.3.2]

22.19.3

In any production location building protected by an existing automatic sprinkler system, where solid- or hard-ceiling sets or platforms are introduced and create an obstruction to sprinkler discharge, the provisions of 22.19.4 or 22.19.5 shall be met. [140:5.11.3]

22.19.4*

The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if approved mitigation is employed. [140:5.11.4]

22.19.5*

The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if the building sprinkler system meets the design criteria for Extra Hazard, Group 2. [140:5.11.5]

22.20 Animal Housing Facilities.

22.20.1 Design Requirements.

22.20.1.1 (Reserved)

22.20.2 Installation Requirements. (Reserved)

22.20.2.1

Quick-response sprinklers shall be utilized in animal housing facilities. [150:9.2.3]

22.21 Water Cooling Towers.

22.21.1 Design Requirements.

22.21.1.1 Types of Systems.

22.21.1.1.1*

Because the counterflow tower design lends itself to either closed- or open-head systems, the following systems shall be permitted to be used:

(1) Wet-pipe
(2) Dry-pipe
(3) Preaction
(4) Deluge

[214:5.2.2.1]

22.21.1.1.2*

The open-head deluge system shall be used in crossflow towers to maximize the water distribution and heat detection activation. [214:5.2.2.2]

22.21.1.2 Minimum Rate of Application.

[214:5.2.3]

22.21.1.2.1

Under the fan decks of counterflow towers, the rate of application of water shall be 0.5 gpm/ft^2 (20.4 mm/min), including fan opening. [214:5.2.3.1]

22.21.1.2.2

Under the fan decks of crossflow towers, the rate of application of water shall be 0.33 gpm/ft^2 (13.45 mm/min), including fan opening. [214:5.2.3.2]

22.21.1.2.3

Over the fill areas of crossflow towers, the rate of application of water shall be 0.5 gpm/ft^2 (20.4 mm/min). [214:5.2.3.3]

22.21.1.3 Extended Fan Decks.

On towers having extended fan decks that completely enclose the distribution basin, the discharge outlets protecting the fill area shall be located over the basin, under the extension of the fan deck. [214:5.2.4.3]

22.21.1.3.1

These discharge outlets shall be open directional spray nozzles or other approved spray devices arranged to discharge 0.35 gpm/ft^2 (14.26 mm/min) directly on the distribution basin and 0.15 gpm/ft^2 (6.11 mm/min) on the underside of the fan deck extension. [214:5.2.4.3.1]

22.21.1.3.2

On towers having extended fan decks that do not completely enclose the hot-water basin, outlets protecting the fill shall be located under the distribution basin in accordance with 5.2.4.2.2 of NFPA 214. [214:5.2.4.3.2]

22.21.1.4 Combustible Fan Decks.

For deluge systems using directional spray nozzles in the pendant position, provisions shall be made to protect the underside of a combustible fan deck at a minimum of 0.15 gpm/ft^2 (6.11 mm/min), which shall be included as part of the application rate specified in 5.2.3 of NFPA 214. [214:5.2.4.4]

22.21.1.5* Water Basin Covers.

On film-filled towers that have solid, hot-water basin covers over the complete basin, the discharge outlets protecting the fill area shall be permitted to be located under the basin covers. [214:5.2.4.5]

22.21.1.5.1

These discharge outlets shall be open directional spray nozzles or other approved devices arranged to discharge 0.50 gpm/ft^2 (20.4 mm/min) into the distribution basin horizontally, with some of the spray splashing up and on the underside of the water basin covers. [214:5.2.4.5.1]

22.21.1.6 Exterior Protection.

[214:5.2.10]

22.21.1.6.1

Where any combustible exterior surfaces of a tower, including the fan deck and distribution basins, are less than 100 ft (30.5 m) from significant concentrations of combustibles such as structures or piled material, the combustible exposed surfaces of the tower shall be protected by an automatic water spray system. [214:5.2.10.1]

22.21.1.6.2

Systems for exterior protection shall be designed with the same attention and care as interior systems. [214:5.2.10.2]

22.21.1.6.2.1

Pipe sizing shall be based on hydraulic calculations. [214:5.2.10.2.1]

22.21.1.6.2.2

Water supply and discharge rate shall be based on a minimum 0.15 gpm/ft^2 (6.11 mm/min) for all protected surfaces. [214:5.2.10.2.2]

22.21.1.7 Sprinkler System Water Supply.

22.21.1.7.1 Deluge Systems.

22.21.1.7.1.1*

Where all cells of a cooling tower are protected by a single deluge system, the water supply shall be adequate to supply all discharge outlets on that system. [214:5.6.1.1]

22.21.1.7.1.2

Where two or more deluge systems are used to protect a cooling tower and fire-resistant partitions are not provided between the deluge systems, the water supply shall be adequate to supply all discharge outlets in the two most hydraulically demanding adjacent systems. [214:5.6.1.2]

22.21.1.7.1.3*

Where two or more deluge systems are separated by fire-resistant partitions, the water supply shall be adequate to supply all discharge outlets in the single most hydraulically demanding system. [214:5.6.1.3]

22.21.1.7.2 Wet, Dry, and Preaction Systems.

22.21.1.7.2.1*

Where each cell of the cooling tower is separated by a fire-resistant partition, the water supply shall be adequate to supply all discharge outlets in the hydraulically most demanding single cell. [214:5.6.2.1]

22.21.1.7.2.2*

Where fire-resistant partitions are not provided between each cell of a cooling tower, the water supply shall be adequate to supply all discharge outlets in the two most hydraulically demanding adjoining cells. [214:5.6.2.2]

22.21.1.7.3 Hose Streams.

Water supplies shall be sufficient to include a minimum of 500 gpm (1892.5 L/min) for hose streams in addition to the sprinkler requirements. [214:5.6.3]

22.21.1.7.4 Duration.

A water supply adequate for at least a 2-hour duration shall be provided for the combination of the water supply specified in 5.6.1 or 5.6.2 of NFPA 214, plus the hose stream demand specified in 22.21.1.7.3. [214:5.6.4]

22.21.2 Installation Requirements.

22.21.2.1* Counterflow Towers.

[214:5.2.4.1]

22.21.2.1.1

The discharge outlets shall be located under the fan deck and fan opening. [214:5.2.4.1.1]

22.21.2.1.2

Except under the fan opening, all discharge outlets shall have deflector distances installed in accordance with Section 8.5 of NFPA 13. [214:5.2.4.1.2]

22.21.2.1.3

Closed-head discharge outlets for dry-pipe and preaction systems shall be installed in the upright position only. [214:5.2.4.1.3]

22.21.2.2* Crossflow Towers.

[214:5.2.4.2]

22.21.2.2.1

The discharge outlets protecting the plenum area shall be located under the fan deck and in the fan opening. [214:5.2.4.2.1]

22.21.2.2.2

Discharge outlets protecting the fill shall be located under the distribution basin on either the louver or drift eliminator side, discharging horizontally through the joist channels. [214:5.2.4.2.2]

22.21.2.2.3

Towers with an air travel dimension longer than the maximum allowable for the discharge device being used shall have discharge devices placed on both sides of the fill area in each joist channel. [214:5.2.4.2.3.1]

22.21.2.2.4

The pressure at each discharge device shall be adequate to provide protection for half of the length of the fill measured along the air travel. [214:5.2.4.2.3.2]

22.21.2.2.5

Where joist channels are wider than 2 ft (0.6 m), more than one discharge device shall be required per joist channel. [214:5.2.4.2.4.1]

22.21.2.2.6

If the discharge device being used is listed for the width of the joist channel being protected, one discharge device per joist channel shall be permitted to be used. [214:5.2.4.2.4.2]

22.21.2.3* Extended Fan Decks.

On towers having extended fan decks that completely enclose the distribution basin, the discharge outlets protecting the fill area shall be located over the basin, under the extension of the fan deck. [214:5.2.4.3]

22.21.2.4 Combustible Fan Decks.

For deluge systems using directional spray nozzles in the pendant position, provisions shall be made to protect the underside of a combustible fan deck at a minimum rate of 0.15 gpm/ft^2 (6.11 mm/min), which shall be included as part of the application rate specified in 22.21.1.2. [214:5.2.4.4]

22.21.2.5* Water Basin Covers.

On film-filled towers that have solid, hot-water basin covers over the complete basin, the discharge outlets protecting the fill area shall be permitted to be located under the basin covers. [214:5.2.4.5]

22.21.2.5.1

These discharge outlets shall be open directional spray nozzles or other approved devices arranged to discharge 0.50 gpm/ft^2 (20.4 mm/min) into the distribution basin horizontally, with some of the spray splashing up and on the underside of the water basin covers. [214:5.2.4.5.1]

22.21.2.6 Valves.

[214:5.2.6]

22.21.2.6.1

Shutoff valves and automatically operated water control valves, if provided, shall be located as follows:

(1) Outside the fire-exposed area

(2) As close to the cooling tower as possible to minimize the amount of pipe to the discharge device

(3) Where they will be accessible during a fire emergency

[214:5.2.6.1.2]

22.21.2.6.2 Manual Release Valve.

[214:5.2.6.2]

22.21.2.6.2.1

Remote manual release valves, where required, shall be conspicuously located and accessible during a fire emergency. [214:5.2.6.2.1]

22.21.2.6.2.2

Where remote manual release valves are not required, an inspector's test valve shall be provided for each pilot-head-operated system. [214:5.2.6.2.2]

22.21.2.7 Strainers.

Strainers shall be required for systems utilizing discharge devices with waterways of less than ⅜ in. (9.5 mm) diameter. [214:5.2.7]

22.21.2.8 Heat Detectors.

Where deluge or preaction systems are used, heat detectors shall be installed and shall be selected from either of the types in 5.2.8.1 or 5.2.8.2 of NFPA 214. [214:5.2.8]

22.21.2.8.1

In mechanical-draft towers, pilot line detectors shall be located under the fan deck at the circumference of the fan opening and under the fan opening where necessary to comply with the spacing requirements in 22.21.2.8.1.1. (For extended fan decks, see 5.2.8.2.3 in NFPA 214.) [214:5.2.8.1.2.1(A)]

22.21.2.8.1.1

Pilot line detectors shall be spaced not more than 8 ft (2.4 m) apart in any direction including the fan opening. Temperature ratings shall be selected in accordance with operating conditions, but shall be no less than intermediate. [214:5.2.8.1.2.1(B)]

22.21.2.8.2

On towers having extended fan decks that completely enclose the distribution basin, electrical heat detectors shall be located under the fan deck extension in accordance with standard, indoor-spacing rules for the type detectors used in accordance with NFPA 72. [214:5.2.8.2.3]

22.21.2.8.2.1

Where the fan deck extension is 16 ft (4.9 m) or less and this dimension is the length of the joist channel, then only one row of detectors centered on and at right angles to the joist channels shall be required. Spacing between detectors shall be in accordance with NFPA 72. [214:5.2.8.2.3.1]

22.21.2.8.2.2

On towers having extended fan decks that do not completely enclose the hot-water basin, electrical heat detectors shall not be required under the fan deck extension. [214:5.2.8.2.3.2]

22.21.2.8.3

Where electrical heat detectors are inaccessible during tower operation, an accessible test detector shall be provided for each detection zone. [214:5.2.8.3]

22.21.2.8.4

Electrical heat detector components exposed to corrosive vapors or liquids shall be protected by materials of construction or by protective coatings applied by the equipment manufacturer. [214:5.2.8.4]

22.21.2.9 Protection for Fan Drive Motor.

[214:5.2.9]

22.21.2.9.1

A sprinkler or spray nozzle shall be provided over each fan drive motor where the motor is located so that it is not within the protected area of the tower. [214:5.2.9.1]

22.21.2.9.2

Where a preaction or deluge system is used, the detection system shall be extended to cover the motor. [214:5.2.9.2]

22.21.2.9.3

Provision shall be made to interlock the fan motors with the fire protection system so that the cooling tower fan motors are stopped in the cell(s) for which the system is actuated. [214:5.2.9.3]

22.21.2.9.4

Where the continued operation of the fans is vital to the process, a manual override switch shall be permitted to be provided to reactivate the fan when it is determined that there is no fire. [214:5.2.9.4]

22.21.2.10 Corrosion Protection.

[214:5.3]

22.21.2.10.1

Piping, fittings, hangers, braces, and attachment hardware including fasteners shall be hot-dipped galvanized steel in accordance with ASTM A 153A/153M, Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware, or other materials having a superior corrosion resistance. [214:5.3.1]

22.21.2.10.1.1

Exposed pipe threads and bolts on fittings shall be protected against corrosion. [214:5.3.1.1]

22.21.2.10.1.2

All other components shall be corrosion resistant or protected against corrosion by a coating. [214:5.3.1.2]

22.21.2.10.2*

Wax-type coatings shall not be used on devices without fusible elements. [214:5.3.2]

22.21.2.10.3*

Special care shall be taken in the handling and installation of wax-coated or similar sprinklers to avoid damaging the coating. [214:5.3.3]

22.21.2.10.3.1

Corrosion-resistant coatings shall not be applied to the sprinklers by anyone other than the manufacturer of the sprinklers. [214:5.3.3.1]

22.21.2.10.3.2

In all cases, any damage to the protective coating occurring at the time of installation shall be repaired at once using only the coating of the manufacturer of the sprinkler in an approved manner, so that no part of the sprinkler will be exposed after the installation has been completed. [214:5.3.3.2]

22.22 Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves.

22.22.1 Design Requirements.

22.22.1.1*

Unless the requirements of 22.22.1.2 apply, automatic sprinkler systems shall be designed based upon the design criteria for the protection of Group A plastics. [307:5.4.2.1]

22.22.1.2

With the approval of the authority having jurisdiction, the requirements of 22.22.1.1 shall not apply to buildings used exclusively for the handling or storage of specific cargoes and commodities that are defined as commodity classes less than Group A plastics by this standard. [307:5.4.2.2]

22.22.1.3

Buildings consistent with 22.22.1.2 shall be protected in accordance with the design criteria for the applicable commodity as required by this standard. [307:5.4.2.3]

22.22.1.4

Buildings used for the storage of hazardous materials shall be protected in accordance with this standard and the applicable codes and standards for the type of hazardous material being stored. [307:5.4.2.4]

22.22.2 Installation Requirements.

22.22.2.1 Piers and Wharves with Combustible Substructure.

22.22.2.1.1

Where there is danger of damage to sprinkler equipment by floating objects, physical barriers shall be provided to exclude such objects. [307:4.3.3.1.2.2]

22.22.2.1.2

The installation requirements in 22.22.2.1.2.1, 22.22.2.1.2.1(A), and 22.22.2.1.2.1(B) are also required.

22.22.2.1.2.1* Upward Projecting Sprinklers.

Where narrow horizontal channels or spaces are caused by caps, stringers, ties, and other structural members and where the standard upright sprinkler does not project sufficient water upward to extinguish or control fires on the underside of the pier or wharf deck, a sprinkler that projects water upward to wet the overhead shall be used. [307:4.3.3.1.3.1]

(A)

Location, spacing, and deflector position shall be governed by the discharge pattern of the sprinkler and the structure being protected. [307:4.3.3.1.3.1(A)]

(B)

The following design and installation guides shall apply where pendent sprinklers in the upright position or old-style sprinklers are to be utilized:

(1) The maximum coverage per sprinkler head shall be limited to 80 ft^2 (7.5 m^2).

(2) Where spacing or arrangement of stringers constitutes typical open-joist construction directly supporting the deck, sprinkler branch lines shall be installed between the bents at right angles to the stringers and shall meet the following requirements:

  (a) Spacing between branch lines shall not exceed 10 ft (3 m).

  (b) Sprinklers on branch lines shall be staggered and spaced not to exceed 8 ft (2.5 m) on center.

(3)* Where crisscross construction is involved, closer spacing of sprinklers shall be permitted as necessary to provide wetting of the entire structure.

(4) The deflectors of sprinklers on lines under stringers shall be located not less than 4 in. (100 mm) nor more than 10 in. (250 mm) below the bottom plane of the stringer, and not more than 18 in. (450 mm) below the underside of the pier or wharf deck.

(5)* The sprinkler system shall be hydraulically designed in accordance with the requirements of this standard and shall meet the following requirements:

  (a) Sprinkler orifice shall be ½ in. (12.7 mm) and shall discharge at a minimum pressure of 12.5 psi (85 kPa).

  (b) Design area shall be based upon the largest area between firestops plus an additional area embracing at least two branch lines on opposite sides of the firestop.

  (c) Minimum design area shall be not less than 5000 ft^2 (465 m^2).

(6) The temperature rating of the sprinkler shall not exceed 165°F (74°C).

(7) The maximum area to be protected by any one system shall be limited to 25,000 ft^2 (2325 m^2).

[307:4.3.3.1.3.1(B)]

22.23 Semiconductor Fabrication Facilities.

22.23.1 Design Requirements.

22.23.1.1*

Automatic sprinklers for cleanrooms or clean zones shall be installed in accordance with NFPA 13 and shall be hydraulically designed for a density of 0.20 gpm/ft^2 (8.15 L/min·m^2) over a design area of 3000 ft^2 (278.8 m^2). [318:4.1.2.1]

22.23.1.2

Automatic sprinkler protection shall be designed and installed in the plenum and interstitial space above cleanrooms in accordance with NFPA 13, for a density of 0.20 gpm/ft^2 (8.15 L/min·m^2) over a design area of 3000 ft^2 (278.8 m^2). [318:4.1.2.5]

22.23.1.2.1*

Automatic sprinklers shall be permitted to be omitted if the construction and occupancy of these spaces are noncombustible. [318:4.1.2.5.1]

22.23.1.3*

Sprinklers installed in duct systems shall be hydraulically designed to provide 0.5 gpm (1.9 L/min) over an area derived by multiplying the distance between the sprinklers in a horizontal duct by the width of the duct. [318:4.1.2.6.2]

22.23.1.3.1*

Minimum discharge shall be 20 gpm (76 L/min) per sprinkler from the five hydraulically most remote sprinklers. [318:4.1.2.6.2.1]

22.23.2 Installation Requirements.

22.23.2.1*

Wet pipe automatic sprinkler protection shall be provided throughout facilities containing cleanrooms and clean zones. [318:4.1.1]

22.23.2.2*

Approved quick-response sprinklers shall be utilized for sprinkler installations within down-flow airstreams in cleanrooms and clean zones. [318:4.1.2.2]

22.23.2.3*

Sprinklers shall be spaced a maximum of 20 ft (6.1 m) apart horizontally and 12 ft (3.7 m) apart vertically. [318:4.1.2.6.2.2]

22.23.2.4

A separate indicating control valve shall be provided for sprinklers installed in ductwork. [318:4.1.2.6.3]

22.23.2.5

The sprinklers shall be accessible for periodic inspection and maintenance. [318:4.1.2.6.6]

22.24 Aircraft Hangars.

22.24.1 Design Requirements.

Sprinkler systems installed in aircraft hangars shall comply with NFPA 409.

22.24.2 Installation Requirements.

Sprinkler systems installed in aircraft hangars shall comply with NFPA 409.

22.25 Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways.

22.25.1 Design Requirements.

22.25.1.1

Passenger-handling areas shall be classified as Ordinary Hazard Group 1 Occupancy for the purpose of sprinkler system design. [415:4.5.1.3]

22.25.1.2*

Baggage, package, and mail-handling areas shall be classified as Ordinary Hazard Group 2 Occupancy for the purpose of sprinkler system design. [415:4.5.1.4]

22.25.1.3*

Other areas of the airport terminal building shall be classified based on the occupancy of the area. [415:4.5.1.5]

22.25.2 Installation Requirements. (Reserved)

22.26 Aircraft Engine Test Facilities.

22.26.1 Design Requirements.

22.26.1.1*

In engine test cells, the minimum design discharge density shall be 0.50 gpm/ft^2 (0.34 L/sec/m^2) of protected area. [423:7.6.3]

22.26.1.2

In engine test cells, water supplies shall be capable of meeting the largest demand at the design rate plus hose stream demand for a period of 30 minutes. [423:7.6.4]

22.26.1.2.1

Hose stream demand shall be a minimum of 250 gpm (16 L/sec). [423:7.6.4.1]

22.26.1.2.2

The hydraulic calculation and the water supply shall be based on the assumption that all sprinklers in the test cell are operating simultaneously. [423:7.6.4.2]

22.26.2 Installation Requirements. (Reserved)

22.27 Advanced Light Water Reactor Electric Generating Plants.

22.27.1 Design Requirements.

22.27.1.1* Sprinkler System Water Supply.

The fire water supply shall be calculated on the basis of the largest expected flow rate for a period of 2 hours but shall not be less than 300,000 gal (1,135,500 L), and the following criteria also shall apply:

(1) The flow rate shall be based on 500 gpm (1892.5 L/min) for manual hose streams plus the largest design demand of any sprinkler or fixed water spray system as determined in accordance with this standard, with NFPA 15, or with NFPA 804.
(2) The fire water supply shall be capable of delivering the design demand specified in 22.27.1.1(1) with the hydraulically least demanding portion of fire main loop out of service.

[804:9.2.1]

22.27.1.2 Yard Mains.

The underground yard fire main loop shall be installed to furnish anticipated water requirements, and the following criteria also shall be met:

(1) The type of pipe and water treatment shall be design considerations, with tuberculation as one of the parameters.
(2) Means for inspecting and flushing the systems shall be provided.

[804:9.4.1]

22.27.1.3 Cable Tunnels.

[804:10.4.2]

22.27.1.3.1

Automatic sprinkler systems shall be designed for a density of 0.30 gpm/ft^2 (12.2 L/min·m^2) for the most remote 100 linear ft (30.5 m) of cable tunnel up to the most remote 2500 ft^2 (232.2 m^2). [804:10.4.2.2.2]

22.27.1.3.2

Deluge sprinkler systems or deluge spray systems shall meet the following criteria:

(1) They shall be zoned to limit the area of protection to that which the drainage system can handle with any two adjacent systems actuated.
(2) They shall be hydraulically designed with each zone calculated with the largest adjacent zone flowing.

[804:10.4.2.2.4]

22.27.1.4 Cable Spreading Room.

The cable spreading room shall have an automatic fixed water-based suppression system, and the following criteria also shall be met:

(1) The location of sprinklers or spray nozzles shall protect cable tray arrangements to ensure water coverage for areas that could present exposure fire hazards to the cable raceways.
(2) Automatic sprinkler systems shall be designed for a density of 0.30 gpm/ft^2 (12.2 L/min·m^2) over the most remote 2500 ft^2 (232.2 m^2).

[804:10.4.1.1]

22.27.1.5* Beneath Turbine Generator Operating Floor.

All areas beneath the turbine generator operating floor shall be protected by an automatic sprinkler or foam-water sprinkler system meeting the following criteria:

(1) The sprinkler system beneath the turbine generator shall be designed around obstructions from structural members and piping.

(2) The sprinkler system shall be designed to a minimum density of 0.30 gpm/ft^2 (12.2 L/min·m^2) over a minimum application of 5000 ft^2 (464.5 m^2).

[804:10.8.2.1]

22.27.1.6* Turbine Generator Bearings.

[804:10.8.3]

22.27.1.6.1

Lubricating oil lines above the turbine operating floor shall be protected with an automatic sprinkler system to a minimum density of 0.30 gpm/ft^2 (12.2 L/min·m^2) that covers those areas subject to oil accumulation, including the area within the turbine lagging (skirt). [804:10.8.4]

22.27.1.6.2

Where shaft-driven ventilation systems are used, an automatic preaction sprinkler system providing a density of 0.30 gpm/ft^2 (12.2 L/min·m^2) over the entire area shall be provided. [804:10.8.7(2)]

22.27.1.7 Standby Emergency Diesel Generators and Combustion Turbines.

The sprinkler and water spray protection systems shall be designed for a 0.25 gpm/ft^2 (10.19 L/min·m^2) density over the entire area. [804:10.9.3(2)]

22.27.1.8 Fire Pump Room/House.

If sprinkler and water spray systems are provided for fire pump houses, they shall be designed for a minimum density of 0.25 gpm/ft^2 (10.19 L/min·m^2) over the entire fire area. [804:10.22.2]

22.27.1.9 Auxiliary Boilers.

Sprinkler and water spray systems shall be designed for a minimum density of 0.25 gpm/ft^2 (10.19 L/min·m^2) over the entire area. [804:10.24.3]

22.27.2 Installation Requirements.

22.27.2.1 Yard Mains, Hydrants, and Building Standpipes.

[804:9.4]

22.27.2.1.1

Approved visually indicating sectional control valves such as postindicator valves shall be provided to isolate portions of the main for maintenance or repair without simultaneously shutting off the supply to both primary and backup fire suppression systems. [804:9.4.2]

22.27.2.1.2*

Sectional control valves shall allow maintaining independence of the individual loop around each unit, and the following also shall apply:

(1) For such installations, common water supplies shall also be permitted to be utilized.

(2) For multiple-reactor sites with widely separated plants [approaching 1 mi (1.6 km) or more], separate yard fire main loops shall be used.

[804:9.4.4]

22.27.2.1.3

Sprinkler systems and manual hose station standpipes shall have connections to the plant underground water main so that a single active failure or a crack in a moderate-energy line can be isolated so as not to impair both the primary and the backup fire suppression systems unless otherwise permitted by the following:

(1) Alternatively, headers fed from each end shall be permitted inside buildings to supply both sprinkler and standpipe systems, provided steel piping and fittings meeting the requirements of ASME B31.1, Code for Power Piping, are used for the headers (up to and including the first valve) supplying the sprinkler systems where such headers are part of the seismically analyzed hose standpipe system.

(2) Where provided, such headers shall be considered an extension of the yard main system.

(3) Each sprinkler and standpipe system shall be equipped with an outside screw and yoke (OS&Y) gate valve or other approved shutoff valve.

[804:9.4.7]

22.27.2.2 Cable Concentrations.

The location of sprinklers or spray nozzles shall protect cable tray arrangements and possible transient combustibles to ensure water coverage for areas that could present exposure fire hazards to the cable raceways. [804:10.4.2.2.3]

22.27.2.3 Turbine Building.

Deluge sprinkler systems or deluge spray systems shall meet the following criteria:

(1) They shall be zoned to limit the area of protection to that which the drainage system can handle with any two adjacent systems actuated.

(2) They shall be hydraulically designed with each zone calculated with the largest adjacent zone flowing.

[804:10.4.2.2.4]

22.28 Light Water Nuclear Power Plants.

22.28.1 Design Requirements.

A fire protection water supply of reliability, quantity, and duration shall be provided by one of the two following methods:

(1) A fire protection water supply of not less than two separate 300,000 gal (1,135,500 L) supplies shall be provided.

(2) The 2-hour fire flow rate for 2 hours shall be calculated, and the following criteria shall be met:

   (a) The flow rate shall be based on 500 gpm (1892.5 L/min) for manual hose streams plus the largest design demand of any sprinkler or fixed water spray system(s) in the power block as determined in accordance with NFPA 13 or NFPA 15.

   (b) The fire water supply shall be capable of delivering this design demand with the hydraulically least demanding portion of fire main loop out of service.

[805:5.5.1]

22.28.2 Installation Requirements.

22.28.2.1

Each sprinkler and standpipe system shall be equipped with an outside screw and yoke (OS&Y) gate valve or other approved shutoff valve. [805:5.5.17]

22.28.2.2

Sprinkler systems and manual hose station standpipes shall be connected to the plant fire protection water main so that a single active failure or a crack to the water supply piping to these systems can be isolated so as not to impair both the primary and backup fire suppression systems. [805:5.5.12]

22.29 Hydroelectric Generating Plants. [NFPA 851]

22.29.1 Design Requirements.

22.29.1.1 Hydraulic Control Systems.

Fixed fire protection for this equipment, where provided, should be as follows:

(1) Automatic wet pipe sprinkler systems utilizing a design density of 0.25 gpm/ft^2 (10.2 mm/min) for the entire hazard area.

(2) Automatic foam-water sprinkler systems providing a density of 0.16 gpm/ft^2 (6.5 mm/min).

[851:7.2.4]

22.29.1.2 Cable Concentrations.

Sprinkler or water spray systems should be designed for a density of 0.30 gpm/ft^2 (12.2 mm/min) over 2500 ft^2 (232 m^2). This coverage is for area protection. Individual cable tray tier coverage could be required based on the fire risk evaluation. [851:7.5.3]

22.29.1.3 Cable Tunnels.

Where protection is required by the fire risk evaluation, cable tunnels should be protected by automatic water spray, automatic wet pipe sprinkler, or foam-water spray systems. Automatic sprinkler systems should be designed for a density of 0.30 gpm/ft^2 (12.2 mm/min) over 2500 ft^2 (232 m^2) or the most remote 100 linear ft (30.5 m) of cable tunnel up to 2500 ft^2 (232 m^2). [851:7.6.1]

22.29.1.4 Emergency Generators.

Emergency generators located within main plant structures should be protected by automatic sprinkler, water spray, foam-water sprinkler, compressed air foam, or gaseous-type extinguishing systems. Sprinkler and water spray protection systems should be designed for a 0.25 gpm/ft^2 (10.2 mm/ min) density over the fire area. [851:7.11.2]

22.29.1.5 Air Compressors.

Automatic sprinkler protection designed for a density of 0.25 gpm/ft^2 (10.2 mm/min) over the postulated oil spill or compressed air foam should be considered for air compressors containing a large quantity of oil. [851:7.12]

22.29.1.6 Hydraulic Systems for Gate and Valve Operators.

Hydraulic control systems should use a listed fire-resistant fluid. Automatic sprinkler protection designed for a density of 0.25 gpm/ ft^2 (10.2 mm/min) over the fire area or compressed air foam systems should be considered for hydraulic systems not using a listed fire-resistant fluid. [851:7.13]

22.29.1.7 Fire Pumps.

Rooms housing diesel-driven fire pumps should be protected by automatic sprinkler, water spray, foamwater sprinkler, or compressed air foam systems. If sprinkler and water spray protection systems are provided, they should be designed for a density of 0.25 gpm/ft^2 (10.2 mm/min) over the fire area. For automatic foam-water sprinkler systems, a density of 0.16 gpm/ft^2 (6.5 mm/min) should be provided. [851:7.14]

22.29.2 Installation Requirements.

22.29.2.1 Hydraulic Control Systems.

Fire extinguishing systems, where installed for lube oil systems employing combustible-type oil, should include protection for the reservoirs, pumps, and all oil lines, especially where unions exist on piping and beneath any shielded area where flowing oil can collect. Facilities not provided with curbs or drains should extend coverage for a distance of 20 ft (6 m) from the oil lines, when measured from the outermost oil line. [851:7.2.7]

22.30 Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship. [NFPA 909]

22.30.1 Design Requirements.

22.30.1.1*

Standard-response sprinklers shall be permitted for use in light-hazard areas. [909:12.4.4.2]

22.30.1.2*

Preaction and dry pipe systems shall be designed to minimize the risk of corrosion in accordance with the requirements of 9.12.12.3.1 through 9.12.12.3.5 of NFPA 909. [909:9.12.12.3]

22.30.1.3 System Design for Museums, Libraries, and Their Collections in Compact Storage.

22.30.1.3.1*

The design shall recognize the nature of the potential threat of a fire that originates in a compact mobile storage unit, where fuel loads are invariably large and fire growth is significantly different from that in other kinds of storage. [909:9.12.23.4.1.3]

22.30.1.3.2*

The automatic fire suppression system, the compact storage system, and the storage compartmentalization features shall be designed to limit fire damage in accordance with the facility's fire safety objectives. [909:9.12.23.4.1.4(A)]

22.30.1.3.3

Design calculations shall include the number and size of the storage modules, the separation provided between the modules end-to-end and back-to-back, and the type of material being stored. [909:9.12.23.4.1.4(B)]

22.30.1.3.4

Where the automatic fire suppression is provided by automatic fire sprinkler systems, the systems shall be wet pipe, single interlock pre-action, or single non-interlock pre-action systems. [909:9.12.23.4.1.4(C)]

22.30.1.3.5

Dry pipe or double-interlock pre-action systems shall not be installed in compact storage areas. [909:9.12.23.4.1.4(D)]

22.30.1.3.6

Where compact storage is installed in an existing storage area, the existing automatic fire detection and fire suppression systems shall be modified as required to accommodate the increased fire loading. [909:9.12.23.4.1.4(E)]

22.30.2 Installation Requirements.

22.30.2.1*

Branch lines shall be pitched at least ½ in. per 10 ft (4 mm/m), and mains shall be pitched at least ¼ in. per 10 ft (2 mm/m). [909:9.12.12.3.1]

22.30.2.2*

Auxiliary drains shall be provided at all low points in accordance with NFPA 13 requirements for dry pipe systems and preaction systems subject to freezing. [909:9.12.12.3.2.1]

22.30.2.3*

Where steel pipe is used in dry pipe and preaction systems, the provisions of NFPA 13 shall be applied assuming water supplies and environmental conditions that contribute to unusual corrosive properties, and a plan shall be developed to treat the system using one of the following methods:

(1) Install a water pipe that is corrosion resistant

(2) Treat all water that enters the system using an approved corrosion inhibitor

(3) Implement an approved plan for monitoring the interior conditions of the pipe at established intervals and locations.

[909:9.12.12.3.3]

22.31 National Electrical Code.

22.31.1 Design Requirements. (Reserved)

22.31.2 Installation Requirements.

22.31.2.1 Dedicated Electrical Space.

The space equal to the width and depth of the equipment and extending from the floor to a height of 6 ft (1.8 m) above the equipment or to the structural ceiling, whichever is lower, shall be dedicated to the electrical installation. No piping, ducts, leak protection apparatus, or other equipment foreign to the electrical installation shall be located in this zone.

Exception : Suspended ceilings with removable panels shall be permitted within the 1.8-m (6-ft) zone.

[70:110.26(E)(1)(a)]

22.31.2.2

The area above the dedicated space required by 22.31.2.1 shall be permitted to contain foreign systems, provided protection is installed to avoid damage to the electrical equipment from condensation, leaks, or breaks in such foreign systems. [70:110.26(E)(1)(b)]

22.31.2.3*

Sprinkler protection shall be permitted for the dedicated space where the piping complies with this section. [70:110.26(E)(1)(c)]

22.32 Fire Protection of Telecommunication Facilities.

22.32.1 Design Requirements. (Reserved)

22.32.2 Installation Requirements.

22.32.2.1

All piping for dry pipe and pre-action sprinkler systems shall be installed with a pitch in accordance with NFPA 13 whether or not the piping is subjected to freezing conditions. [76:8.6.2.2.2]

22.33 Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids.

22.33.1 Design Requirements.

22.33.1.1

When a sprinkler system is installed, means shall be provided to prevent water accumulation in the duct or flow of water back to a process subject that could be damaged by water. [91:9.2]

22.33.2 Installation Requirements. (Reserved)

22.34 Hypobaric Facilities.

22.34.1 Design Requirements.

22.34.1.1

A fire suppression system consisting of independently supplied and operating handline and fixed deluge-type water spray systems shall be installed. [99B:4.5.1.5]

22.34.1.2

Design of the fire suppression system shall be such that failure of components in either the handline or deluge system will not render the other system inoperative. [99B:4.5.1.6]

22.34.1.3

System design shall be such that activation of either the handline or the deluge system shall automatically cause the following:

(1) Visual and audio alarm indicators shall be activated at the chamber operator's console.

(2) All ungrounded electrical leads for power and lighting circuits contained inside the chamber shall be disconnected.

(3) Emergency lighting and communication, where used, shall be activated.

[99B:4.5.1.7]

22.34.1.4

Intrinsically safe circuits, including sound-powered communications, shall be permitted to remain connected when either the handline or deluge system is activated. [99B:4.5.1.8]

22.34.1.5

Control circuitry and other electrical equipment involved in the fire detection and suppression system shall be powered from the critical branch of the emergency electrical system and connected to the uninterruptible power supply (UPS). [99B:4.5.1.11]

22.34.1.6

In chambers that consist of more than one compartment, the deluge system shall operate independently or simultaneously even if the compartments are at different pressures (altitudes). [99B:4.5.2.2]

22.34.1.7

Fixed deluge systems shall not be required in chamber compartments that are used strictly as personnel transfer compartments and for no other purpose. [99B:4.5.2.3]

22.34.1.8

Manual activation and deactivation deluge controls shall be located at the operator's console and in each chamber compartment containing a deluge system. [99B:4.5.2.4]

22.34.1.9

Controls shall be designed to prevent unintended activation. [99B:4.5.2.4.1]

22.34.1.10

Water shall be delivered from the fixed discharge nozzles of the deluge system within 3 seconds of activation of any affiliated deluge control. [99B:4.5.2.5]

22.34.1.11*

Total water demand shall be determined by multiplying the total chamber floor area by 7.5 gpm/ft^2 (305.6 L/min/m^2). [99B:4.5.2.5.1]

22.34.1.12

The minimum operating pressure at the nozzle shall be 30 psi (206 kPa). [99B:4.5.2.5.2]

22.34.1.13

The water supply shall be constantly and fully charged. [99B:4.5.2.6]

22.34.1.14

The water supply pressure shall be constantly monitored and an interlock shall prevent chamber operation if water supply pressure has fallen 10 percent below normal operating charge pressure. [99B:4.5.2.7]

22.34.1.15

There shall be water in the deluge system to maintain the flow specified in 22.34.1.11 simultaneously in each chamber containing the deluge system for 1 minute. [99B:4.5.2.8]

22.34.1.16

The limit on maximum extinguishment duration shall be governed by the chamber capacity (bilge capacity also, if so equipped) and/or its drainage system. [99B:4.5.2.9]

22.34.1.17

The deluge system shall have stored pressure to operate for at least 15 seconds without electrical branch power. [99B:4.5.2.10]

22.34.2 Installation Requirements. (Reserved)

22.35 Coal Mines.

22.35.1 Design Requirements.

22.35.1.1 Underground Mining Operations.

22.35.1.1.1*

Fire sprinkler systems for underground mining operations shall be designed and installed in accordance with NFPA 120.

22.35.1.2 Coal Preparation Plants and Crusher Buildings.

22.35.1.2.1

When automatic sprinkler systems are to be supplied through the standpipe system, hydraulic calculations shall be used to ensure that the piping and the water supply meet the hose and automatic sprinkler demands simultaneously. [120:6.3.2.3.2]

22.35.1.3 Underground Conveyors.

22.35.1.3.1

The application rate shall not be less than 10.2 L/min/m^2 (0.25 gpm/ft^2) of the top surface of the top belt. [120:9.4.6.4]

22.35.1.3.2

The water supply shall be free of excessive sediment and corrosives and provide the required flow for not less than 10 minutes. A strainer with a flush-out connection and manual shutoff valve shall be provided. [120:9.4.6.6]

22.35.1.3.3

The system shall be interlocked to shut down the conveyor and provide an audible and a visual alarm. [120:9.4.6.8]

22.35.1.3.4

Fire suppression systems shall also comply with 22.35.1.1.1. [120:9.4.6.10]

22.35.1.3.5

Sprinkler systems shall meet the following requirements:

(1) The sprinklers shall be installed in accordance with NFPA 13 as far as practical, and shall have components that have been listed.

(2) The water supply shall be capable of supplying a constant flow of water with all heads functioning for a period of 10 minutes.

(3) The sprinkler head activation temperature shall not be less than 65.6°C (150°F) or greater than 148.9°C (300°F).

[120:9.4.6.13]

22.35.2 Installation Requirements.

22.35.2.1 Underground Conveyors.

22.35.2.1.1

Deluge water spray systems, foam systems, closed-head sprinkler systems, or dry-chemical systems automatically actuated by rise in temperature shall be installed at main and secondary belt conveyor drives. [120:9.4.6.1]

22.35.2.1.2

Fire suppression systems shall extend to the drive areas of belt conveyors, including drive motor(s), reducer, head pulley, and belt storage unit (takeup), including any hydraulic power unit; its electrical controls; and the top and bottom of the first 15.2 m (50 ft) of belt from the drive on the downwind side. [120:9.4.6.2]

22.35.2.1.3

Piping for the deluge, foam, or closed-head sprinkler system shall be metal and listed for sprinkler applications. [120:9.4.6.3]

22.35.2.1.4

The discharge shall be directed at both the upper and the bottom surface of the top belt and the upper surface of the bottom belt. [120:9.4.6.5]

22.35.2.1.5

Maximum distance between nozzles on a branch line shall not exceed 2.4 m (8 ft). [120:9.4.6.7]

22.35.2.1.6

The components of the system shall be located so as to minimize the possibility of damage by roof fall or by the moving belt and its load. [120:9.4.6.9]

22.35.2.1.7

Deluge water spray systems shall meet the requirements of 22.35.2.1.7.1 through 22.35.2.1.7.5. [120:9.4.6.11]

22.35.2.1.7.1

The system shall be activated by heat detectors. [120:9.4.6.11.1]

22.35.2.1.7.2

Heat detectors shall be located at the belt drive, hydraulic takeup unit (unless fire-resistive fluid is used), discharge roller, and the roof above the conveyor. [120:9.4.6.11.1.1]

22.35.2.1.7.3

Heat detectors at the roof line should be spaced 2.4 m to 3.0 m (8 ft to 10 ft) apart along the entire length of the protected area of the belt. [120:9.4.6.11.1.2]

22.35.2.1.7.4

The nozzles shall be full cone, corrosion resistant, and provided with blow-off dust covers. [120:9.4.6.11.2]

22.35.2.1.7.5

A closed sprinkler head shall be used over the electrical controls. [120:9.4.6.11.3]

22.35.2.2 Mine Surface Buildings.

22.35.2.2.1

If sprinklers are installed, waterflow, valve tamper, and low building temperature alarms shall be provided. [120:8.6.1.2]

22.36 Metal/Nonmetal Mining and Metal Mineral Processing Facilities.

22.36.1 Design Requirements.

22.36.1.1 Water Supplies.

22.36.1.1.1

When automatic sprinkler systems are supplied through the hand hose line standpipe system, hydraulic calculations shall be used to ensure that the piping and water supply will supply the hose and automatic sprinkler demands simultaneously. [122:6.2.3]

22.36.1.1.2

Where a fire water supply [for a surface mineral processing plant] is required by the risk assessment, capacity and availability shall provide the water demand for fire-fighting purposes, including hose and sprinkler systems, for a minimum duration of 2 hours. [122:13.7.2]

22.36.1.2*

Where provided, automatic sprinkler systems installed for the protection of flammable liquid or diesel fuel storage areas shall be of the foam-water type. [122:11.3.1]

22.36.1.3 New Solvent Extraction (SX) Facilities.

22.36.1.3.1

Fixed fire suppression shall be provided for the following SX facility areas and equipment:

(1) Buildings housing SX processes
(2) Interior of all mixer-settler vessels/cells
(3) Crud tanks that include treatment filters and centrifuges
(4) Coalescers
(5) Along launders and weirs outside of mixer-settler vessels
(6) Inside pipe trenches carrying solvents
(7) Inside organic solvent and diluent tanks
(8) Inside dikes enclosing organic solvent storage tanks
(9) Over organic solvent pumps
(10) Over elevated pipe racks carrying organic solvents in plastic pipes
(11) Other areas handling, processing, or exposed to flammable or combustible liquids

[122:13.19.1]

22.36.1.3.2*

Fire suppression for applications in 22.36.1.3.1 shall be water, foam, dry chemical, or water mist. [122:13.19.1.1]

22.36.1.3.3*

Design of fire suppression systems in 22.36.1.3.1 shall be based on criteria set forth in NFPA 11; NFPA 15; NFPA 16; and NFPA 17. [122:13.19.1.2]

22.36.1.3.4*

Actuation of fire suppression systems in 22.36.1.3.1 shall be automatic. [122:13.19.1.3]

22.36.1.3.5

As exposure protection, automatic water-only deluge (open-head) sprinkler systems shall be provided between mixer-settler trains if spaced closer than 15.24 m (50 ft) from each other. [122:13.19.2]

22.36.1.3.6

As exposure protection, automatic water-only deluge sprinkler systems shall be provided around the exterior perimeter of organic solvent tanks if spaced closer than 15.24 m (50 ft) from each other. [122:13.19.3]

22.36.1.3.7

As exposure protection, automatic fire suppression shall be provided over other critical equipment (i.e., transformers) or outside along important building walls [i.e., motor control center (MCC) rooms] that are within 15.24 m (50 ft) of a solvent fire area. [122:13.19.4]

22.36.1.3.8

Hydraulic design of automatic fire suppression systems in 22.36.1.3.1 shall include the simultaneous operation of all fire protection systems associated with a single (multi-cell) train. [122:13.19.5]

22.36.1.3.9

The total flow rate of foam application and water associated with the discharge of automatic fire extinguishing systems, fixed monitors, and hydrants shall determine the total volume of fire water required. [122:13.19.6]

22.36.2 Installation Requirements. (Reserved)

22.37 Hazardous Materials Code.

22.37.1 Design Requirements.

Sprinkler system discharge criteria for the protection of hazardous materials shall comply with NFPA 400.

22.37.1.1 Requirements for Occupancies Storing Quantities of Hazardous Materials Exceeding the Maximum Allowable Quantities per Control Area for High Hazard Contents.

The design of the sprinkler system shall be not less than ordinary hazard Group 2 in accordance with NFPA 13, except as follows:

(1) Where different requirements are specified in Chapters 11 through 21 of NFPA 400
(2) Where the materials or storage arrangement requires a higher level of sprinkler system protection in accordance with nationally recognized standards
(3) Where approved alternative automatic fire extinguishing systems are permitted

[400:6.2.1.1.1]

22.37.1.2 General Requirements for Storage of Ammonium Nitrate Solids and Liquids.

Sprinkler systems shall be of the approved type and designed and installed in accordance with NFPA 13, and the following:

(1) Ammonium nitrate in noncombustible or combustible containers (paper bags or noncombustible containers with removable combustible liners) shall be designated as a Class I commodity.
(2) Where contained in plastic containers, ammonium nitrate shall be designated as a Class II commodity.
(3) Where contained in fiber packs or noncombustible containers in combustible packaging, ammonium nitrate shall be designated as a Class III commodity.

[400:11.2.6.1.3]

22.37.1.3 General Requirements for Storage of Organic Peroxide Formulations.

22.37.1.3.1

Where required by other provisions of this code, automatic sprinklers and water spray systems shall be designed and installed according to the requirements of NFPA 13 and NFPA 15 and shall provide the following discharge densities:

(1) Class I — 0.50 gpm/ft^2 (20.4 L/min/m^2)
(2) Class II — 0.40 gpm/ft^2 (16.3 L/min/m^2)
(3) Class III — 0.30 gpm/ft^2 (12.2 L/min/m^2)
(4) Class IV — 0.25 gpm/ft^2 (10.2 L/min/m^2)

[400:14.2.6.1]

22.37.1.3.2

The system shall be designed as follows:

(1) It shall provide the required density over a 3000 ft^2 (280 m^2) area for areas protected by a wet pipe sprinkler system or 3900 ft^2 (360 m^2) for areas protected by a dry pipe sprinkler system.

(2) The entire area of any building of less than 3000 ft^2 (280 m^2) shall be used as the area of application.

[400:14.2.6.2]

22.37.1.3.3

Where required for detached storage buildings containing Class I organic peroxide formulations in quantities exceeding 2000 lb (907 kg), automatic sprinkler protection shall be open-head deluge-type, designed and installed in accordance with NFPA 13. [400:14.2.6.3]

22.37.1.4 Indoor Storage of Oxidizer Solids and Liquids.

22.37.1.4.1

Sprinkler protection for Class 2 oxidizers shall be designed in accordance with Table 22.37.1.4.1. [400:15.3.2.3.4.1]

Table 22.37.1.4.1 Ceiling Sprinkler Protection for Class 2 Oxidizers in Palletized or Bulk and Rack Storage Areas

	Ceiling Sprinklers						
	Storage Height		Density		Area of Application		
Type of Storage	ft	m	gpm/ft^2	$L/min/m^2$	ft^2	m^2	In-Rack Sprinklers
Palletized or bulk	8	2.4	0.20	8	3750	348	—
Palletized or bulk	12	3.7	0.35	14	3750	348	—
Rack	12	3.7	0.20	8	3750	348	One line above each level of storage, except the top level
Rack	16	4.9	0.30	12	2000	186	One line above each level of storage, except the top level

[400: Table 15.3.2.3.2.10(B)]

22.37.1.4.2

Ceiling sprinklers shall be high-temperature sprinklers. [400:15.3.2.3.4.2]

22.37.1.4.3 Storage Protection for Class 2 Oxidizers with In-Rack Sprinklers.

(A)

In-rack sprinklers shall be quick-response sprinklers with an ordinary-temperature rating and have a K-factor of not less than K = 8.0. [400:15.3.2.3.4.3(A)]

(B)

In-rack sprinklers shall be designed to provide 25 psi (172 kPa) for the six most hydraulically remote sprinklers on each level. [400:15.3.2.3.4.3(B)]

(C)

The in-rack sprinklers shall be 8 ft to 10 ft (2.4 m to 3.0 m) spacings in the longitudinal flue space at the intersection of the transverse flue spaces. [400:15.3.2.3.4.3(C)]

22.37.1.4.4 Sprinkler Criteria for Class 3 Oxidizers.

22.37.1.4.4.1 Class 3 Oxidizers Less than 2300 lb (1043 kg).

(A)

Sprinkler design criteria for buildings that require sprinkler protection and contain total quantities of Class 3 oxidizers less than 2300 lb (1043 kg) shall be in accordance with the requirements of 22.37.1.4.4.1(B). [400:15.3.2.4.13.1(A)]

(B)

Facilities that require sprinkler protection and contain total quantities of Class 3 oxidizers greater than 200 lb (91 kg), but less than 2300 lb (1043 kg), shall follow the sprinkler design criteria in Table 22.37.1.4.4.1(B). [400:15.3.2.4.13.1(B)]

Table 22.37.1.4.4.1(B) Sprinkler Protection of Class 3 Oxidizers Stored in Total Quantities Greater than 200 lb (91 kg) but Less than 2300 lb (1043 kg)

Storage Parameters	Shelf	Bulk or Pile	Bulk or Pile	Rack
Maximum storage height	6 ft (1.8 m)	5 ft (1.5 m)	10 ft (3 m)	10 ft (3 m)
Maximum ceiling height	25 ft (7.6 m)	25 ft (7.6 m)	25 ft (7.6 m)	NA
Aisles — pile separation	4 ft (1.2 m) min. clear aisles	4 ft (1.2 m) min. clear aisles	8 ft (2.4 m) min. clear aisles	8 ft (2.4 m) min. clear aisles
Ceiling design criteria	0.45 gpm/ft^2/2000 ft^2	0.35 gpm/ft^2/or 5000 ft^2 or 0.6 gpm/2000 ft^2	0.65 gpm/ft^2/5000 ft^2	0.35 gpm/ft^2/or 5000 ft^2 or 0.6 gpm/ft^2/2000 ft^2
In-rack sprinklers	NP	NP	NA	See 15.3.2.4.12.2.
Hose stream demand	500 gpm	500 gpm	500 gpm	500 gpm
Duration	120 minutes	120 minutes	120 minutes	120 minutes

For SI units, 1 gal = 3.79 L. NA: Not applicable. NP: Not permitted.

[400: Table 15.3.2.4.12.1(B)]

22.37.1.4.4.2 Storage Protection for Class 3 Oxidizers In-Rack Sprinkler Criteria.

(A)

Where required by Table 22.37.1.4.4.1(B), in-rack sprinkler protection shall be as follows:

(1) In-rack sprinklers shall be installed above every level of oxidizer storage.

(2) In-rack sprinklers shall be spaced at maximum 4 ft (1.2 m) intervals to provide one sprinkler in each flue space.

(3) In-rack sprinklers shall be quick-response sprinklers with an ordinary-temperature rating and have a K-factor of not less than K = 8.0.

(4) In-rack sprinklers shall be designed to provide 25 psi (172 kPa) for the six most hydraulically remote sprinklers on each level.

[400:15.3.2.4.13.3(A)]

22.37.1.4.4.3 Class 3 Oxidizers Greater than or Equal to 2300 lb (1043 kg).

The sprinkler protection shall be in accordance with Table 22.37.1.4.4.3. [400:15.3.2.4.13.4(B)]

Table 22.37.1.4.4.3 Sprinkler Protection of Class 3 Oxidizers Stored in Total Quantities of Greater than or Equal to 2300 lb (1043 kg)

Storage Parameters	Bulk or Pile	Rack
Maximum storage height	5 ft (1.5 m)	10 ft (3 m)
Maximum ceiling height	25 ft (7.6 m)	NP
Aisles — pile separation	8 ft (2.4 m) min. clear aisles	8 ft (2.4 m) min. clear aisles
Ceiling design criteria	0.35 gpm/ft^2/5000 ft^2 (1.32 L/min/m^2/464.5 m^2)	Predominant for other commodities but not less than ordinary hazard Group II
In-rack sprinklers	NP	See 15.3.2.4.12.4
Hose stream demand	500 gpm (1893 L/min)	500 gpm (1893 L/min)
Duration	120 minutes	120 minutes

NP: Not permitted.

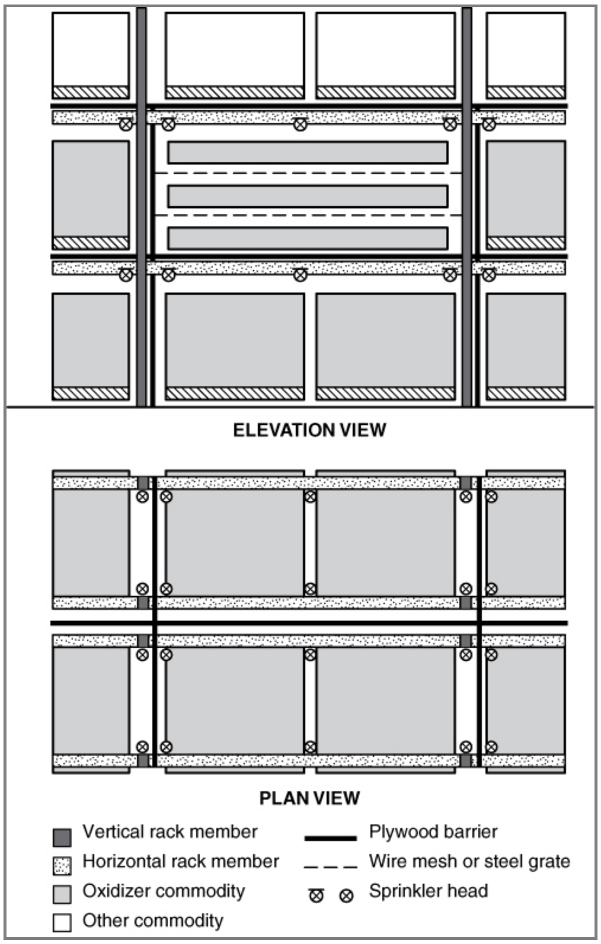
[400: Table 15.3.2.4.12.3(B)]

22.37.1.4.4.4 Special In-Rack Sprinkler Protection for Class 3 Oxidizers.

(A)

Where required by Table 22.37.1.4.4.3, special in-rack sprinkler protection shall be as shown in Figure 22.37.1.4.4.4(A). [400:15.3.2.4.13.5(A)]

Figure 22.37.1.4.4.4(A) Arrangement of Barriers and In-Rack Sprinklers for Special Fire Protection Provisions. [400: Figure 15.3.2.4.13.5(A)]



(B)

In-rack automatic sprinklers shall be provided under each horizontal barrier and arranged in accordance with 22.37.1.4.4.4(C) through 22.37.1.4.4.4(I). [400:15.3.2.4.13.5(K)]

(C)

For double-row racks, two lines of in-rack sprinklers shall be provided between the face of the rack and the longitudinal vertical barrier located in the center of the rack. [400:15.3.2.4.13.5(L)]

(D)

For single-row racks, two lines of in-rack sprinklers shall be provided between each rack face. [400:15.3.2.4.13.5(M)]

(E)

Three in-rack sprinklers shall be provided on each in-rack sprinkler line as follows:

(1) Two sprinklers on each line shall be spaced approximately 1½ in. (38.1 mm) from each transverse vertical barrier.

(2) One in-rack sprinkler on each in-rack sprinkler line shall be located approximately equidistant between the transverse vertical barriers.

[400:15.3.2.4.13.5(N)]

(F)

In-rack sprinklers shall be of the upright or pendent type, with the fusible element located no more than 6 in. (152.4 mm) from the horizontal barrier. [400:15.3.2.4.13.5(O)]

(G)

In-rack sprinklers shall be K = 8.0, quick-response, ordinary-temperature-rated sprinklers. [400:15.3.2.4.13.5(Q)]

(H)

The in-rack sprinkler system shall be designed to supply 6 sprinklers on each line, with a total of 12 sprinklers operating at gauge pressure of 25 psi (172 kPa). [400:15.3.2.4.13.5(R)]

(I)

The design of the in-rack sprinkler system shall be independent of, and shall not be required to be balanced with, ceiling sprinkler systems. [400:15.3.2.4.13.5(S)]

22.37.1.4.4.5 Sprinkler Criteria for Class 4 Oxidizers.

(A)

Sprinkler protection for Class 4 oxidizers shall be installed on a deluge sprinkler system to provide water density of 0.35 gpm/ft^2 (14.4 L/min/m^2) over the entire storage area. [400:15.3.2.5.4.6(A)]

(B)

Sprinkler protection shall be installed in accordance with NFPA 13. [400:15.3.2.5.4.6(B)]

22.37.2 Installation Requirements.

(Reserved)

Statement of Problem and Substantiation for Public Input

Resequence the sections in Chapter 22 to be consistent with the referenced NFPA standard. When Chapter 22 was first developed, the sequence of the sections was based upon the NFPA document number. As additional material has been added, that logic has been lost making it more challenging to apply Chapater 22.

Submitter Information Verification

Submitter Full Name: William Koffel

Organization: Koffel Associates, Inc.

Submittal Date: Sun Feb 10 05:26:51 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1360492011196.xml

Public Input No. 33-NFPA 13-2013 [Section No. 23.1.3]

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23.1.3

Working plans shall be drawn to an indicated scale, on sheets of uniform size, with a plan of each floor, and shall show those items from the following list that pertain to the design of the system:

(1) Name of owner and occupant.

(2) Location, including street address.

(3) Point of compass.

(4) Full height cross section, or schematic diagram, including structural member information if required for clarity and including ceiling construction and method of protection for nonmetallic piping.

(5) Location of partitions.

(6) Location of fire walls.

(7) Occupancy class of each area or room.

(8) Location and size of concealed spaces, closets, attics, and bathrooms.

(9) Any small enclosures in which no sprinklers are to be installed.

(10) Size of city main in street and whether dead end or circulating; if dead end, direction and distance to nearest circulating main; and city main test results and system elevation relative to test hydrant.

(11) Other sources of water supply, with pressure or elevation.

(12) Make, type, model, and nominal K-factor of sprinklers including sprinkler identification number.

(13) Temperature rating and location of high-temperature sprinklers.

(14) Total area protected by each system on each floor.

(15) Number of sprinklers on each riser per floor.

(16) Total number of sprinklers on each dry pipe system, preaction system, combined dry pipe–preaction system, or deluge system.

(17) Approximate capacity in gallons of each dry pipe system.

(18) Pipe type and schedule of wall thickness.

(19) Nominal pipe size and cutting lengths of pipe (or center-to-center dimensions). Where typical branch lines prevail, it shall be necessary to size only one typical line.

(20) Location and size of riser nipples.

(21) Type of fittings and joints and location of all welds and bends. The contractor shall specify on drawing any sections to be shop welded and the type of fittings or formations to be used.

(22) Type and locations of hangers, sleeves, braces, and methods of securing sprinklers when applicable.

(23) All control valves, check valves, drain pipes, and test connections.

(24) Make, type, model, and size of alarm or dry pipe valve.

(25) Make, type, model, and size of preaction or deluge valve.

(26) Kind and location of alarm bells.

(27) Size and location of standpipe risers, hose outlets, hand hose, monitor nozzles, and related equipment.

(28) Private fire service main sizes, lengths, locations, weights, materials, point of connection to city main; the sizes, types and locations of valves, valve indicators, regulators, meters, and valve pits; and the depth that the top of the pipe is laid below grade.

(29) Piping provisions for flushing.

(30) Where the equipment is to be installed as an addition to an existing system, enough of the existing system indicated on the plans to make all conditions clear.

(31) For hydraulically designed systems, the information on the hydraulic data nameplate.

(32) A graphic representation of the scale used on all plans.

(33) Name and address of contractor.

(34) Hydraulic reference points shown on the plan that correspond with comparable reference points on the hydraulic calculation sheets.

(35) The minimum rate of water application (density or flow or discharge pressure), the design area of water application, in-rack sprinkler demand, and the water required for hose streams both inside and outside.

(36) The total quantity of water and the pressure required noted at a common reference point for each system.

(37) Relative elevations of sprinklers, junction points, and supply or reference points.

(38) If room design method is used, all unprotected wall openings throughout the floor protected.

(39) Calculation of loads for sizing and details of sway bracing.

(40) The setting for pressure-reducing valves.

(41) Information about backflow preventers (manufacturer, size, type).

Item 42 of 23.1.3 was revised by a tentative interim amendment (TIA). See page 1.

(42) Information about listed antifreeze solution used (type and amount).

(43) Size and location of hydrants, showing size and number of outlets and if outlets are to be equipped with independent gate valves. Whether hose houses and equipment are to be provided, and by whom, shall be indicated. Static and residual hydrants that were used in flow tests shall be shown.

(44) Size, location, and piping arrangement of fire department connections.

(45) Ceiling/roof heights and slopes not shown in the full height cross section.

(46) Edition year of NFPA 13 to which the sprinkler system is designed.

See uploaded file.

Additional Proposed Changes

File Name	Description	Approved

Open 13_P_29_Rec_from_TIA.pdf Rec text from TIA (balloted)

Statement of Problem and Substantiation for Public Input

Note: This Proposal originates from Tentative Interim Amendment 13-13-1 (TIA 1066) issued by the Standards Council on August 9, 2012.

The information provided in the Fire Protection Research Foundation report "Antifreeze Solutions Supplied through Spray Sprinklers: Interim Report" illustrates that under certain conditions (pressure, fire size, k-factor, ceiling height, deflector design…etc) a 50% glycerine solution is capable of igniting and causing a dramatic increase in heat release rate. As noted in the FPRF report, these results highlight the "complicated interaction between sprinkler spray and the ignition source."As a result of this additional testing, there are more questions that need to be answered, and the testing shows that concentrations of anti-freeze that previous testing indicated were acceptable and would not support combustion actually do with a stronger ignition source. In addition, sprinklers with larger orifices that require lower pressure than typical residential sprinklers and potentially a lager droplet distribution also ignited. It is clear that further testing is need to fully understand under what conditions an anti-freeze solutions are safe, anti-freeze solutions can not be allowed in sprinkler systems.

This TIA calls for the use of Listed Antifreeze Solutions. Using listed antifreeze solutions will ensure that the solution discharged from a sprinkler system will not ignite or cause a dramatic increase in heat release rate of a fire. The process for developing listed products will also allow for a continued improvement in fire and life safety in environments meeting the NFPA Codes and Standards.

This TIA also calls for the continued acceptance of currently listed ESFR Antifreeze Systems. The listing process has already shown that, in some cases, it is possible to use current antifreeze solutions to provide the level of protection prescribed by NFPA 13. For this reason, it is proposed to allow the continued use of propylene-glycol solutions in systems and in protection scenarios that have been thoroughly tested to demonstrate such results. There are ESFR systems currently available that have been specifically tested and listed with a specific model of sprinkler and solution delivery method that provide an appropriate level of protection as to be considered "Early Suppression".

Emergency Nature: The latest testing from The Fire Protection Research Foundation titled Antifreeze Solutions Supplied through Spray Sprinklers Interim Report (dated February 2012) shows that anti-freeze concentrations currently allowed in new NFPA 13 sprinkler systems may support combustion and increase the size of the fire. This is a safety issue that requires changes in the standard.

The following are two items which make this TIA of emergency nature. Only one is required for substantiation of an emergency nature.

(d) The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation During the latest revision cycle the committee evaluated the test data that was present at the time of the cycle. The committee could not anticipate that additional data would change our justifications during the process. The new data demonstrates that variables utilized in the development of the 2013 edition may lead to changes in the fire involvement.

Propylene glycol and glycerin antifreeze solutions discharged from sprinklers have the potential to ignite under certain conditions. Research testing has indicated that several variables may influence the potential for large scale ignition of the antifreeze solution discharged from a sprinkler. These variables include, but are not limited to, the concentration of antifreeze solution, sprinkler discharge characteristics, inlet pressure at the sprinkler, location of fire relative to the sprinkler, and size of fire at the time of sprinkler discharge.

(f) The proposed TIA intends to correct a circumstance in which the revised document has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process, or was without adequate technical (safety) justification for the action. Antifreeze solutions have been subject to recent testing and the new data shows that the installations found within the standard do not account for the complete safety of the occupant. The data appears to provide additional questions and challenges the parameters of installation found in the standard.

The use of propylene glycol and glycerin antifreeze solutions should only be considered when other sprinkler system design alternatives are not available or practical. If these solutions are used, all relevant data and information should be carefully reviewed and considered in the sprinkler system.

Submitter Information Verification

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Organization: Tyco/SimplexGrinnell
Submittal Date: Thu Jan 24 13:25:56 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359051956731.xml

Public Input No. 255-NFPA 13-2013 [Section No. 23.2.1 [Excluding any Sub-Sections]]

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The following information shall be included:

(1) Location and elevation of static and residual test gauge with relation to the riser reference point

(2) Flow location

(3) Static pressure, psi (bar)

(4) Residual pressure, psi (bar)

(5) Flow, gpm (L/min)

(6) Date

(7) Time

(8) Name of person who conducted the test or supplied the information

(9) Other sources of water supply, with pressure or elevation

(10) Pertinent pressure fluctuation data

Statement of Problem and Substantiation for Public Input

Something that is regularly ignored and missing from fire protection design submittals is pressure fluctuation information, which could drastically affect system design for low and high pressure fluctuations.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 231-NFPA 13-2013 [Section No. 24.2.2.2]	Same basic issue on pressure fluctuation

Submitter Information Verification

Submitter Full Name: Bob Morgan
Organization: Fort Worth Fire Department
Affilliation: Fire Advisory Board to the North Central Texas Council of Governments
Submittal Date: Sat May 04 15:26:12 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367695572607.xml

Public Input No. 365-NFPA 13-2013 [New Section after 23.2.2]

NOTE: This proposal appeared as Comment 13-320 (Log #58) which was held from the A12 ROC on Proposal 13-501.

23.2.2.3* Where the volume and pressure available from a water supply are determined through a waterflow test, an adjustment shall be made to the test data to account for daily and seasonal fluctuations.

Additional Proposed Changes

File Name	Description	Approved
13_PI_365_Held_Comment_13-320_Brooks_.pdf	Held Comment 13-320	

Statement of Problem and Substantiation for Public Input

This comment is being made to NFPA 13 to correlate with a change proposed to NFPA 24 on section 5.1.3. The basic concept of requiring some adjustment to the waterflow test data needs to be in the body of the standard. It is completely irresponsible to conduct a waterflow test at a hydrant at a time of very low water demand and believe that you are going to have all of that flow and pressure available when a fire occurs a few hours later during a regular and known peak demand time.

As proposed, the rule would only apply in those situations where the waterflow test is being performed and would not apply to the development of water supply data from other sources.

The concept of evaluating the water supply for possible interruptions from flood or ice conditions has been intentionally dropped from the language because this does not have to do with the flow or pressure available. This concept should be a part of the determination as to whether the water supply is "reliable" enough to use at all, which is a completely different concept and should not be tied to evaluating data from a flow test.

Submitter Information Verification

Submitter Full Name: William Brooks
Organization: Brooks Fire Protection
Submittal Date: Thu May 23 11:07:27 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369321647305.xml

Public Input No. 588-NFPA 13-2013 [New Section after 23.2.2]

NOTE: This proposal appeared as Comment 13-320 (Log #58) which was held from the A12 ROC on Proposal 13-501.

23.2.2.3* Where the volume and pressure available from a water supply are determined through a waterflow test, an adjustment shall be made to the test data to account for daily and seasonal fluctuations.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_PI_588_Held_Comment_13-320_Kelly_.pdf	Held Comment 13-320	

Statement of Problem and Substantiation for Public Input

This comment is being made to NFPA 13 to correlate with a change proposed to NFPA 24 on section 5.1.3. The basic concept of requiring some adjustment to the waterflow test data needs to be in the body of the standard. It is completely irresponsible to conduct a waterflow test at a hydrant at a time of very low water demand and believe that you are going to have all of that flow and pressure available when a fire occurs a few hours later during a regular and known peak demand time.

As proposed, the rule would only apply in those situations where the waterflow test is being performed and would not apply to the development of water supply data from other sources.

The concept of evaluating the water supply for possible interruptions from flood or ice conditions has been intentionally dropped from the language because this does not have to do with the flow or pressure available. This concept should be a part of the determination as to whether the water supply is "reliable" enough to use at all, which is a completely different concept and should not be tied to evaluating data from a flow test.

Submitter Information Verification

Submitter Full Name: KEVIN KELLY
Organization: [Not Specified]
Submittal Date: Mon Jun 17 12:22:31 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1371486151712.xml

Public Input No. 19-NFPA 13-2013 [Section No. 23.3.5.2]

Original Hide Markup

~~23.3.5.2 Summary Sheet.~~

~~The summary sheet as shown in Figure 23.3.5.1.2(a) shall contain the following information, where applicable:~~

(1) ~~Project name and date~~

(2) ~~Location (including street address)~~

(3) ~~Drawing number~~

(4) ~~Remote area number~~

(5) ~~Remote area location~~

(6) ~~Occupancy or commodity classification~~

(7) ~~System design requirements, as follows:~~

  (8) ~~Design area of water application, ft ^{2} (m ^{2})~~

  (9) ~~Minimum rate of water application (density), gpm/ft ^{2} (mm/min)~~

  (10) ~~Area per sprinkler, ft ^{2} (m ^{2})~~

(11) ~~Total water requirements as calculated, including allowance for inside hose, outside hydrants, water curtain and exposure sprinklers, and allowance for in-rack sprinklers, gpm (L/min)~~

(12) ~~Type of system and, if dry or preaction, the volume of the system in gallons (liters)~~

(13) ~~Water supply information, including the following:~~

  (14) ~~Date~~

  (15) ~~Location~~

  (16) ~~Source~~

  (17) ~~Elevation relative to finished floor~~

(18) ~~Name and address of installing contractor~~

(19) ~~Name of designer~~

(20) ~~Authority having jurisdiction~~

(21) ~~Notes that include items such as peaking information for calculations performed by a computer program, limitations (dimension, flow, and pressure) on extended-coverage or other listed special sprinklers~~

Additional Proposed Changes

	File Name	Description	Approved
Open	New_Info_Sheet_NFPA_13.docx	Summary Sheets for NFPA 13 Hydraulics	
Open	Figure_23.3.5.2.2_a_.pdf		
Open	Figure_23.3.5.2.1_a_.pdf		

Statement of Problem and Substantiation for Public Input

As this system is not as flexible as Word, I have done this proposal with a doc attachment. The list of requirements has been tweaked. Also, a summary sheet for residential projects has been added since NFPA 13R and sometimes NFPA 13D reference NFPA 13 for hydraulic calculation procedures

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Wed Jan 16 14:25:34 EST 2013

23.3.5.2 Summary Sheet

23.3.5.2.1 NFPA 13. The summary sheet as shown in Figure 23.3.5.2.1 (a) shall contain the following information, where applicable:

(1) Project general information

a) Project name
b) Project location (including street address)
c) Building number or other identification
d) Date
e) Drawing or sheet number(s)
f) Name of owner or occupant
g) Name of installing contractor
h) Address of installing contractor
i) Phone number of installing contractor
j) Name of engineering technician
k) Name of approving agency (AHJ)

(2) System design requirements, as follows:

a) Year edition of NFPA 13 used
b) Type of System (Wet, Dry, Deluge, Preaction, Antifreeze, Other)
c) Volume of system (Dry or Preaction)
d) Remote area name or number
e) Occupancy classification or description of hazard (for storage applications, the commodity classification, storage height, and rack configuration shall be included)
f) Type of sprinklers calculated (Standard Spacing, Extended Coverage, Residential, CMDA, ESFR, CMSA)
g) Maximum coverage area per sprinkler, ft^2 (m^2)
h) Limitations (spacing, flow, and pressure) on extended coverage or other listed special sprinklers
i) Ceiling height if QR reduction taken
j) Elevation of highest sprinkler calculated relative to the finished floor
k) Design area of water application, ft^2 (m^2) or number of sprinklers when applicable (Residential, Corridor, CMSA, ESFR)
l) Minimum rate of water application (density), gpm/ft^2 (mm/min). Where sprinklers are listed with minimum water application in gpm (L/min) or pressure in psi (bar), the minimum rate of water application shall be indicated in gpm (L/min) or pressure, psi (bar)
m) Total water requirements as calculated, including allowance for inside hose, outside hose, domestic demand, water curtain and exposure sprinklers or for in-rack sprinklers, gpm (L/min)
n) Backflow type (DC, DDC, RPZ) including make and model

(3) Water supply information (as applicable)

a) Date of flow test
b) Time of flow test

c) Location of flow test hydrants relative to the finished floor
d) Elevation of static & residual hydrant, pump or tank as applicable
e) Source of flow test information
f) Size of fire pump (GPM @ PSI)
g) Size of tank or reservoir

(4) Notes (Include peaking information for gridded systems here)

23.3.5.2 Summary Sheet

23.3.5.2.2 NFPA 13R and NFPA 13D (when applicable). The summary sheet as shown in Figure 23.3.5.2.2 (a) shall contain the following information, where applicable:

(1) Project general information

a) Project name
b) Project location (including street address)
c) Building number or other identification
d) Date
e) Drawing or sheet number(s)
f) Name of owner or occupant
g) Name of installing contractor
h) Address of installing contractor
i) Phone number of installing contractor
j) Name of engineering technician
k) Name of approving agency (AHJ)

(2) System design requirements, as follows:

a) Year edition of NFPA 13R or NFPA 13D used
b) Remote area name or number
c) Dwelling unit calculation or area outside of dwelling unit
d) Type of sprinklers calculated (Standard Spacing, Extended Coverage, Residential)
e) Maximum coverage area per sprinkler, ft^2 (m^2) or maximum spacing used
f) Ceiling height if QR reduction taken
g) Elevation of highest sprinkler calculated relative to the finished floor
h) Design area of water application, ft^2 (m^2) (area outside of dwelling unit) or number of sprinklers when applicable (Residential, Corridor)
i) Minimum rate of water application (density), gpm/ft^2 (mm/min). Where sprinklers are listed with minimum water application in gpm (L/min) or pressure in psi (bar), the minimum rate of water application shall be indicated in gpm (L/min) or pressure, psi (bar)
j) Total water requirements as calculated, including domestic demand allowance, gpm (L/min)
k) Backflow type (DC, DDC, RPZ) including make and model
l) Meter type including make and model

(3) Water supply information (as applicable)

h) Date of flow test
i) Time of flow test
j) Location of flow test hydrants relative to the finished floor
k) Elevation of static & residual hydrant, pump or tank as applicable
l) Source of flow test information
m) Size of fire pump (GPM @ PSI)
n) Size of tank or reservoir

(4) Notes

HYDRAULIC CALCULATIONS
for

PROJECT GENERAL INFORMATION

Project name: ______________________________
Location - address: ______________________________
Building #: ____________ Drawing #: ____________ Date: ____________
Owner: ____________ Occupant: ____________
Installing Contractor name: ______________________________
Installing Contractor address: ______________________________
Name of Eng. technician: ____________ Phone #: ____________
Approval Agency (AHJ): ______________________________

SYSTEM DESIGN REQUIREMENTS

Year/Edition of NFPA 13 used: ______________________________
Type of System: ______________________________
Volume of System (Dry or Preaction): ______________________________
Remote area name or #: ______________________________
Occupancy classification or hazard: ______________________________
Commodity Class: ____________ Storage Height: ____________ Rack Config: ____________
Type of Sprinklers: ______________________________
Maximum area per sprinkler: ______________________________
EC or special sprinkler requirements: ______________________________
Ceiling height if QR reduction used: ______________________________
Design Area sq ft or # of sprinklers Required: ______________________________
Elevation of highest sprinkler calculated: ______________________________
Density: ____________ PSI & GPM for Specific Listed: ____________
System Demand @ Source: ______________________________
Hose Allowance Inside: ____________ Hose Allowance Outside: ____________
Rack allowance: ____________ Other: ____________
Backflow Type: ______________________________

WATER SUPPLY INFORMATION

Date of flow test: ______________________________
Time of flow test: ______________________________
Location of flow test hydrants: ______________________________
____
____
Source of flow test information: ______________________________
Size of fire pump: ______________________________
Size of tank or reservoir: ______________________________

NOTES (INCLUDE PEAKING INFORMATION FOR GRIDDED SYSTEMS HERE)

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____
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____
____

FIGURE 23.3.5.2.1 (a) NFPA 13 Summary Sheet

HYDRAULIC CALCULATIONS
for

PROJECT GENERAL INFORMATION

Project name: ____________________
Location - address: ____________________
Building #: __________ Drawing #: __________ Date: __________
Owner: __________ Occupant: __________
Installing Contractor name: ____________________
Installing Contractor address: ____________________
Name of Eng. technician: __________ Phone #: __________
Approval Agency (AHJ): ____________________

SYSTEM DESIGN REQUIREMENTS

Year/Edition of NFPA 13R or NFPA 13D used: ____________________
Type of System: ____________________
Remote area name or #: ____________________
Occupancy classification or hazard: ____________________
Type of Sprinklers: ____________________
Maximum area per sprinkler: ____________________
EC or special sprinkler requirements: ____________________
Ceiling height if QR reduction used: ____________________
Design Area sq ft or # of sprinklers Required: ____________________
Elevation of highest sprinkler calculated: ____________________
Density: __________ PSI & GPM for Specific Listed: __________
System Demand @ Source: ____________________
Domestic demand: __________ Other: __________
Backflow Type: ____________________
Meter Type: ____________________

WATER SUPPLY INFORMATION

Date of flow test: ____________________
Time of flow test: ____________________
Location of flow test hydrants: ____________________
____
____
Source of flow test information: ____________________
Size of fire pump: ____________________
Size of tank or reservoir: ____________________

NOTES

____
____
____
____
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FIGURE 23.3.5.2.2 (a) NFPA 13R-D Summary Sheet

Public Input No. 195-NFPA 13-2013 [Section No. 23.4.1.2]

Original | Hide Markup

23.4.1.2

Pipe sizes shall be no less than 1 in. (25 mm) nominal for ferrous piping and ¾ in. (20 mm) nominal for copper tubing or nonmetallic piping listed for fire sprinkler service except as permitted by 18 .15.20.4 and 18.15.20.5.

Statement of Problem and Substantiation for Public Input

You are currently permitted to use 1/2 inch and 3/4 inch pipe when revamping systems in accordance with section 8.15.20.4. and 8.15.20.5. The section that limits pipe sizes needs to recognize the revamping rules.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Fri Apr 19 13:31:12 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366392672279.xml

Public Input No. 210-NFPA 13-2013 [New Section after 23.4.1.3]

Velocity Limitations

Unless required by other NFPA standards, the velocity of water flow shall not be limited when hydraulic calculations are performed using the Hazen Williams and/or Darcy Weisbach formulas.

Statement of Problem and Substantiation for Public Input

A great deal of confusion exists among users of the standard where computer hydraulic calculation programs show velocities in piping exceeding 32 fps. This is the result of long since retired rules limiting velocities in overhead and underground piping. Other NFPA standards (NFPA 20; NFPA 15 do have velocity limits)

Submitter Information Verification

Submitter Full Name:	Robert Caputo
Organization:	Fire & Life Safety America
Submittal Date:	Wed Apr 24 00:17:22 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366777042745.xml

Public Input No. 504-NFPA 13-2013 [New Section after 23.4.2]

Add new text:

23.4.2.6 Flow Formula. Flow shall be determined from an orifice on the basis of the following formula:

(See the attached picture file for formula)

where:

K = K-factor

q = flow increment in gpm

P = pressure at the node

23.4.2.7 Pressure Formula. Pressure shall be determined on the basis of the following formula:

(See the attached picture file for formula)

where:

K = K-factor

q = flow increment in gpm

P = pressure at the node

Additional Proposed Changes

	File Name	Description	Approved
Open	Formulas_Twellen.png	These are the formulas to go with the new text.	

Statement of Problem and Substantiation for Public Input

These formulas have to be determined from the formula in 23.4.2.5. This provides the formulas without having to solve for the desired output (pressure or flow).

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Fri May 31 13:40:40 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370022040501.xml

Public Input No. 34-NFPA 13-2013 [Section No. 23.4.2.1.3]

Original | Hide Markup

23.4.2.1.3

For antifreeze systems greater than 40 gal (151 L) in size, the friction loss shall also be calculated using the Darcy–Weisbach formula:

$$\Delta P = 0.000216 f \frac{l \rho Q^2}{d^5}$$

where:

ΔP = friction loss (psi)
f = friction loss factor from Moody diagram
l = length of pipe or tube (ft)
ρ = density of fluid (lb/ft^3)
Q = flow in pipe or tube (gpm)
d = inside diameter of tube (in.)

See uploaded file.

Additional Proposed Changes

File Name	Description	Approved

Open 13_P_29_Rec_from_TIA.pdf Rec text from TIA (balloted)

Statement of Problem and Substantiation for Public Input

Note: This Proposal originates from Tentative Interim Amendment 13-13-1 (TIA 1066) issued by the Standards Council on August 9, 2012.

The information provided in the Fire Protection Research Foundation report "Antifreeze Solutions Supplied through Spray Sprinklers: Interim Report" illustrates that under certain conditions (pressure, fire size, k-factor, ceiling height, deflector design…etc) a 50% glycerine solution is capable of igniting and causing a dramatic increase in heat release rate. As noted in the FPRF report, these results highlight the "complicated interaction between sprinkler spray and the ignition source."As a result of this additional testing, there are more questions that need to be answered, and the testing shows that concentrations of anti-freeze that previous testing indicated were acceptable and would not support combustion actually do with a stronger ignition source. In addition, sprinklers with larger orifices that require lower pressure than typical residential sprinklers and potentially a lager droplet distribution also ignited. It is clear that further testing is need to fully understand under what conditions an anti-freeze solutions are safe, anti-freeze solutions can not be allowed in sprinkler systems.

This TIA calls for the use of Listed Antifreeze Solutions. Using listed antifreeze solutions will ensure that the solution discharged from a sprinkler system will not ignite or cause a dramatic increase in heat release rate of a fire. The process for developing listed products will also allow for a continued improvement in fire and life safety in environments meeting the NFPA Codes and Standards.

This TIA also calls for the continued acceptance of currently listed ESFR Antifreeze Systems. The listing process has already shown that, in some cases, it is possible to use current antifreeze solutions to provide the level of protection prescribed by NFPA 13. For this reason, it is proposed to allow the continued use of propylene-glycol solutions in systems and in protection scenarios that have been thoroughly tested to demonstrate such results. There are ESFR systems currently available that have been specifically tested and listed with a specific model of sprinkler and solution delivery method that provide an appropriate level of protection as to be considered "Early Suppression".

Emergency Nature: The latest testing from The Fire Protection Research Foundation titled Antifreeze Solutions Supplied through Spray Sprinklers Interim Report (dated February 2012) shows that anti-freeze concentrations currently allowed in new NFPA 13 sprinkler systems may support combustion and increase the size of the fire. This is a safety issue that requires changes in the standard.

The following are two items which make this TIA of emergency nature. Only one is required for substantiation of an emergency nature.

(d) The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation During the latest revision cycle the committee evaluated the test data that was present at the time of the cycle. The committee could not anticipate that additional data would change our justifications during the process. The new data demonstrates that variables utilized in the development of the 2013 edition may lead to changes in the fire involvement.

Propylene glycol and glycerin antifreeze solutions discharged from sprinklers have the potential to ignite under certain conditions. Research testing has indicated that several variables may influence the potential for large scale ignition of the antifreeze solution discharged from a sprinkler. These variables include, but are not limited to, the concentration of antifreeze solution, sprinkler discharge characteristics, inlet pressure at the sprinkler, location of fire relative to the sprinkler, and size of fire at the time of sprinkler discharge.

(f) The proposed TIA intends to correct a circumstance in which the revised document has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process, or was without adequate technical (safety) justification for the action. Antifreeze solutions have been subject to recent testing and the new data shows that the installations found within the standard do not account for the complete safety of the occupant. The data appears to provide additional questions and challenges the parameters of installation found in the standard.

The use of propylene glycol and glycerin antifreeze solutions should only be considered when other sprinkler system design alternatives are not available or practical. If these solutions are used, all relevant data and information should be carefully reviewed and considered in the sprinkler system.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu Jan 24 13:27:35 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359052055286.xml

23.4.2.6 Flow Formula. Flow shall be determined from an orifice on the basis of the following formula:

$$q = K\sqrt{P}$$

where:
K = K-factor
q = flow increment in gpm
P = pressure at the node

23.4.2.7 Pressure Formula. Pressure shall be determined on the basis of the following formula:

$$P = \left(\frac{Q}{K}\right)^2$$

where:
K = K-factor
q = flow increment in gpm
P = pressure at the node

Public Input No. 300-NFPA 13-2013 [New Section after 23.4.4.2.2]

23.4.4.2.3 In systems having branch lines with an insufficient number of sprinklers to fulfill the 1.2 requirement, the design area shall be extended to include sprinklers on adjacent branch lines supplied by the same cross main.

Additional Proposed Changes

File Name	Description	Approved
LK_NFPA_13-2013_Proposal_13_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The proposed text was copied from 23.4.4.1.1.3 for application of the density / area method. This requirement should apply to all design methods that call for the 1.2 requirement, such as for CMSA sprinklers.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:43:26 EDT 2013

Origin (from sources other than the submitter)

23.4.4.1.1.3 of NFPA 13-2013.

/TerraView/Content/13-2013.ditamap/2/C1368553406094.xml

Public Input No. 12-NFPA 13-2013 [Section No. 23.4.4.6.2 [Excluding any Sub-Sections]]

Original Hide Markup

Where the design area is equal to or greater than the area in Table 23.4.4.6.2 for the hazard being protected by the sprinkler system, the discharge for sprinklers protecting small rooms ~~such~~ 55 ft^2 (5.1 m²) or less such as closets, washrooms, and ~~similar small compartments~~ similar compartments that are in the design area shall be permitted to be omitted from the hydraulic calculations.

Table 23.4.4.6.2 Minimum Design Area

Occupancy Hazard Classification	Minimum Design Area to Omit Discharge from Sprinklers in Small Rooms in Design Area (ft^2)
Light hazard–wet pipe system	1500
Light hazard–dry pipe system	1950
Ordinary hazard–wet pipe system	1500
Ordinary hazard–dry pipe system	1950
Extra hazard–wet pipe system	2500
Extra hazard–dry pipe system	3250

Statement of Problem and Substantiation for Public Input

Currently there is a definition for "small rooms" which is rooms not exceeding 800 square feet. The size limitation for small rooms in determining whether to omit these sprinklers from the design area needs to be defined. 800 is just too much. The 55 square foot threshold is a SWAG but makes sense as a good starting point. if this size cannot be quantified then the exception should be removed.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinklers
Submittal Date: Tue Jan 15 13:08:43 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358273323359.xml

Public Input No. 196-NFPA 13-2013 [Section No. 23.4.4.6.2 [Excluding any Sub-Sections]]

Original | Hide Markup

Where the design area is equal to or greater than the area in Table 23.4.4.6.2 for the hazard being protected by the sprinkler system, the discharge for sprinklers protecting ~~small rooms such as~~ _ closets, washrooms, and similar small compartments 24 square feet or less in size that are in the design area shall be permitted to be omitted from the hydraulic calculations.

Table 23.4.4.6.2 Minimum Design Area

Occupancy Hazard Classification	Minimum Design Area to Omit Discharge from Sprinklers in Small Rooms in Design Area (ft^2)
Light hazard–wet pipe system	1500
Light hazard–dry pipe system	1950
Ordinary hazard–wet pipe system	1500
Ordinary hazard–dry pipe system	1950
Extra hazard–wet pipe system	2500
Extra hazard–dry pipe system	3250

Statement of Problem and Substantiation for Public Input

To help remove confusion applying the small room requirements. This rule should only be applied to very small rooms. Rooms up to 800 sq ft in area and protected with multiple sprinklers should not be eligible for this rule. At one time, this standard limited the application of this rule to rooms protected by a single sprinkler. That limit was dropped in recent years. Some limit needs to be brought back.

A limitation of a single sprinkler is still not sufficient to keep the rule to very small compartments. A single sprinkler can cover up to 400 sq ft. The 24 sq ft limitation that we have proposed is admittedly arbitrary, but some limit needs to be proposed that is reasonable and measurable, and 24 sq ft meets both of those criteria.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri Apr 19 13:38:30 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366393110851.xml

Public Input No. 496-NFPA 13-2013 [Section No. 23.4.4.6.3 [Excluding any Sub-Sections]]

Original | Hide Markup

The requirements of 23.4.4.6.1.1 to include every sprinkler in the design area shall not apply where ~~spray~~ sprinklers ~~or CMSA sprinklers~~ are provided above and below obstructions such as wide ducts or tables.

Statement of Problem and Substantiation for Public Input

There is no longer any need to address spray sprinklers and CMSA sprinklers separately from ESFR sprinklers. This change also provides guidance on the pipe size for ESFR sprinklers below obstructions.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Fri May 31 11:55:43 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370015743203.xml

Public Input No. 497-NFPA 13-2013 [Section No. 23.4.4.6.4]

Original Hide Markup

~~23.4.4.6.4~~ –

~~The requirements of 23.4.4.6.1.1 to include every sprinkler in the design area shall not apply where ESFR sprinklers are installed above and below obstructions.~~

-

Statement of Problem and Substantiation for Public Input

Since the requirement to include in the hydraulic calculation additional sprinklers below obstructions was deleted for ESFR sprinklers, there is no longer a need to have a separate sentence on ESFR. Additionally there is no guidance on sizing the pipe beneath the obstruction for ESFR sprinklers (fixed by the linked PI)

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 496-NFPA 13-2013 [Section No. 23.4.4.6.3 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Fri May 31 12:01:34 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370016094109.xml

Public Input No. 17-NFPA 13-2013 [Section No. 23.4.4.7.1]

Original Hide Markup

23.4.4.7.1

Pipe friction loss shall be calculated in accordance with the Hazen–Williams formula with C values from Table 23.4.4.7.1, as follows:

(1) Include pipe, fittings, and devices such as valves, meters, flow switches in pipes 2 in. or less in size, and strainers, and calculate elevation changes that affect the sprinkler discharge.

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

(3) Calculate the loss for a tee or a cross 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) Do not include fitting loss for straight-through flow in a tee or cross.

(6) Calculate the loss of reducing elbows based on the equivalent feet value of the smallest outlet.

(7) Use the equivalent feet value for the standard elbow on any abrupt 90-degree turn, such as the screw-type pattern.

(8) Use the equivalent feet value for the long-turn elbow on any sweeping 90-degree turn, such as a flanged, welded, or mechanical joint-elbow type. (See Table 23.4.3.1.1.)

(9) Friction loss shall be excluded for the fitting directly connected to a sprinkler.

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

Table 23.4.4.7.1 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
Galvanized steel (dry systems including preaction)	100
Galvanized steel (wet systems including deluge)	120
Plastic (listed) all	150
Cement-lined cast- or ductile iron	140
Copper tube ~~or~~ , Brass or stainless steel	150
Asbestos cement	140
Concrete	140

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

Statement of Problem and Substantiation for Public Input

Since brass piping was added in the 2013 edition, guidance on the C Factor is needed.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Submittal Date: Tue Jan 15 16:47:36 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358286456003.xml

Public Input No. 177-NFPA 13-2013 [Section No. 23.4.4.7.1]

Original Hide Markup

23.4.4.7.1
Pipe friction loss shall be calculated in accordance with the Hazen–Williams formula with C values from Table 23.4.4.7.1, as follows:

(1) Include pipe, fittings, and devices such as valves, meters, flow switches in pipes 2 in. or less in size, and strainers, and calculate elevation changes that affect the sprinkler discharge.

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

(3) Calculate the loss for a tee or a cross 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) Do not include fitting loss for straight-through flow in a tee or cross.

(6) Calculate the loss of reducing elbows based on the equivalent feet value of the smallest outlet.

(7) Use the equivalent feet value for the standard elbow on any abrupt 90-degree turn, such as the screw-type pattern.

(8) Use the equivalent feet value for the long-turn elbow on any sweeping 90-degree turn, such as a flanged, welded, or mechanical joint-elbow type. (See Table 23.4.3.1.1.)

(9) Friction loss shall be excluded for the fitting directly connected to a sprinkler.

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

In Table 23.4.4.7.1 *Black steel with Supervisory 98%+ Nitrogen (dry systems including preaction) = C Value of 120

*Galvanized steel with Supervisory 98%+ Nitrogen (dry systems including preaction) = C Value of 120)

Table 23.4.4.7.1 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
Galvanized steel (dry systems including preaction)	100
Galvanized steel (wet systems including deluge)	120
Plastic (listed) all	150
Cement-lined cast- or ductile iron	140
Copper tube or stainless steel	150
Asbestos cement	140
Concrete	140

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

Additional Proposed Changes

	File Name	Description	Approved
Open	Table_23.4.4.7.1.pdf	Cover Sheet	
Open	Sprinkler_Age_-_FM_Article_on_Black_Galvanized.pdf	Steel Piping Material Corrosion	
Open	Technical_Report_C2013-0002846.pdf	Paper No. 2846	

Statement of Problem and Substantiation for Public Input

Building materials such as steel continue to increase in cost and in addition LEED (Category - Materials and Recourses) is becoming a key focus. Therefore, minimizing the material utilized for projects needs to be considered. In support of minimizing costs and materials, new data has recently been released which outline the significant impact that Supervisory Nitrogen has in regards to inhibiting corrosion (minimizing obstructers within both Black and Galvanized sprinkler systems). These findings should be heavily considered in the upcoming NFPA 13 Guidelines when considering C Factor values.

Submitter Information Verification

Submitter Full Name: SCOTT BODEMANN
Organization: South-Tek Systems
Submittal Date: Wed Apr 10 13:15:36 EDT 2013

Public Input No. 555-NFPA 13-2013 [Section No. 23.4.4.7.1]

Original | Hide Markup

23.4.4.7.1

Pipe friction loss shall be calculated in accordance with the Hazen–Williams formula with C values from Table 23.4.4.7.1 , as follows:

(1) Include pipe, fittings, and devices such as valves, meters, flow switches in pipes 2 in. or less in size, and strainers, and calculate elevation changes that affect the sprinkler discharge.

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

(3) Calculate the loss for a tee or a cross 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) Do not include fitting loss for straight-through flow in a tee or cross.

(6) Calculate the loss of reducing elbows based on the equivalent feet value of the smallest outlet.

(7) Use the equivalent feet value for the standard elbow on any abrupt 90-degree turn, such as the screw-type pattern.

(8) Use the equivalent feet value for the long-turn elbow on any sweeping 90-degree turn, such as a flanged, welded, or mechanical joint-elbow type. (See Table 23.4.3.1.1 .)

(9) Friction loss shall be excluded for the fitting directly connected to a sprinkler.

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

Table 23.4.4.7.1 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
Galvanized steel (dry systems including preaction)	100
Galvanized steel (wet systems including deluge)	120
Plastic (listed) all	150
Cement-lined cast- or ductile iron	140
Copper tube or stainless steel	150
Asbestos cement	140
Concrete	140

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

*In order to increase the C-Value due to utilizing supervisory Nitrogen, it is required that an off-line alarm be installed to alert the building monitoring system if the Nitrogen supply (provided via Nitrogen cylinders or Nitrogen generator) is bypassed.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Bodemann.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

An off-line alarm will ensure that supervisory Nitrogen is continually being provided to the Fire Protection System. This device can be utilized either with Nitrogen cylinders or with a Nitrogen generator and will provide the peace of mind that corrosion protection is continued.

Submitter Information Verification

Submitter Full Name: SCOTT BODEMANN
Organization: SOUTH TEK SYSTEMS
Submittal Date: Mon Jun 03 10:40:40 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370270440179.xml

Public Input No. 39-NFPA 13-2013 [Section No. 23.5.2.6]

Original | Hide Markup

23.5.2.6*

Where the total number of sprinklers above and below a ceiling exceeds the number specified in Table ~~23~~ 22 .5.2.~~2.1~~ 4 _ for 2 ½ in. (64 mm) pipe, the pipe supplying such sprinklers shall be increased to 3 in. (76 mm) and sized thereafter according to the schedule shown in Table ~~23~~ 22 .5.2.2.1 for the number of sprinklers above or below a ceiling, whichever is larger.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Maryia.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

None given.

Submitter Information Verification

Submitter Full Name: Maryia Fahs-Shypulia
Organization: MZ&Partners WLL
Submittal Date: Fri Jan 25 09:27:12 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359124032132.xml

Public Input No. 40-NFPA 13-2013 [Section No. 23.5.3.9]

Original | Hide Markup

23.5.3.9*

Where the total number of sprinklers above and below a ceiling exceeds the number specified in Table ~~23~~ 22 .5.3.7 for 3 in. (76 mm) pipe, the pipe supplying such sprinklers shall be increased to 3 ½ in. (89 mm) and sized thereafter according to the schedule shown in Table ~~23~~ 22 .5.~~2~~ 3 .~~2.1~~ 5 _ or Table ~~23~~ 22 .5.3.4 for the number of sprinklers above or below a ceiling, whichever is larger.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Maryia.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

None given.

Submitter Information Verification

Submitter Full Name: Maryia Fahs-Shypulia
Organization: MZ&Partners WLL
Submittal Date: Fri Jan 25 09:29:07 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359124147486.xml

Public Input No. 479-NFPA 13-2013 [New Section after 24.1]

24.1.5*(New) Electrical Conductivity.

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPA_13_public_input_Ch24-4.docx	Water conductivity	

Statement of Problem and Substantiation for Public Input

See attached document

Submitter Information Verification

Submitter Full Name: George Laverick
Organization: UL LLC
Affilliation: None
Submittal Date: Thu May 30 15:22:11 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369941731312.xml

Public Input No. 301-NFPA 13-2013 [Section No. 24.1.6.1.2]

Original Hide Markup

24.1.6.1.2
~~The~~ Where required due to specific environmental conditions, the transition piece shall be protected against possible damage from corrosive agents, solvent attack, or mechanical damage.

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_14_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

During the previous revision cycle, the intent of Proposal 13-86 and Comment 13-79 was to clarify that it was acceptable to bring underground pipe into the building to specifically allow the transition above the floor, without having to make any special provisions.
This clarification was lost however, when the TC amended the text that was offered, to address all piping and added the reference to 24.1.6.1.2. As written, the text now seems to suggest that spigot pieces always need to be protected from corrosion and mechanical damage. These changes are offered to provide the clarification as it was originally intended.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:45:06 EDT 2013

Origin (from sources other than the submitter)

Proposal 13-86 and Comment 13-79 from the previous revision cycle.

/TerraView/Content/13-2013.ditamap/2/C1368553506260.xml

24.1.5*(New) Electrical Conductivity.

24.1.5.1 Sea water supplies shall not be used in systems where the water is intended to be discharged in areas containing electrically energized equipment and where there is a risk of electric shock to humans due to the water wetting of appliances and equipment, or water pooling in the area of electrically energized equipment, unless approved.

A.24.1.5 (New) Sea water, commonly known to be electrically conductive and in the range of approximately 50,000 uS/cm, and other electrically conductivity solutions in that same range or higher, have been shown to present an increased risk of an electrical shock hazard to humans when discharged onto an area where electrically energized appliances or equipment is being used. The hazard increases significantly when the appliances or equipment are wetted by the sprinkler discharge or the discharge water is pooled in the vicinity of the energized equipment. Some electrical equipment may not be susceptible to the risk of an electric shock hazard~~s~~ under certain conditions when wetted and should be considered by the AHJ.

26.2 (New)   Sea water shall not be used in systems where the water is intended to be discharged in areas containing electrically energized equipment and where the risk of an electric-shock hazard to humans exists due to the water wetting or pooling in the vicinity of electrical appliances and equipment unless approved.

Substantiation:

Testing was conducted as a part of a Research Investigation to assess and compare the electrical shock hazards that could be posed by sprinkler discharge of tap water, stagnant water contained within existing sprinkler systems and sea water. This study was undertaken based on the following considerations: (1) kitchen fires account for 42% of reported fires,   (2) the prevalence of electrically energized, readily accessible appliances including higher voltage electric ranges/cooktops, (3) the availability of ground-fault protected and unprotected circuits and (4) the ability of discharged sprinkler fluid to pool on horizontal surfaces such as floors, counters, and ranges/cooktops that are electrically energized or near electrically energized appliances.

The attached Test Summary indicates an increased potential for electrical shock hazards to humans due to the wetting of appliances and equipment or pooling in the area of electrically energized equipment when using sea water as compared to city or sprinkler water.

Public Input No. 231-NFPA 13-2013 [Section No. 24.2.2.2]

Original Hide Markup

24.2.2.2*

The volume and pressure of a public water supply shall be determined from waterflow test data or other approved method. Such waterflow test data must be adjusted to account for low and high pressure fluctuations, as identified by the waterworks authority.

Statement of Problem and Substantiation for Public Input

Moving the requirement to account for pressure fluctuations into the Appendix in the 2010 edition of the standard removes a great deal of the authority of local enforcers to require that fire hydrant flow test data be adjusted to account for such pressure fluctuation. As an enforcer, I have already encountered this argument. As such, I am also pursuing a proposal to modify the 2015 IFC in this same regard because of how critical this issue is to the fire protection design. The North Central Texas Council of Governments recommends amendments to the I-codes in the DFW Metroplex region, and currently, one of those is to properly adjust waterflow test data to account for such fluctuation. Most of our water supply systems fluctuate significantly throughout the day as well as seasonally by as much as 40 to 50 psi in some areas. The result can be a very inadequate fire sprinkler design, or potentially a system that fluctuates over the 100 psi mark necessitating surge clips and hanger changes, or if provided with a fire pump, a system that fluctuates over 175 psi. This is a critical issue that was located in the body of the standard for many years, and in my opinion, adequate substantiation was not provided to move it to the Appendix, which again, in most jurisdictions, is not enforceable. This is not an advisory statement or commentary - it must be a requirement for adequate fire protection design.

Submitter Information Verification

Submitter Full Name: Bob Morgan
Organization: Fort Worth Fire Department
Affilliation: Fire Advisory Board to the North Central Texas Council of Governments
Submittal Date: Fri Apr 26 21:29:14 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367026154895.xml

Public Input No. 18-NFPA 13-2013 [Section No. 25.2.1.1]

Original Hide Markup

25.2.1.1

Unless permitted by 25.2.1.2 through 25.2.1.8, all piping and attached appurtenances subjected to system working pressure shall be hydrostatically tested at a minimum of 200 psi (13.8 bar) and shall maintain that pressure ~~without loss~~ at ±5 psi (0.35 bar) for 2 hours.

25.2.1.1.1

The test pressure shall never drop below 200 psi (13.8 bar).

Statement of Problem and Substantiation for Public Input

Overhead sprinkler systems are subject to pressure fluctuations due to temperature. This change correlates to NFPA 24. A section was added to clarify that the test pressure should never drop below 200 psi.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Wed Jan 16 13:14:33 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358360073923.xml

Public Input No. 247-NFPA 13-2013 [Section No. 25.2.1.4]

Original Hide Markup

25.2.1.4
Modifications ~~affecting 20 or fewer sprinklers~~ to existing piping systems shall not require testing in excess of system working pressure.

Statement of Problem and Substantiation for Public Input

There is a great deal of confusion related the requirements for hydrostatic testing where systems are modified.

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Fri May 03 12:03:30 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367597010810.xml

Public Input No. 248-NFPA 13-2013 [Section No. 25.2.1.5]

Original Hide Markup

25.2.1.5
Where ~~addition or modification is made~~ additions are made to an existing system - ~~affecting more than 20 sprinklers~~ , the new portion shall be isolated and tested at not less than 200 psi (13.8 bar) for 2 hours.

Statement of Problem and Substantiation for Public Input

Clarifies that additions to existings systems require hydrostatic testing

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 247-NFPA 13-2013 [Section No. 25.2.1.4]	Hydrostatic testing requirement

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Fri May 03 12:10:37 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367597437758.xml

Public Input No. 198-NFPA 13-2013 [Section No. 25.2.1.6]

Original | Hide Markup

25.2.1.6

Modifications effecting more then 20 sprinklers that cannot be isolated, such as relocated drops, shall not require testing in excess of system working pressure.

Statement of Problem and Substantiation for Public Input

To compliment the wording of previous section 25.2.1.5

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Fri Apr 19 13:50:05 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366393805538.xml

Public Input No. 249-NFPA 13-2013 [Section No. 25.2.1.6]

Original | Hide Markup

A. 25.2.1. ~~6~~ 4

Modifications that cannot be isolated, such as added or relocated drops ~~, shall not~~ for tenant improvements to an existing system should not require testing in excess of system working pressure.

Statement of Problem and Substantiation for Public Input

Provides support and clarification to requirements for hydrostatic testing

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 247-NFPA 13-2013 [Section No. 25.2.1.4]	hydroststic testing
Open	Public Input No. 248-NFPA 13-2013 [Section No. 25.2.1.5]	hydrostatic testing

Submitter Information Verification

Submitter Full Name:	Robert Caputo
Organization:	Fire & Life Safety America
Submittal Date:	Fri May 03 12:13:35 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367597615908.xml

Public Input No. 230-NFPA 13-2013 [New Section after 25.2.1.11]

A.25.2.1.11

When a hydrostatic test is performed with plugs installed in lieu of pendednt or sidewall sprinklers, a second hydrostatic test should not be required after piping is re-cut to fit the pendent or sidewall sprinklers to the finished ceiling or wall.

Statement of Problem and Substantiation for Public Input

Adding this annex material will clarify the committee's intent as it relates to hydrostatic tests with plugs in lieu of sprinklers. Many AHJ's require sprinklers to be in place during the hydroststic test, which would result in having to replace the sprinklers when the pendent drop piping is removed and cut to the finished ceiling.

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Fri Apr 26 10:36:55 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366987015903.xml

Public Input No. 485-NFPA 13-2013 [New Section after 25.2.2]

Add new text:

25.2.2.3 Modifications affecting 20 or fewer sprinklers shall not require testing in excess of system working air pressure and shall not require a hydrostatic test.

25.2.2.4 Where addition or modification is made to an existing system affecting more than 20 sprinklers, the new portion shall be isolated and tested.

25.2.2.5 Modifications that cannot be isolated, such as relocated drops, shall not require testing in excess of system working air pressure.

Statement of Problem and Substantiation for Public Input

New systems installed do not generally have a problem with the air or gas leakage tests. An issue with leakage occurs when an existing dry pipe or preaction system is modified where the installing contractor of the modified portion of the system is now responsible for repairing air or gas leaks in the system where modifications were not made. The piping at times is located in concealed spaces that are not accessible. Contractors cannot get their piping modifications accepted since the existing system cannot pass the NFPA 13 air or gas leakage test.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Submittal Date: Thu May 30 16:14:00 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369944840705.xml

Public Input No. 360-NFPA 13-2013 [New Section after 25.2.3.2.1]

25.2.3.2.2

Where a quick opening device is present, the trip test described in 25.2.3.2.1 shall be sufficient to test the quick opening device as long as the device trips properly during the test.

Statement of Problem and Substantiation for Public Input

This is a continuation of the change proposed for 25.2.3.2.1. As long as the QOD trips properly during the full flow trip test, there should be no need to separately trip the QOD.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Wed May 22 17:38:33 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369258713612.xml

Public Input No. 199-NFPA 13-2013 [Section No. 25.2.3.2.1]

Original Hide Markup

25.2.3.2.1

A working test of the dry pipe valve ~~alone and with a quick-opening device, if installed,~~ shall be made by opening the inspector's test connection.

Statement of Problem and Substantiation for Public Input

The inclusion of the word "alone" has been leading AHJ's to require the dry-pipe valve to be trip tested without the QOD and their pass/fail criteria of water delivery time was not being modified. A dry-pipe valve with a QOD cannot generally pass this test. By separating the requirement for the quick opening device to be tested, we hope that this clarifies that the test for both devices can be performed at the same time.

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Fri Apr 19 13:53:52 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366394032691.xml

Public Input No. 207-NFPA 13-2013 [Section No. 25.2.3.2.3]

Original Hide Markup

25.2.3.2.3
The results shall be recorded using the contractor's material and test certificate for aboveground piping (see Figure 25.1) and the General Information Sign (see Figure A . 25.6)

Statement of Problem and Substantiation for Public Input

Original test results should be posted on the General Information Placard for comparison to future trip test result comparison.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 211-NFPA 13-2013 [Section No. 25.6.2]	adds data to General Info Sign

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Tue Apr 23 23:51:10 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366775470025.xml

Public Input No. 208-NFPA 13-2013 [Section No. 25.2.3.4.2]

Original Hide Markup

25.2.3.4.2 *
The static and residual pressures shall be recorded on the contractor's material and test certificate (see Figure 25.1) and the Sprinkler System General Information Placard (See Figure A . 25.6) .

Statement of Problem and Substantiation for Public Input

Main Drain Test results are required to be recorded on the General Information Sign. The charging paragraph should indicate this requirement in support of the required data.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 211-NFPA 13-2013 [Section No. 25.6.2]	

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Tue Apr 23 23:57:04 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366775824980.xml

Public Input No. 6-NFPA 13-2013 [New Section after 25.5]

25.6 Pipe Schedule Sign

25.6.1 Where system design approach utilizes the pipe schedule method, a permanently marked metal or rigid information sign shall be placed at the system riser supplying the pipe scheduled area.

25.6.1.1 The sign shall indicate the following information:

(1) Location of the pipe scheduled design area

(2) The occupancy classification

(3) The name of the installing contractor or person providing the information

A.25.6 Sample Pipe Schedule Sign

(sample sign is in the attachment)

Additional Proposed Changes

	File Name	Description	Approved
Open	Capture.JPG	Pipe Schedule sign	

Statement of Problem and Substantiation for Public Input

The installation standard needs to have a requirement for a pipe schedule sign. This will correlate with NFPA 25.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Sat Jan 12 21:46:40 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358045200238.xml

Pipe Schedule System

System location ______________________________

Occupancy classification ______________________

Name of installing contractor or individual providing the data:

____

Public Input No. 484-NFPA 13-2013 [Section No. 25.5.2]

Original | Hide Markup

25.5.2
The sign shall include the following information:

(1) Location of the design area or areas

(2) Discharge densities over the design area or areas

(3) Required flow and residual pressure demand at the base of the riser

(4) Occupancy classification or commodity classification and maximum permitted storage height and configuration

(5) Hose stream allowance included in addition to the sprinkler demand

(6) The name of the installing contractor

(7) Required flow and residual pressure demand at the water supply

(8) Required flow and residual pressure demand at the discharge of the fire pump where a pump is installed

(9) Type ot Types and number of sprinklers or nozzles installed including the orifice size, temperature rating, orientation, K-factor, sprinkler identification number (SIN) for sprinkler heads, when applicable, and response type.

(10) The minimum discharge flow rate and pressure required from the hydraulically most demanding sprinkler

(11) The required pressure settings for pressure reducing valves if applicable

(12) For deludge sprinkler systems, the required flow and pressure at the hydraulically most demanding sprinkler nozzle.

(13) The protection area per sprinkler based on the hydraulic calculations

(14) The edition of NFPA 13 or other NFPA standard to which the system was designed and installed.

Statement of Problem and Substantiation for Public Input

When working on an existing building for inspection, tenant improvement or retrofit work the original plans, hydraulic calculations and design parameters may not be known or available. Having this important hydraulic design information included on the sign which should be permanently attached to the riser will preserve this information for future use even if the original plans and hydraulic calculations are lost or unavailable.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH
Organization: VFS FIRE AND SECURITY
Submittal Date: Thu May 30 16:09:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369944588241.xml

Public Input No. 211-NFPA 13-2013 [Section No. 25.6.2]

Original Hide Markup

25.6.2
The sign shall include the following information:

(1) Name and location of the facility protected
(2) Occupancy classification
(3) Commodity classification
(4) Presence of high-piled and/or rack storage
(5) Maximum height of storage planned
(6) Aisle width planned
(7) Encapsulation of pallet loads
(8) Presence of solid shelving
(9) Flow test data
(10) Presence of flammable/combustible liquids
(11) Presence of hazardous materials
(12) Presence of other special storage
(13) Location of auxiliary drains and low point drains on dry pipe and preaction systems
(14) Original results of main drain flow test
(15) Name of installing contractor or designer
(16) Indication of presence and location of antifreeze or other auxiliary systems
(17) Where injection systems are installed to treat MIC or corrosion, the type of chemical, concentration of the chemical, and where information can be found as to the proper disposal of the chemical

18. Original results of Dry Pipe and Double Interlock Pre-Action Valve test results. (insert as item 15 and renumber remaining items - revise Figure A.25.6 accordingly)

Statement of Problem and Substantiation for Public Input

Original trip test data is needed for comparison to future trip tests as required by NFPA 25

Submitter Information Verification

Submitter Full Name: Robert Caputo
Organization: Fire & Life Safety America
Submittal Date: Wed Apr 24 00:28:42 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366777722442.xml

Public Input No. 480-NFPA 13-2013 [New Section after 26.1]

26.2 (New) Sea water shall not be used in systems where the water is intended to be discharged in areas containing electrically energized equipment and where the risk of an electric shock hazard to humans exists due to the water wetting or pooling in the vicinity of electrical appliances and equipment unless approved.

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPA_13_public_input_Ch24-4.docx	Water coductivity	

Statement of Problem and Substantiation for Public Input

See attached document

Submitter Information Verification

Submitter Full Name: George Laverick
Organization: UL LLC
Affilliation: None
Submittal Date: Thu May 30 15:28:14 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369942094326.xml

Public Input No. 201-NFPA 13-2013 [Section No. A.3.7.2]

Original Hide Markup

A.3.7.2 Unobstructed Construction.

The following examples of unobstructed construction are provided to assist the user in determining the type of construction feature:

(1) Bar Joist Construction. The term bar joist construction refers to construction employing joists consisting of steel truss-shaped members. Wood truss-shaped members, which consist of wood top and bottom chord members with steel tube or bar webs, are also defined as bar joists. Bar joists include noncombustible or combustible roof or floor decks on bar joist construction with top and bottom chord members not exceeding 4 in. (102 mm) in depth. [See Figure A.3.7.2(a) and Figure A.3.7.2(b) for examples of bar joist construction.]

(2) Open-Grid Ceilings. The term open-grid ceilings as used in this standard refers to ceilings in which the openings are ¼ in. (6.4 mm) or larger in the least dimension, the thickness of the ceiling material does not exceed the least dimension of the openings, and the openings constitute at least 70 percent of the ceiling area.

(3) Smooth Ceiling Construction. The term smooth ceiling construction as used in this standard includes the following:

(a) ~~Flat slab, pan-type reinforced concrete~~

(b) Continuous smooth bays formed by wood, concrete, or steel beams spaced more than 7 ½ ft (2.3 m) on centers — beams supported by columns, girders, or trusses

(c) Smooth roof or floor decks supported directly on girders or trusses spaced more than 7 ½ ft (2.3 m) on center

(d) Smooth monolithic ceilings of at least ¾ in. (19 mm) of plaster on metal lath or a combination of materials of equivalent fire-resistive rating attached to the underside of wood joists, wood trusses, and bar joists

(e) Open-web-type steel beams, regardless of spacing

(f) Smooth shell-type roofs, such as folded plates, hyperbolic paraboloids, saddles, domes, and long barrel shells

(g) Suspended ceilings of combustible or noncombustible construction

(h) Smooth monolithic ceilings with fire resistance less than that specified under item (d) and attached to the underside of wood joists, wood trusses, and bar joists

Combustible or noncombustible floor decks are permitted in the construction specified in A.3.7.2 (3)(b) through (f). Item (b) would include standard mill construction.

(4) Standard Mill Construction. The term standard mill construction as used in this standard refers to heavy timber construction as defined in NFPA 220.

(5) Truss Construction (Wood or Steel). The term truss construction refers to parallel or pitched chord members connected by open web members supporting a roof or floor deck with top and bottom members not exceeding 4 in. (102 mm) in depth. [See Figure A.3.7.2(c).]

Figure A.3.7.2(a) Wood Bar Joist Construction.

Public Input No. 480-NFPA 13-2013 [New Section after 26.1]

26.2 (New) Sea water shall not be used in systems where the water is intended to be discharged in areas containing electrically energized equipment and where the risk of an electric shock hazard to humans exists due to the water wetting or pooling in the vicinity of electrical appliances and equipment unless approved.

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPA_13_public_input_Ch24-4.docx	Water coductivity	

Statement of Problem and Substantiation for Public Input

See attached document

Submitter Information Verification

Submitter Full Name: George Laverick
Organization: UL LLC
Affilliation: None
Submittal Date: Thu May 30 15:28:14 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369942094326.xml

Public Input No. 201-NFPA 13-2013 [Section No. A.3.7.2]

Original Hide Markup

A.3.7.2 Unobstructed Construction.
The following examples of unobstructed construction are provided to assist the user in determining the type of construction feature:

(1) Bar Joist Construction. The term bar joist construction refers to construction employing joists consisting of steel truss-shaped members. Wood truss-shaped members, which consist of wood top and bottom chord members with steel tube or bar webs, are also defined as bar joists. Bar joists include noncombustible or combustible roof or floor decks on bar joist construction with top and bottom chord members not exceeding 4 in. (102 mm) in depth. [See Figure A.3.7.2(a) and Figure A.3.7.2(b) for examples of bar joist construction.]

(2) Open-Grid Ceilings. The term open-grid ceilings as used in this standard refers to ceilings in which the openings are ¼ in. (6.4 mm) or larger in the least dimension, the thickness of the ceiling material does not exceed the least dimension of the openings, and the openings constitute at least 70 percent of the ceiling area.

(3) Smooth Ceiling Construction. The term smooth ceiling construction as used in this standard includes the following:

(a) ~~Flat slab, pan-type reinforced concrete~~

(b) Continuous smooth bays formed by wood, concrete, or steel beams spaced more than 7 ½ ft (2.3 m) on centers — beams supported by columns, girders, or trusses

(c) Smooth roof or floor decks supported directly on girders or trusses spaced more than 7 ½ ft (2.3 m) on center

(d) Smooth monolithic ceilings of at least ¾ in. (19 mm) of plaster on metal lath or a combination of materials of equivalent fire-resistive rating attached to the underside of wood joists, wood trusses, and bar joists

(e) Open-web-type steel beams, regardless of spacing

(f) Smooth shell-type roofs, such as folded plates, hyperbolic paraboloids, saddles, domes, and long barrel shells

(g) Suspended ceilings of combustible or noncombustible construction

(h) Smooth monolithic ceilings with fire resistance less than that specified under item (d) and attached to the underside of wood joists, wood trusses, and bar joists

Combustible or noncombustible floor decks are permitted in the construction specified in A.3.7.2 (3)(b) through (f). Item (b) would include standard mill construction.

(4) Standard Mill Construction. The term standard mill construction as used in this standard refers to heavy timber construction as defined in NFPA 220.

(5) Truss Construction (Wood or Steel). The term truss construction refers to parallel or pitched chord members connected by open web members supporting a roof or floor deck with top and bottom members not exceeding 4 in. (102 mm) in depth. [See Figure A.3.7.2(c).]

Figure A.3.7.2(a) Wood Bar Joist Construction.

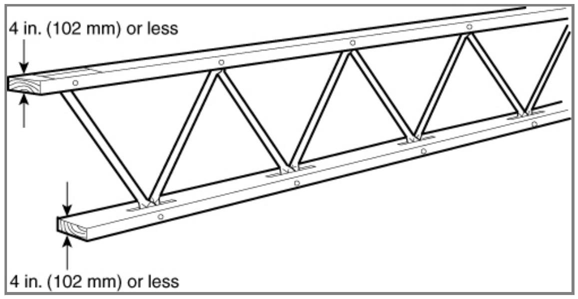


Figure A.3.7.2(b) Open-Web Bar Joist Construction.

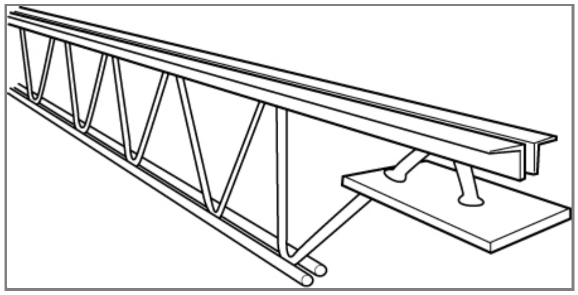
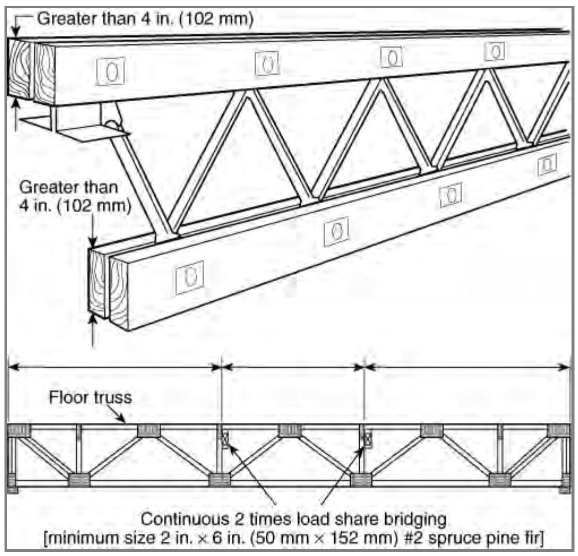


Figure A.3.7.2(c) Examples of Wood Truss Construction.



Statement of Problem and Substantiation for Public Input

Pan type ceilings are not necessarily smooth. It all depends on what the sprinkler is covering. If the sprinkler is only covering the area under one pan, it is within a smooth ceiling space similar to a compartment. But if the sprinkler is expected to cover floor area under more than one pan, the vertical protrutions that are a part of the pan construction form obstructive barriers to heat and water flow, which make the construction "obstructed".

Submitter Information Verification

Submitter Full Name:	Roland Asp
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA E&S Committee
Submittal Date:	Fri Apr 19 14:04:02 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366394642192.xml

24.1.5*(New) Electrical Conductivity.

24.1.5.1 Sea water supplies shall not be used in systems where the water is intended to be discharged in areas containing electrically energized equipment and where there is a risk of electric shock to humans due to the water wetting of appliances and equipment, or water pooling in the area of electrically energized equipment, unless approved.

A.24.1.5 (New) Sea water, commonly known to be electrically conductive and in the range of approximately 50,000 uS/cm, and other electrically conductivity solutions in that same range or higher, have been shown to present an increased risk of an electrical shock hazard to humans when discharged onto an area where electrically energized appliances or equipment is being used. The hazard increases significantly when the appliances or equipment are wetted by the sprinkler discharge or the discharge water is pooled in the vicinity of the energized equipment. Some electrical equipment may not be susceptible to the risk of an electric shock hazard~~s~~ under certain conditions when wetted and should be considered by the AHJ.

26.2 (New) Sea water shall not be used in systems where the water is intended to be discharged in areas containing electrically energized equipment and where the risk of an electric-shock hazard to humans exists due to the water wetting or pooling in the vicinity of electrical appliances and equipment unless approved.

Substantiation:

Testing was conducted as a part of a Research Investigation to assess and compare the electrical shock hazards that could be posed by sprinkler discharge of tap water, stagnant water contained within existing sprinkler systems and sea water. This study was undertaken based on the following considerations: (1) kitchen fires account for 42% of reported fires, (2) the prevalence of electrically energized, readily accessible appliances including higher voltage electric ranges/cooktops, (3) the availability of ground-fault protected and unprotected circuits and (4) the ability of discharged sprinkler fluid to pool on horizontal surfaces such as floors, counters, and ranges/cooktops that are electrically energized or near electrically energized appliances.

The attached Test Summary indicates an increased potential for electrical shock hazards to humans due to the wetting of appliances and equipment or pooling in the area of electrically energized equipment when using sea water as compared to city or sprinkler water.

Public Input No. 73-NFPA 13-2013 [Section No. A.3.9.1.1]

Original | Hide Markup

~~A.3.9.1.1 Available Height for Storage.~~

~~For new sprinkler installations, the maximu... ...ight of storage is the height at which commodities can be stored above the floor where the minimum required unobstructed space below sprinklers is maintained. For the evaluation of existing situations, the maximum height of storage is the maximum existing height if space between the sprinklers and storage is equal to or greater than required.~~

Statement of Problem and Substantiation for Public Input

This material is redundant and is discussed in A.4.3. Since this is guidance for design professionals to consider future flexibility, it is reasonable to assume that they know it is possible for future use to be higher than possible initial use and that the minimum clearance below sprinklers must be maintained, so no value is provided by this definition.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Tue Feb 26 17:35:01 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361918101185.xml

Public Input No. 313-NFPA 13-2013 [New Section after A.3.9.3.7]

TITLE OF NEW CONTENT

Type your content here ...A.3.9.3.8 One of the most significant changes to rack storage in the 2010 edition was the new defintion for solid shelving. The placement of loads on the shelf now affects the calculated area of the shelf. Previous editions only dealt with the shelf material alone and did not consider the loads on the shelf. With this definition, shelving material that had been classified as open, such as wire grate, which is more than 50 percent open, could be calculated as solid shelf if the loads on the shelf cover the required flue spaces to separate shelf area calculations. A storage arrangement could be classified as solid shelving even if there is no shelving material provided. Cantilever shelving with wide loads could be classified as solid shelving and require additional protection

The intent was to have flues surrounding the load or shelf material that will not block more than 20 ft ^{2} (1.9 m ^{2}) in area. Even though the shelf material (if any) is considered open, the distribution is blocked if the area of load or shelf is greater than 20 ft ^{2} (1.9 m ^{2}) in area and solid shelf rack rules would apply.

Statement of Problem and Substantiation for Public Input

The committee's intent regarding solid shelving is not understood by many. The inserted section is taken straight from the Sprinkler Handbook and clearly states that it is the load that defines solid shelving and not the shelving material itself. Two pallets back to back without a loingitudinal flue constitutes solid shelving and requries protection if greater than 20 square feet. Cantilever shelving supporting 4 foot by 8 foo sheets of drywall is solid shelving and requires additional protection because the area exceeds 20 square feet. Yet when the official does his inspection and sees cantilever shelving open to the sky he does not address what the load is but rather assumes this constitues open shelving. I would prefer something in the body of the standard to clearly explain this but cannot figure where it belongs.

Submitter Information Verification

Submitter Full Name: GERALD SCHULTZ
Organization: FPI CONSORTIUM
Submittal Date: Mon May 20 12:04:15 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369065855474.xml

Public Input No. 312-NFPA 13-2013 [Section No. A.3.9.3.7]

Original Hide Markup

A.3.9.3.7 Rack.
Shelving in some rack structures use shelves that can be solid, slatted, or open. Racks can be fixed, portable, or movable. Loading can be either manual, using lift trucks, stacker cranes, or hand placement, or automatic, using machine-controlled storage and retrieval systems.

Rack storage as referred to in this standard contemplates commodities in a rack structure, usually steel. Many variations of dimensions are found. Racks can be single-, double-, or multiple-row, with or without solid shelving. The standard commodity used in most of the tests was 42 in. (1.07 m) on a side. The types of racks covered in this standard are as follows:

(1) Double-Row Racks. Pallets rest on two beams parallel to the aisle. Any number of pallets can be supported by one pair of beams. [See Figure A.3.9.3.7(a) through Figure A.3.9.3.7(d).]

(2) Automatic Storage-Type Rack. The pallet is supported by two rails running perpendicular to the aisle. [See Figure A.3.9.3.7(e).]

(3) Multiple-Row Racks More Than Two Pallets Deep, Measured Aisle to Aisle. These racks include drive-in racks, drive-through racks, flow-through racks, portable racks arranged in the same manner, and conventional or automatic racks with aisles less than 42 in. (1.07 m) wide. [See Figure A.3.9.3.7(f) through Figure A.3.9.3.7(i).]

(4) Movable Racks. Movable racks are racks on fixed rails or guides. They can be moved back and forth only in a horizontal, two-dimensional plane. A moving aisle is created as abutting racks are either loaded or unloaded, then moved across the aisle to abut other racks. [See Figure A.3.9.3.7(k).]

(5) ~~Solid Shelving . Conventional pallet racks with plywood shelves on the shelf beams [see Figure A.3.9.3.7(c) and Figure A.3.9.3.7(d)] . These racks are used in special cases. (See Chapter 12 .)~~

(6)

(7) Cantilever Rack. The load is supported on arms that extend horizontally from columns. The load can rest on the arms or on shelves supported by the arms. [See Figure A.3.9.3.7(j).]

Load depth in conventional or automatic racks should be considered a nominal 4 ft (1.22 m). [See Figure A.3.9.3.7(b).]

When catwalks are installed between racks, these areas are not to be considered flue spaces.

Figure A.3.9.3.7(a) Conventional Pallet Rack.

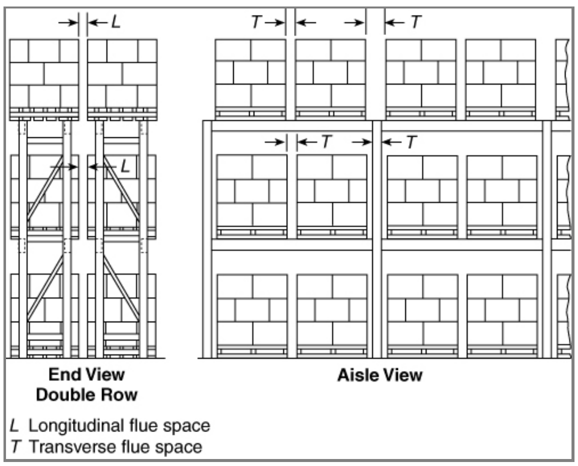


Figure A.3.9.3.7(b) Double-Row Racks Without Solid or Slatted Shelves.

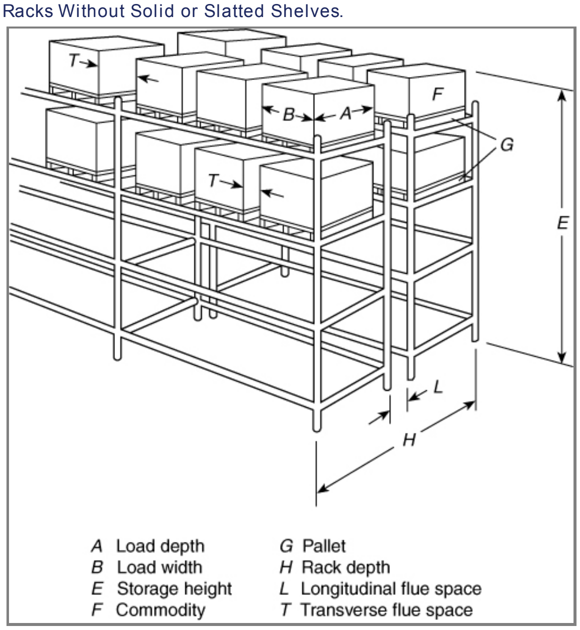


Figure A.3.9.3.7(c) Double-Row Racks with Solid Shelves.

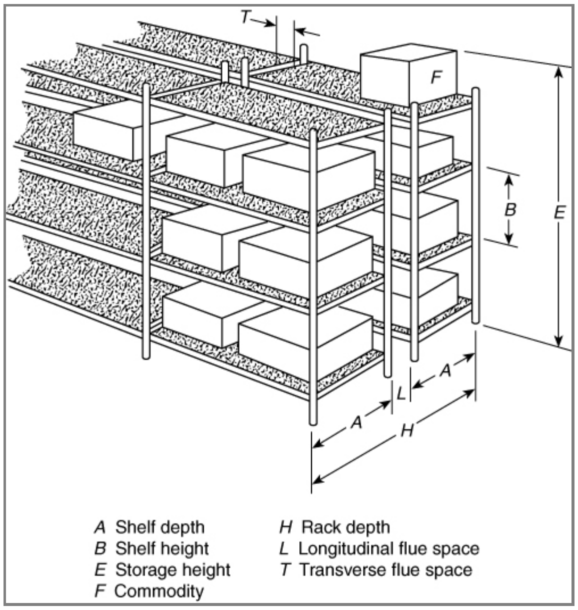


Figure A.3.9.3.7(d) Double-Row Racks with Slatted Shelves.

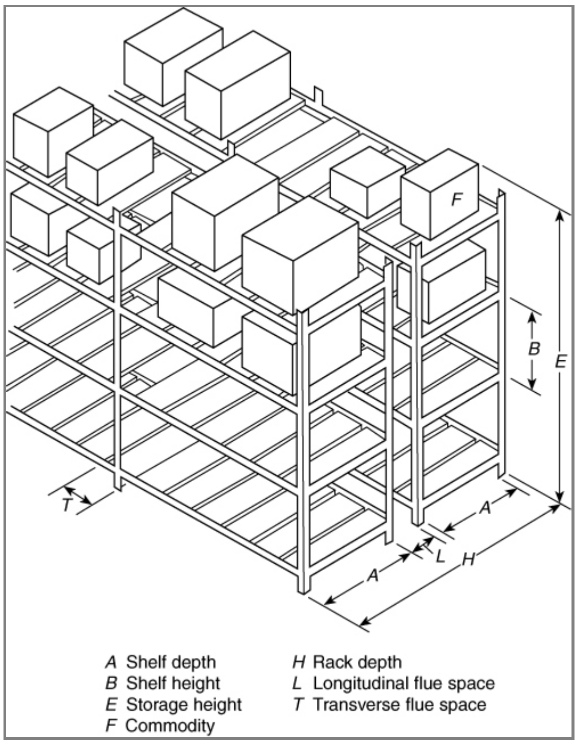


Figure A.3.9.3.7(e) Automatic Storage-Type Rack.

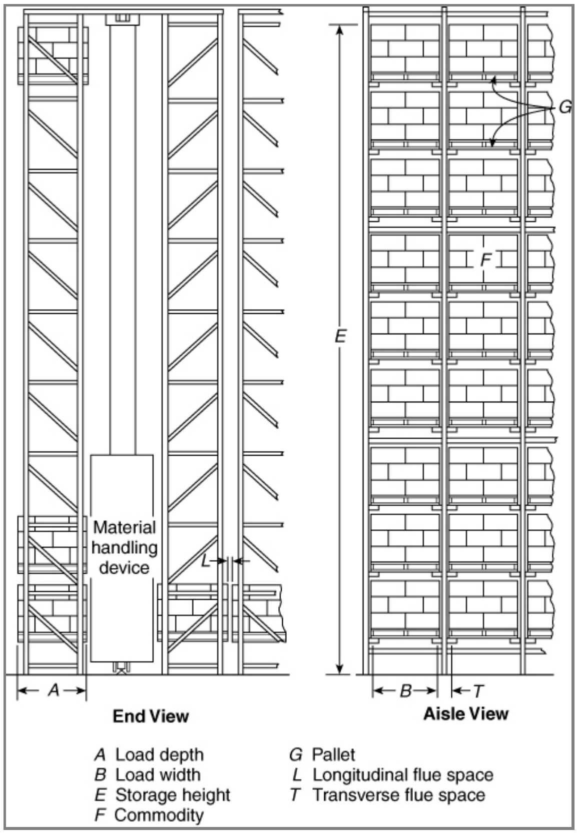


Figure A.3.9.3.7(f) Multiple-Row Rack Served by Reach Truck.

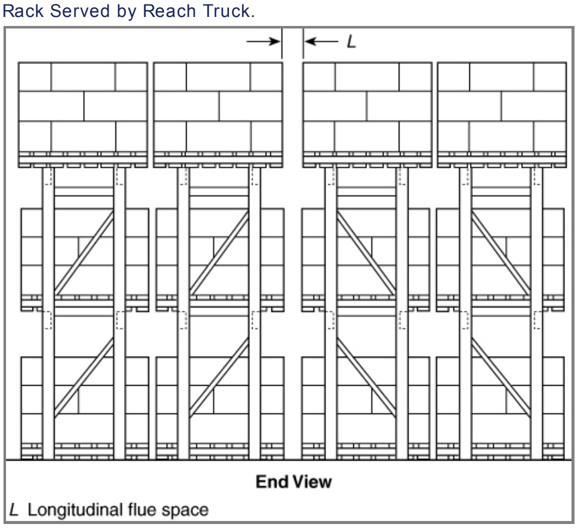


Figure A.3.9.3.7(g) Flow-Through Pallet Rack.

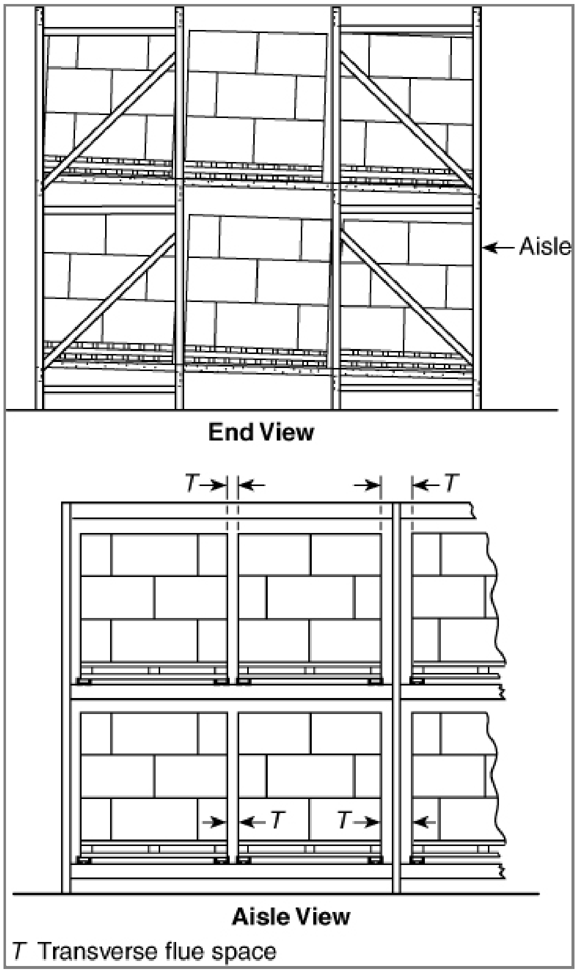


Figure A.3.9.3.7(h) Drive-In Rack — Two or More Pallets Deep (Fork Truck Drives into Rack to Deposit and Withdraw Loads in Depth of Rack).

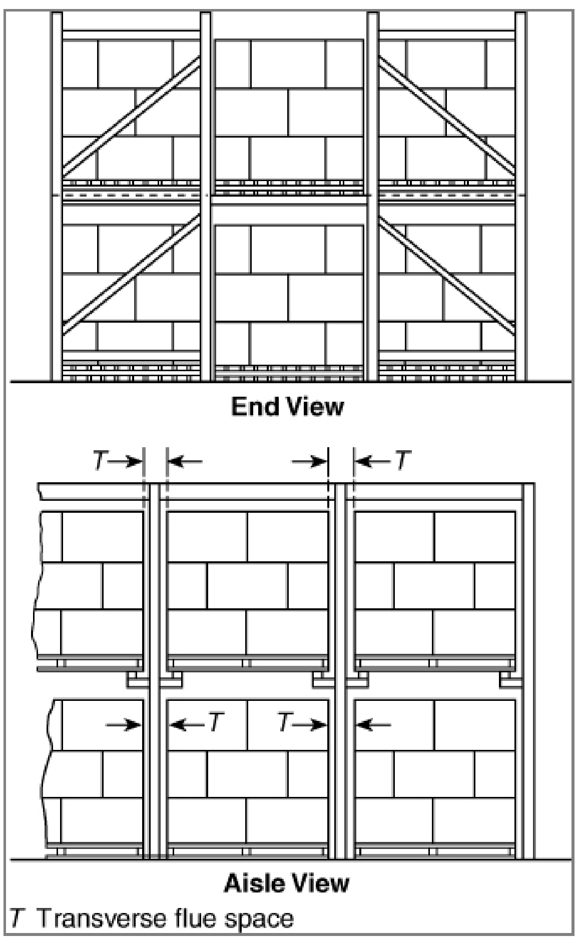


Figure A.3.9.3.7(i) Flow-Through Racks (Top) and Portable Racks (Bottom).

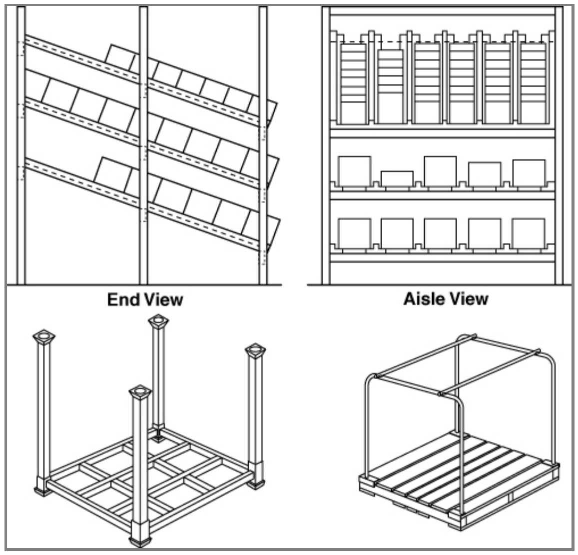


Figure A.3.9.3.7(j) Cantilever Rack.

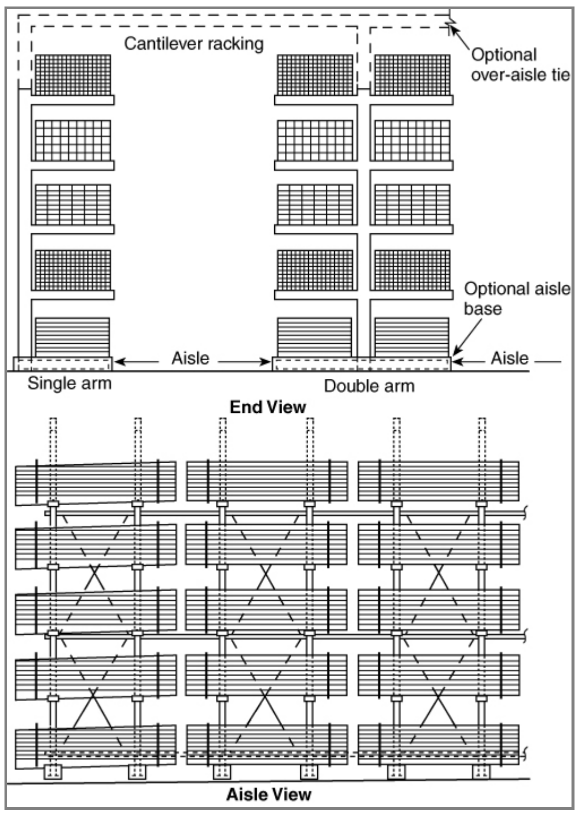
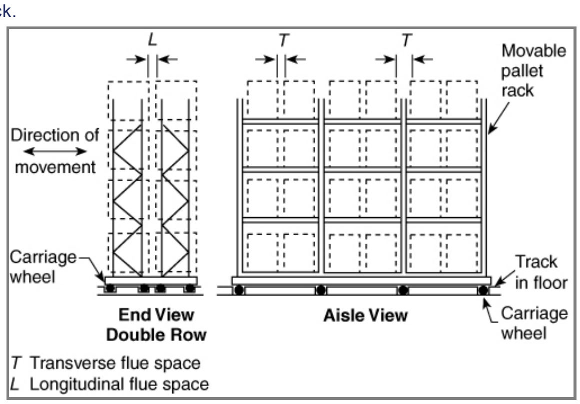


Figure A.3.9.3.7(k) Movable Rack.



Statement of Problem and Substantiation for Public Input

This section implies that Solid Shelving only consists of plywood shelves on the shelf beams, yet the definition of solid shelving in Section 3.9.3.8 covers so much more. By definition solid shelving can be present even if there is no shelving material used at all so to define solid shelving as plywood is confusing and weakening what the committee appears to be attempting in Section 3.9.3.8.

Submitter Information Verification

Submitter Full Name: GERALD SCHULTZ
Organization: FPI CONSORTIUM
Submittal Date: Mon May 20 11:53:23 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369065203416.xml

Public Input No. 86-NFPA 13-2013 [New Section after A.3.9.4.4]

A.3.9.3.7.5 When a narrow rack with a depth up to 6 ft is located within 24 inches of a wall, it is consider to have a longitudinal flue and is treated as a double-row rack.

Statement of Problem and Substantiation for Public Input

Provides clarification. Need to add an asterisk to 3.9.3.7.5

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 74-NFPA 13-2013 [Section No. 3.9.3.6]	

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Wed Feb 27 14:48:38 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361994518843.xml

Public Input No. 36-NFPA 13-2013 [Sections A.5.2, A.5.3]

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Sections A.5.2, A.5.3

A.5.2

Light hazard occupancies include occupancies having uses and conditions similar to the following:

(1) Animal shelters

(2) Churches

(3) Clubs

(4) Eaves and overhangs, if of combustible construction with no combustibles beneath

(5) Educational

(6) ~~Hospitals, including animal hospitals and veterinary facilities~~

(7)

(8) Institutional

(9) Kennels

(10) Libraries, except large stack rooms

(11) Museums

(12) ~~Nursing or convalescent homes~~

(13)

(14) Offices, including data processing

(15) Residential

(16) Restaurant seating areas

(17) Theaters and auditoriums, excluding stages and prosceniums

(18) Unused attics

Note that it is not the committee's intent to automatically equate library bookshelves with ordinary hazard occupancies or with library stacks. Typical library bookshelves of approximately 8 ft (2.4 m) in height, containing books stored vertically on end, held in place in close association with each other, with aisles wider than 30 in. (762 mm) can be considered to be light hazard occupancies. Similarly, library stack areas, which are more akin to shelf storage or record storage, as defined in NFPA 232, should be considered to be ordinary hazard occupancies.

A.5.3

For purposes of these definitions, Class I, Class II, Class III, and Class IV commodities would be considered to have moderate rates of heat release, while Group A plastics would be considered to have high rates of heat release. Stockpiles are considered to include display merchandise (mercantile) and arrangements of combustibles ancillary to operations within the occupancy as opposed to dedicated storage areas where the fire loading is generally more severe.

(1) Hospitals, including animal hospitals and veterinary facilities

(2) Nursing or convalescent homes

(3) Residential Board and Care

Additional Proposed Changes

File Name	Description	Approved
13_Caviness.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

With the standards being lowered for "home like" environments these once low fire hazard occupancies are using micro-fiber and other combustibles that I feel should no longer allow them to be protected by a Light Hazard designed fire sprinkler system.

Submitter Information Verification

Submitter Full Name: TED CAVINESS
Organization: COLORADO DEPT PUB HLTH
Submittal Date: Thu Jan 24 13:37:08 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359052628128.xml

Public Input No. 514-NFPA 13-2013 [Section No. A.5.3.1]

Original Hide Markup

A.5.3.1

Ordinary hazard (Group 1) occupancies include occupancies having uses and conditions similar to the following:

(1) Automobile parking and showrooms

(2) Bakeries

(3) Beverage manufacturing

(4) Canneries

(5) Dairy products manufacturing and processing

(6) Electronic plants

(7) Glass and glass products manufacturing

(8) Laundries

(9) Restaurant service areas

(10) Mechanical rooms with stockpiles up to 8 ft

Statement of Problem and Substantiation for Public Input

A new mechanical room by definition is a light hazard occupancy. The room is empty and the equipment is generally noncombustible. The AHJ likely will not buy off that the room will not be used for storage.

Submitter Information Verification

Submitter Full Name: Thomas Wellen

Organization: American Fire Sprinkler Association

Submittal Date: Fri May 31 14:41:05 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370025665898.xml

Public Input No. 9-NFPA 13-2013 [Section No. A.5.3.1]

Original Hide Markup

A.5.3.1

Ordinary hazard (Group 1) occupancies include occupancies having uses and conditions similar to the following:

(1) Automobile parking and showrooms

(2) Bakeries

(3) Beverage manufacturing

(4) Canneries

(5) Dairy products manufacturing and processing

(6) Electronic plants

(7) Glass and glass products manufacturing

(8) Laundries

(9) Restaurant service areas

(10) Porte Cocheres

Statement of Problem and Substantiation for Public Input

Provides guidance for the user on how to protect and calculate porte cochere that are required to be sprinklered.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Jan 15 12:22:01 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358270521215.xml

Public Input No. 483-NFPA 13-2013 [Section No. A.5.3.2]

Original Hide Markup

A.5.3.2
Ordinary hazard (Group 2) occupancies include occupancies having uses and conditions similar to the following:

(1) _ Agricultural facilities

(2) _ Agro-Industrial facilities

(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 liquids, hazardous materials, or where utilized for storage, exterior loading docks and all 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

Statement of Problem and Substantiation for Public Input

The additions submitted to NFPA13 are intended to clarify the level of protection provided to agro-industrial facilities processing “crop-residue”--as solid, biomass feedstock--into solid biofuels (densified plant or animal-based material of biological origin, often pelletized into cubiform, polyhedral, polyhedric or cylindrical units). As discussed and supported via related proposals P.I. Nos. 464 and 481 and definitions added to Section 2, the effects of pelletization on the heating values of biomass feedstock essentially result in "no net change to the hazard"--that is, the format change (non-densified to densified) does nothing to alter the heating value, except perhaps decrease it slightly by driving off volatile compounds as a result of the heat generated in the pelleting process. Accordingly, the BFICOCS recommends a Commodity Hazard Classification of III and a Group Hazard Classification of Ordinary hazard (Group 2).

The Biomass Feedstock Industry Committee on Codes and Standards (BFICOCS), led by Oak Ridge National Laboratory (ORNL), is an initiative of the Department of Energy Biomass Technologies Office (BTO). As part of the BTO integrated biorefinery efforts, the BFICOCS was assembled to conduct analysis of existing fire and building codes and to prepare proposed code changes designed to facilitate the development of the commercial-scale biomass industry while maintaining a focus on safety. The committee is made up of managers, engineers and code officials from industry, government laboratories, consulting firms, and the American Society of Agricultural and Biological Engineers (ASABE).

Fire codes related to storage, handling, and pre-processing of biomass are based on industries that operate in a significantly different manner than the growing biomass-based energy industry. Applying current research on biomass properties and knowledge of conventional and emerging storage, handling, and pre-processing technologies, the BFICOCS has submitted changes to both the NFPA and ICC development processes intent on benefiting both industry and the public.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 464-NFPA 13-2013 [Section No. A.5.6.3.3]	Defines solid biomass feedstock as a Class III Commodity
Open	Public Input No. 481-NFPA 13-2013 [Section No. A.5.6.3]	Defines solid biomass feedstock as a Class III Commodity

Submitter Information Verification

Submitter Full Name:	Darren Meyers
Organization:	IECC LLC
Affilliation:	Biomass Feedstock Industry Committee on Codes and Standards
Submittal Date:	Thu May 30 16:07:48 EDT 2013

Copyright Assignment

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Public Input No. 515-NFPA 13-2013 [Section No. A.5.3.2]

Original | Hide Markup

A.5.3.2

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

(1) Agricultural facilities

(2) Barns and stables

(3) Cereal mills

(4) Chemical plants — ordinary

(5) Confectionery products

(6) Distilleries

(7) Dry cleaners

(8) 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 liquids, hazardous materials, or where utilized for storage, exterior loading docks and all 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.)

(9) Feed mills

(10) Horse stables

(11) Leather goods manufacturing

(12) Libraries — large stack room areas

(13) Machine shops

(14) Metal working

(15) Mercantile

(16) Paper and pulp mills

(17) Paper process plants

(18) Piers and wharves

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

(20) Post offices

(21) Printing and publishing

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

(23) Repair garages

(24) Resin application area

(25) Stages

(26) Textile manufacturing

(27) Tire manufacturing

(28) Tobacco products manufacturing

(29) Wood machining

(30) Wood product assembly

(31) <u>Mechanical rooms with stockpiles up to 12 ft</u>

Statement of Problem and Substantiation for Public Input

A new mechanical room by definition is a light hazard occupancy. The room is empty and the equipment is generally noncombustible. The AHJ likely will not buy off that the room will not be used for storage.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 514-NFPA 13-2013 [Section No. A.5.3.1]	

Submitter Information Verification

Submitter Full Name: Thomas Wellen

Organization: American Fire Sprinkler Association

Submittal Date: Fri May 31 14:44:17 EDT 2013

Copyright Assignment

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Public Input No. 367-NFPA 13-2013 [Section No. A.5.4.1]

Original Hide Markup

A.5.4.1

Extra hazard (Group 1) occupancies include occupancies having uses and conditions similar to the following:

(1) Aircraft hangars (except as governed by NFPA 409)

(2) Combustible hydraulic fluid use areas

(3) Die casting

(4) Metal extruding

(5) Plywood and particleboard manufacturing

(6) Printing [using inks having flash points below 100°F (38°C)]

(7) Rubber reclaiming, compounding, drying, milling, vulcanizing

(8) Saw mills

(9) Textile picking, opening, blending, garnetting, or carding, combining of cotton, synthetics, wool shoddy, or burlap

(10) Upholstering with plastic foams

(11) Car Stackers/ Car Lift Systems

Additional Proposed Changes

	File Name	Description	Approved
Open	Car_Stacker_Project_Form.pdf	Research to study appropriate sprinkler design for car stackers	

Statement of Problem and Substantiation for Public Input

Problem:
Since NFPA 13 does not address Sprinkler Design for the various types of Car Stackers/Car Lifts being installed in parking garages - there is inconsistency of sprinkler design criteria being specified depending on diffrent jurisdications and diffrent facilities.

Solution and substantiation:

Since Car Stackers/Car Lift introduce a diffrent hazard than a single regular car parking stall, these devices should have a higher level of sprinkler protection - There are obstructions due to the solid metal platform holding the upper automobiles, sheilding the sprinkler spray to the lower automobiles in the car stacker/car lift device. The variation of these devices range from devices used for two cars with or without a pit to a high-rise devices with multiple level of car stacking systems

See San Francisco Fire Department Adminstrative Bulletin as a reference regarding sprinkler protection for car stackers/car lifts.

4.25 Car Stacking/Lift Systems

Reference: 2010 Edition of NFPA 13, 2010 S.F.B.C. Sections 903.3.1.1 and 903.3.5.2
Purpose: To establish requirements for sprinkler protection of car stackers not specifically addressed in NFPA 13.
Parking garage areas containing car stackers shall be protected by an automatic wet-pipe sprinkler system designed to Extra Hazard Group 1. In addition, non-extended coverage standard sidewall sprinklers listed for Ordinary Hazard shall be provided under each parking level, including the bottom level if the stacker is provided with a pit. Each sidewall sprinkler shall cover an area of 80 sq. ft or less.
The area of application may be reduced from the required 2500 sq. ft. to as low as 1500 sq. ft. if:
1. 1-hour fire rated walls are provided to separate the car stacker areas from the standard parking stalls,
2. The car stacker areas are divided up into 1500 sq. ft. areas via 1-hour fire rated walls, and
3. One-hour fire rated walls are provided to separate the car stacker areas from any other areas in the garage.
One-hour fired rated walls are not required in the driveway areas. For the hydraulic calculation, flow from all sprinklers, upright or pendent sprinklers at ceiling and all sidewall sprinklers at all levels, located in the area of application shall be included in the calculation.

Note:
For a high-rise building, car stacker sprinkler systems will cause the secondary water supply capacity to increase. For water supply and secondary water supply capacity purposes, the system is to be considered as an Ordinary Hazard System. The secondary water supply shall be designed for largest car stacking sprinkler system demand plus a hose allowance of 100 gpm for 60 minutes. If the available city main flow at 20 psi is not adequate to provide requirements, the secondary water supply becomes the primary water supply. For this case, the secondary/primary water supply capacity must meet the above requirements and the requirements specified in NFPA 13 and 14.
For low-rise building, if the city main can not provide the required flow at 20 psi, a primary water supply tank and fire pump must be provided. The capacity of the tank shall meet the above requirements and the requirements of NFPA 13 and 14.

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department, Fred Stumpp FPE and Sagiv Weiss-Ishai FPE
Submittal Date: Thu May 23 11:14:56 EDT 2013

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Public Input No. 413-NFPA 13-2013 [Section No. A.5.6.3]

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A.5.6.3

See Table A.5.6.3 .

[Provide additional examples of Class I, Class II, Class III, Class IV, and Group A plastics.]

Table A.5.6.3 Alphabetized Listing of Commodity Classes

Commodity	Commodity Class
Aerosols	
Cartoned or uncartoned — Level 1	Class III
Alcoholic Beverages	
Cartoned or uncartoned	
- Up to 20 percent alcohol in metal, glass, or ceramic containers	Class I
- Up to 20 percent alcohol in wood containers	Class II
Ammunition	
Small arms, shotgun — packaged, cartoned	Class IV
Appliances, Major (e.g., stoves, refrigerators)	
- Not packaged, no appreciable plastic exterior trim	Class I
- Corrugated, cartoned (no appreciable plastic trim)	Class II
Baked Goods	
Cookies, cakes, pies	
- Frozen, packaged in cartons [a]	Class II
- Packaged, in cartons	Class III
Batteries	
Dry cells (nonlithium or similar exotic metals)	
- Packaged in cartons	Class I
- Blister-packed in cartons	Class II
Automobile — filled [b]	Class I
Truck or larger — empty or filled [b]	Group A plastics
Beans	
Dried — packaged, cartoned	Class III
Boat Storage	
- Stored in racks	See Table A.5.6
Bottles, Jars	
Empty, cartoned	
- Glass	Class I
- Plastic PET (polyethylene terephthalate)	Class IV
Filled noncombustible powders	
- Plastic PET	Class II
- Glass, cartoned	Class I
- Plastic, cartoned [less than 1 gal (3.8 L)]	Class IV
- Plastic, uncartoned (other than PET), any size	Group A plastics
- Plastic, cartoned or exposed [greater than 1 gal (3.8 L)]	Group A plastics
- Plastic, solid plastic crates	Group A plastics
- Plastic, open plastic crates	Group A plastics
Filled noncombustible liquids	
- Glass, cartoned	Class I
- Plastic, cartoned [less than 5 gal (18.9 L)]	Class I

- Plastic, open or solid plastic crates [c]	Group A plastics
- Plastic, PET	Class I
Boxes, Crates	
- Empty, wood, solid walls	Class II
- Empty, wood, slatted	See Table A.5.6
Bread	
Wrapped cartoned	Class III
Butter	
Whipped spread	Class III
Candles	
Packaged, cartoned	
- Treat as expanded plastic	Group A plastics
Candy	
Packaged, cartoned	Class III
Canned Foods	
In ordinary cartons	Class I
Cans	
Metal — empty	Class I
Carpet Tiles	
Cartoned	Group A plastics
Cartons	
Corrugated	
- Unassembled (neat piles)	Class III
- Partially assembled	Class IV
Wax coated, single walled	Group A plastics
Cement	
Bagged	Class I
Cereals	
Packaged, cartoned	Class III
Charcoal	
Bagged — standard	Class III
Cheese	
- Packaged, cartoned	Class III
- Wheels, cartoned	Class III
Chewing Gum	
Packaged, cartoned	Class III
Chocolate	
Packaged, cartoned	Class III
Cloth	
Cartoned and not cartoned	
- Natural fiber, viscose	Class III
- Synthetic [d]	Class IV
Cocoa Products	
Packaged, cartoned	Class III
Coffee	
- Canned, cartoned	Class I
- Packaged, cartoned	Class III
Coffee Beans	
Bagged	Class III
Cotton	
Packaged, cartoned	Class III
Diapers	
- Cotton, linen	Class III
- Disposable with plastics and nonwoven fabric (in cartons)	Class IV
- Disposable with plastics and nonwoven fabric (uncartoned), plastic wrapped	Group A plastics
Dried Foods	
Packaged, cartoned	Class III
Fertilizers	
Bagged	
- Phosphates	Class I
- Nitrates	Class II
Fiberglass Insulation	
- Paper-backed rolls, bagged or unbagged	Class IV
File Cabinets	
Metal	
- Cardboard box or shroud	Class I

Fish or Fish Products	
Frozen	
- Nonwaxed, nonplastic packaging	Class I
- Waxed-paper containers, cartoned	Class II
- Boxed or barreled	Class II
- Plastic trays, cartoned	Class III
Canned	
- Cartoned	Class I
Frozen Foods	
Nonwaxed, nonplastic packaging	Class I
- Waxed-paper containers, cartoned	Class II
- Plastic trays	Class III
Fruit	
Fresh	
- Nonplastic trays or containers	Class I
- With wood spacers	Class I
Furniture	
Wood	
- No plastic coverings or foam plastic cushioning	Class III
- With plastic coverings	Class IV
- With foam plastic cushioning	Group A plastics
Grains — Packaged in Cartons	
- Barley	Class III
- Rice	Class III
- Oats	Class III
Ice Cream	Class I
Leather Goods	Class III
Leather Hides	
Baled	Class II
Light Fixtures	
Nonplastic — cartoned	Class II
Lighters	
Butane	
- Blister-packed, cartoned	Group A plastics
- Loose and in large containers (Level 3 aerosol)	See Table A.5.6
Liquor	
100 proof or less, 1 gal (3.8 L) or less, cartoned	
- Glass (palletized) [e]	Class IV
- Plastic bottles	Class IV
Marble	
Artificial sinks, countertops	
- Cartoned, crated	Class II
Margarine	
- Up to 50 percent oil (in paper or plastic containers)	Class III
- Between 50 percent and 80 percent oil (in any packaging)	Group A plastics
Matches	
Packaged, cartoned	
- Paper	Class IV
- Wood	Group A plastics
Mattresses	
- Standard (box spring)	Class III
- Foam (in finished form)	Group A plastics
Meat, Meat Products	
- Bulk	Class I
- Canned, cartoned	Class I
- Frozen, nonwaxed, nonplastic containers	Class I
- Frozen, waxed-paper containers	Class II
- Frozen, expanded plastic trays	Class II
Metal Desks	
- With plastic tops and trim	Class I
Milk	
- Nonwaxed-paper containers	Class I
- Waxed-paper containers	Class I
- Plastic containers	Class I
- Containers in plastic crates	Group A plastics

Motors	
- Electric	Class I
Nail Polish	
- 1 oz to 2 oz (29.6 ml to 59.1 ml) glass, cartoned	Class IV
- 1 oz to 2 oz (29.6 ml to 59.1 ml) plastic bottles, cartoned	Group A plastics
Nuts	
- Canned, cartoned	Class I
- Packaged, cartoned	Class III
- Bagged	Class III
Paints	
Friction-top cans, cartoned	
- Water-based (latex)	Class I
- Oil-based	Class IV
Paper Products	
- Books, magazines, stationery, plastic-coated paper food containers, newspapers, cardboard games, or cartoned tissue products	Class III
- Tissue products, uncartoned and plastic wrapped	Group A plastics
Paper, Rolled	
In racks or on side	Class III
- Medium- or heavyweight	
In racks	Class IV
- Lightweight	
Paper, Waxed	
Packaged in cartons	Class IV
Pharmaceuticals	
Pills, powders	
- Glass bottles, cartoned	Class II
- Plastic bottles, cartoned	Class IV
Nonflammable liquids	
- Glass bottles, cartoned	Class II
Photographic Film	
- Motion picture or bulk rolls of film in polycarbonate, polyethylene, or metal cans; polyethylene bagged in cardboard boxes	Class II
- 35 mm in metal film cartridges in polyethylene cans in cardboard boxes	Class III
- Paper, in sheets, bagged in polyethylene, in cardboard boxes	Class III
- Rolls in polycarbonate plastic cassettes, bulk wrapped in cardboard boxes	Class IV
Plastic Containers (except PET)	
- Noncombustible liquids or semiliquids in plastic containers less than 5 gal (18.9 L) capacity	Class I
- Noncombustible liquids or semiliquids (such as ketchup) in plastic containers with nominal wall thickness of 1⁄4 in. (6.4 mm) or less and larger than 5 gal (18.9) capacity	Class II
- Noncombustible liquids or semiliquids (such as ketchup) in plastic containers with nominal wall thickness greater than 1⁄4 in. (6.4 mm) and larger than 5 gal (18.9 L) capacity	Group A plastics
Polyurethane	
- Cartoned or uncartoned expanded	Group A plastics
Poultry Products	
- Canned, cartoned	Class I
- Frozen, nonwaxed, nonplastic containers	Class I
- Frozen (on paper or expanded plastic trays)	Class II
Powders	
Ordinary combustibles — free flowing	
- In paper bags (e.g., flour, sugar)	Class II
PVA (polyvinyl alcohol) Resins	
PVC (polyvinyl chloride)	
- Flexible (e.g., cable jackets, plasticized sheets)	Class III
- Rigid (e.g., pipe, pipe fittings)	Class III
- Bagged resins	Class III
Rags	
Baled	
- Natural fibers	Class III
- Synthetic fibers	Class IV
Rubber	
- Natural, blocks in cartons	Class IV
- Synthetic	Group A plastics
Salt	
- Bagged	Class I
- Packaged, cartoned	Class II
Shingles	
- Asphalt-coated fiberglass	Class III
- Asphalt-impregnated felt	Class IV

Shock Absorbers	
- Metal dust cover	Class II
- Plastic dust cover	Class III
Signatures	
Books, magazines	
- Solid array on pallet	Class II
Skis	
- Wood	Class III
- Foam core	Class IV
Stuffed Toys	
Foam or synthetic	Group A plastics
Storage Container	
- Large container storage of household goods	See Table A.5.6
Syrup	
- Drummed (metal containers)	Class I
- Barreled, wood	Class II
Textiles	
Natural fiber clothing or textile products	Class III
Synthetics (except rayon and nylon) — 50/50 blend or less	
- Thread, yarn on wood or paper spools	Class III
- Fabrics	Class III
- Thread, yarn on plastic spools	Class IV
- Baled fiber	Group A plastics
Synthetics (except rayon and nylon) — greater than 50/50 blend	
- Thread, yarn on wood or paper spools	Class IV
- Fabrics	Class IV
- Baled fiber	Group A plastics
- Thread, yarn on plastic spools	Group A plastics
Rayon and nylon	
- Baled fiber	Class IV
- Thread, yarn on wood or paper spools	Class IV
- Fabrics	Class IV
- Thread, yarn on plastic spools	Group A plastics
Tobacco Products	
In paperboard cartons	Class III
Transformers	
Dry and oil filled	Class I
Vinyl-Coated Fabric	
Cartoned	Group A plastics
Vinyl Floor Coverings	
- Tiles in cartons	Class IV
- Rolled	Group A plastics
Wax-Coated Paper	
Cups, plates	
- Boxed or packaged inside cartons (emphasis on packaging)	Class IV
- Loose inside large cartons	Group A plastics
Wax	
Paraffin/petroleum wax, blocks, cartoned	Group A plastics
Wire	
- Bare wire on metal spools on wood skids	Class I
- Bare wire on wood or cardboard spools on wood skids	Class II
- Bare wire on metal, wood, or cardboard spools in cardboard boxes on wood skids	Class II
- Single- or multiple-layer PVC-covered wire on metal spools on wood skids	Class II
- Insulated (PVC) cable on large wood or metal spools on wood skids	Class II
- Bare wire on plastic spools in cardboard boxes on wood skids	Class IV
- Single- or multiple-layer PVC-covered wire on plastic spools in cardboard boxes on wood skids	Class IV
- Single, multiple, or power cables (PVC) on large plastic spools	Class IV
- Bulk storage of empty plastic spools	Group A plastics
Wood Products	
- Solid piles — lumber, plywood, particleboard, pressboard (smooth ends and edges)	Class II
- Spools (empty)	Class III
- Toothpicks, clothespins, hangers in cartons	Class III

- Doors, windows, wood cabinets, and furniture	Class III
- Patterns	Class IV

[a] The product is presumed to be in a plastic-coated package in a corrugated carton. If packaged in a metal foil, it can be considered Class I.

[b] Most batteries have a polypropylene case and, if stored empty, should be treated as a Group A plastic. Truck batteries, even where filled, should be considered a Group A plastic because of their thicker walls.

[c] As the openings in plastic crates become larger, the product behaves more like a Class III commodity. Conversely, as the openings become smaller, the product behaves more like a plastic.

[d] Tests clearly indicate that a synthetic or synthetic blend is considered greater than Class III.

[e] When liquor is stored in glass containers in racks, it should be considered a Class III commodity; where it is palletized, it should be considered a Class IV commodity.

Statement of Problem and Substantiation for Public Input

This is a placeholder that is intended to allow for results of fire tests or analysis to add to the examples in this table.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri May 24 11:22:28 EDT 2013

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Public Input No. 481-NFPA 13-2013 [Section No. A.5.6.3]

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A.5.6.3

See Table A.5.6.3 .

Table A.5.6.3 Alphabetized Listing of Commodity Classes

Commodity	Commodity Class
Aerosols	
Cartoned or uncartoned — Level 1	Class III
Alcoholic Beverages	
Cartoned or uncartoned	
- Up to 20 percent alcohol in metal, glass, or ceramic containers	Class I
- Up to 20 percent alcohol in wood containers	Class II
Ammunition	
Small arms, shotgun — packaged, cartoned	Class IV
Appliances, Major (e.g., stoves, refrigerators)	
- Not packaged, no appreciable plastic exterior trim	Class I
- Corrugated, cartoned (no appreciable plastic trim)	Class II
Baked Goods	
Cookies, cakes, pies	
- Frozen, packaged in cartons [a]	Class II
- Packaged, in cartons	Class III
Batteries	
Dry cells (nonlithium or similar exotic metals)	
- Packaged in cartons	Class I
- Blister-packed in cartons	Class II
Automobile — filled [b]	Class I
Truck or larger — empty or filled [b]	Group A plastics
Beans	
Dried — packaged, cartoned	Class III
Biomass briquettes and pellets	
- Bagged, totes and static piles	Class III
Boat Storage	

- Stored in racks	See Table A.5.6
Bottles, Jars	
Empty, cartoned	
- Glass	Class I
- Plastic PET (polyethylene terephthalate)	Class IV
Filled noncombustible powders	
- Plastic PET	Class II
- Glass, cartoned	Class I
- Plastic, cartoned [less than 1 gal (3.8 L)]	Class IV
- Plastic, uncartoned (other than PET), any size	Group A plastics
- Plastic, cartoned or exposed [greater than 1 gal (3.8 L)]	Group A plastics
- Plastic, solid plastic crates	Group A plastics
- Plastic, open plastic crates	Group A plastics
Filled noncombustible liquids	
- Glass, cartoned	Class I
- Plastic, cartoned [less than 5 gal (18.9 L)]	Class I
- Plastic, open or solid plastic crates [c]	Group A plastics
- Plastic, PET	Class I
Boxes, Crates	
- Empty, wood, solid walls	Class II
- Empty, wood, slatted	See Table A.5.6
Bread	
Wrapped cartoned	Class III
Butter	
Whipped spread	Class III
Candles	
Packaged, cartoned	
- Treat as expanded plastic	Group A plastics
Candy	
Packaged, cartoned	Class III
Canned Foods	
In ordinary cartons	Class I
Cans	
Metal — empty	Class I
Carpet Tiles	
Cartoned	Group A plastics
Cartons	
Corrugated	
- Unassembled (neat piles)	Class III
- Partially assembled	Class IV
Wax coated, single walled	Group A plastics
Cement	
Bagged	Class I
Cereals	
Packaged, cartoned	Class III
Charcoal	
Bagged — standard	Class III
Cheese	
- Packaged, cartoned	Class III
- Wheels, cartoned	Class III
Chewing Gum	
Packaged, cartoned	Class III
Chocolate	
Packaged, cartoned	Class III
Cloth	
Cartoned and not cartoned	
- Natural fiber, viscose	Class III
- Synthetic [d]	Class IV
Cocoa Products	
Packaged, cartoned	Class III
Coffee	
- Canned, cartoned	Class I
- Packaged, cartoned	Class III

Coffee Beans	
Bagged	Class III
Corn cobs	
- Static piles	Class III
Corn stover	
- Baled and chopped	Class III
Cotton	
Packaged, cartoned	Class III
Diapers	
- Cotton, linen	Class III
- Disposable with plastics and nonwoven fabric (in cartons)	Class IV
- Disposable with plastics and nonwoven fabric (uncartoned), plastic wrapped	Group A plastics
Dried Foods	
Packaged, cartoned	Class III
Fertilizers	
Bagged	
- Phosphates	Class I
- Nitrates	Class II
Fiberglass Insulation	
- Paper-backed rolls, bagged or unbagged	Class IV
File Cabinets	
Metal	
- Cardboard box or shroud	Class I
Fish or Fish Products	
Frozen	
- Nonwaxed, nonplastic packaging	Class I
- Waxed-paper containers, cartoned	Class II
- Boxed or barreled	Class II
- Plastic trays, cartoned	Class III
Canned	
- Cartoned	Class I
Forest residue, round wood, or chipped	
- Branches, bark, cross-cut ends, edgings and treetops	Class III
Frozen Foods	
Nonwaxed, nonplastic packaging	Class I
- Waxed-paper containers, cartoned	Class II
- Plastic trays	Class III
Fruit	
Fresh	
- Nonplastic trays or containers	Class I
- With wood spacers	Class I
Furniture	
Wood	
- No plastic coverings or foam plastic cushioning	Class III
- With plastic coverings	Class IV
- With foam plastic cushioning	Group A plastics
Grains — Packaged in Cartons	
- Barley	Class III
- Rice	Class III
- Oats	Class III
Ice Cream	Class I
Leather Goods	Class III
Leather Hides	
Baled	Class II
Light Fixtures	
Nonplastic — cartoned	Class II
Lighters	
Butane	
- Blister-packed, cartoned	Group A plastics
- Loose and in large containers (Level 3 aerosol)	See Table A.5.6
Liquor	
100 proof or less, 1 gal (3.8 L) or less, cartoned	

- Glass (palletized) [e]	Class IV
- Plastic bottles	Class IV
Marble	
Artificial sinks, countertops	
- Cartoned, crated	Class II
Margarine	
- Up to 50 percent oil (in paper or plastic containers)	Class III
- Between 50 percent and 80 percent oil (in any packaging)	Group A plastics
Matches	
Packaged, cartoned	
- Paper	Class IV
- Wood	Group A plastics
Mattresses	
- Standard (box spring)	Class III
- Foam (in finished form)	Group A plastics
Meat, Meat Products	
- Bulk	Class I
- Canned, cartoned	Class I
- Frozen, nonwaxed, nonplastic containers	Class I
- Frozen, waxed-paper containers	Class II
- Frozen, expanded plastic trays	Class II
Metal Desks	
- With plastic tops and trim	Class I
Milk	
- Nonwaxed-paper containers	Class I
- Waxed-paper containers	Class I
- Plastic containers	Class I
- Containers in plastic crates	Group A plastics
Motors	
- Electric	Class I
Nail Polish	
- 1 oz to 2 oz (29.6 ml to 59.1 ml) glass, cartoned	Class IV
- 1 oz to 2 oz (29.6 ml to 59.1 ml) plastic bottles, cartoned	Group A plastics
Nuts	
- Canned, cartoned	Class I
- Packaged, cartoned	Class III
- Bagged	Class III
Paints	
Friction-top cans, cartoned	
- Water-based (latex)	Class I
- Oil-based	Class IV
Paper Products	
- Books, magazines, stationery, plastic-coated paper food containers, newspapers, cardboard games, or cartoned tissue products	Class III
- Tissue products, uncartoned and plastic wrapped	Group A plastics
Paper, Rolled	
In racks or on side	Class III
- Medium- or heavyweight	
In racks	Class IV
- Lightweight	
Paper, Waxed	
Packaged in cartons	Class IV
Peanut hulls	
- Bagged, totes and static piles	Class III
Pharmaceuticals	
Pills, powders	
- Glass bottles, cartoned	Class II
- Plastic bottles, cartoned	Class IV
Nonflammable liquids	
- Glass bottles, cartoned	Class II
Photographic Film	
- Motion picture or bulk rolls of film in polycarbonate, polyethylene, or metal cans; polyethylene bagged in cardboard boxes	Class II
- 35 mm in metal film cartridges in polyethylene cans in cardboard boxes	Class III
- Paper, in sheets, bagged in polyethylene, in cardboard boxes	Class III

- Rolls in polycarbonate plastic cassettes, bulk wrapped in cardboard boxes	Class IV
Plastic Containers (except PET)	
- Noncombustible liquids or semiliquids in plastic containers less than 5 gal (18.9 L) capacity	Class I
- Noncombustible liquids or semiliquids (such as ketchup) in plastic containers with nominal wall thickness of $1/4$ in. (6.4 mm) or less and larger than 5 gal (18.9) capacity	Class II
- Noncombustible liquids or semiliquids (such as ketchup) in plastic containers with nominal wall thickness greater than $1/4$ in. (6.4 mm) and larger than 5 gal (18.9 L) capacity	Group A plastics
Polyurethane	
- Cartoned or uncartoned expanded	Group A plastics
Poultry Products	
- Canned, cartoned	Class I
- Frozen, nonwaxed, nonplastic containers	Class I
- Frozen (on paper or expanded plastic trays)	Class II
Powders	
Ordinary combustibles — free flowing	
- In paper bags (e.g., flour, sugar)	Class II
PVA (polyvinyl alcohol) Resins	
PVC (polyvinyl chloride)	
- Flexible (e.g., cable jackets, plasticized sheets)	Class III
- Rigid (e.g., pipe, pipe fittings)	Class III
- Bagged resins	Class III
Rags	
Baled	
- Natural fibers	Class III
- Synthetic fibers	Class IV
Recovered construction wood	
- No plastic coverings or foam plastic cushioning	Class III
Rice hulls	
- Bagged, totes and static piles	Class III
Rubber	
- Natural, blocks in cartons	Class IV
- Synthetic	Group A plastics
Salt	
- Bagged	Class I
- Packaged, cartoned	Class II
Seasonal grasses	
- Baled and chopped	Class III
Shingles	
- Asphalt-coated fiberglass	Class III
- Asphalt-impregnated felt	Class IV
Shock Absorbers	
- Metal dust cover	Class II
- Plastic dust cover	Class III
Signatures	
Books, magazines	
- Solid array on pallet	Class II
Skis	
- Wood	Class III
- Foam core	Class IV
Straw	
- Baled	Class III
Stuffed Toys	
Foam or synthetic	Group A plastics
Storage Container	
- Large container storage of household goods	See Table A.5.6
Syrup	
- Drummed (metal containers)	Class I
- Barreled, wood	Class II
Textiles	
Natural fiber clothing or textile products	Class III
Synthetics (except rayon and nylon) — 50/50 blend or less	

- Thread, yarn on wood or paper spools	Class III
- Fabrics	Class III
- Thread, yarn on plastic spools	Class IV
- Baled fiber	Group A plastics
Synthetics (except rayon and nylon) — greater than 50/50 blend	
- Thread, yarn on wood or paper spools	Class IV
- Fabrics	Class IV
- Baled fiber	Group A plastics
- Thread, yarn on plastic spools	Group A plastics
Rayon and nylon	
- Baled fiber	Class IV
- Thread, yarn on wood or paper spools	Class IV
- Fabrics	Class IV
- Thread, yarn on plastic spools	Group A plastics
Tobacco Products	
In paperboard cartons	Class III
Transformers	
Dry and oil filled	Class I
Vinyl-Coated Fabric	
Cartoned	Group A plastics
Vinyl Floor Coverings	
- Tiles in cartons	Class IV
- Rolled	Group A plastics
Wax-Coated Paper	
Cups, plates	
- Boxed or packaged inside cartons (emphasis on packaging)	Class IV
- Loose inside large cartons	Group A plastics
Wax	
Paraffin/petroleum wax, blocks, cartoned	Group A plastics
Wire	
- Bare wire on metal spools on wood skids	Class I
- Bare wire on wood or cardboard spools on wood skids	Class II
- Bare wire on metal, wood, or cardboard spools in cardboard boxes on wood skids	Class II
- Single- or multiple-layer PVC-covered wire on metal spools on wood skids	Class II
- Insulated (PVC) cable on large wood or metal spools on wood skids	Class II
- Bare wire on plastic spools in cardboard boxes on wood skids	Class IV
- Single- or multiple-layer PVC-covered wire on plastic spools in cardboard boxes on wood skids	Class IV
- Single, multiple, or power cables (PVC) on large plastic spools	Class IV
- Bulk storage of empty plastic spools	Group A plastics
Wood chips	
- Bagged, totes and static piles	Class III
Wood pellets	
- Bagged, totes and static piles	Class III
Wood Products	
- Solid piles — lumber, plywood, particleboard, pressboard (smooth ends and edges)	Class II
- Spools (empty)	Class III
- Toothpicks, clothespins, hangers in cartons	Class III
- Doors, windows, wood cabinets, and furniture	Class III
- Patterns	Class IV
Woody biomass, round wood or chipped	
- Vase-shaped bushes, bamboo, willows, branches, bark and stem wood	Class III

[a] The product is presumed to be in a plastic-coated package in a corrugated carton. If packaged in a metal foil, it can be considered Class I.

[b] Most batteries have a polypropylene case and, if stored empty, should be treated as a Group A plastic. Truck batteries, even where filled, should be considered a Group A plastic because of their thicker walls.

[c] As the openings in plastic crates become larger, the product behaves more like a Class III commodity. Conversely, as the openings become smaller, the product behaves more like a plastic.

[d] Tests clearly indicate that a synthetic or synthetic blend is considered greater than Class III.

[e] When liquor is stored in glass containers in racks, it should be considered a Class III commodity; where it is palletized, it should be considered a Class IV commodity.

Additional Proposed Changes

File Name	Description	Approved
Open HHV_INL_draft_002.xlsx	The file, "HHV_INL_draft_002.xlsx" is abbreviated for "High Heating Value_Idaho National Laboratory." It was developed by INL to provide the NFPA13 Committee with comparative and peer-reviewed information that shows the heating values for a select set of biomass feedstock relative to two grades of Coal (Bituminous and Sub Bituminous), Charcoal, and Wood [Douglas fir wood and Douglas fir bark (i.e., Furniture)] identified in Table A.5.6.3.3 for Class III Commodities, using the test methods of ASTM D5865-10a, Standard Test Method for Gross Calorific Value of Coal and Coke Using Either an Isoperibol or Adiabatic Bomb Calorimeter.	

Statement of Problem and Substantiation for Public Input

The additions submitted to NFPA13 are intended to clarify the level of protection provided to certain “crop-residue”--as solid, biomass feedstock--to be used as biofuel are appropriately identified as Class III commodities.

The supplementary material in the form of file, "HHV_INL_draft_002.xlsx" was prepared by Idaho National Laboratory to provide the NFPA13 Committee with 1) Results for heat of combustion performed at INL using the standard test methods of ASTM D5865-10a, Standard Test Method for Gross Calorific Value of Coal and Coke Using Either an Isoperibol or Adiabatic Bomb Calorimeter, 2) Results that the Laboratory has drawn from the literature, and 3) A simple spreadsheet compiled from publicly available HHV's, each showing values for HHV data applicable to a range of cellulosic biomass.

This comparative and peer-reviewed literature review demonstrates that the heating values for a select set of biomass feedstock are less than those for the two grades of Coal (Bituminous and Sub Bituminous), Charcoal, and Wood [Douglas fir wood and Douglas fir bark (i.e., Furniture)] identified in Table A.5.6.3.3 for Class III Commodities.

Material	HHV (GJ Mg-1)	HHV (Btu/lb)
Bituminous Coal	31.7	13,629
Sub Bituminous Coal	32.9	14,144
Charcoal	31.0	13,328
Douglas fir	21.0	9,028
Douglas fir bark	22.0	9,458
Eucalyptus grandis	19.4	8,340
Beech	20.3	8,727
Sugar cane bagasse	17.3	7,438
Wheat straw	17.5	7,524
Poplar	20.7	8,899
Rice hulls	15.3	6,578
Rice straw	15.8	6,793

The Biomass Feedstock Industry Committee on Codes and Standards (BFICOCS), led by Oak Ridge National Laboratory (ORNL), is an initiative of the Department of Energy Biomass Technologies Office (BTO). As part of the BTO integrated biorefinery efforts, the BFICOCS was assembled to conduct analysis of existing fire and building codes and to prepare proposed code changes designed to facilitate the development of the commercial-scale biomass industry while maintaining a focus on safety. The committee is made up of managers, engineers and code officials from industry, government laboratories, consulting firms, and the American Society of Agricultural and Biological Engineers (ASABE).

Fire codes related to storage, handling, and pre-processing of biomass are based on industries that operate in a significantly different manner than the growing biomass-based energy industry. Applying current research on biomass properties and knowledge of conventional and emerging storage, handling, and pre-processing technologies, the BFICOCS has submitted changes to both the NFPA and ICC development processes intent on benefiting both industry and the public.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 464-NFPA 13-2013 [Section No. A.5.6.3.3]	Adds alphabetical listing of newly proposed solid biomass as Class III Commodities

Submitter Information Verification

Submitter Full Name: Darren Meyers
Organization: IECC LLC
Affilliation: Biomass Feedstock Industry Committee on Codes and Standards
Submittal Date: Thu May 30 15:28:27 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369942107116.xml

Public Input No. 464-NFPA 13-2013 [Section No. A.5.6.3.3]

Original Hide Markup

A.5.6.3.3

See Table A.5.6.3.3 .

Table A.5.6.3.3 Examples of Class III Commodities

Aerosols
Cartoned or uncartoned
- Level 1
Baked Goods
Cookies, cakes, pies
- Packaged, in cartons
Beans
Dried
- Packaged, cartoned

Biomass briquettes and pellets

- Bagged, totes and static piles

Bread

Wrapped, cartoned
Butter
Whipped spread
Candy
Packaged, cartoned
Cartons
Corrugated
- Unassembled (neat piles)
Cereals
Packaged, cartoned
Charcoal
Bagged
- Standard
Cheese
- Packaged, cartoned
- Wheels, cartoned
Chewing Gum
Packaged, cartoned
Chocolate
Packaged, cartoned
Cloth
Cartoned and not cartoned
- Natural fiber, viscose
Cocoa Products
Packaged, cartoned
Coffee
Packaged, cartoned
Coffee Beans
Bagged

Corn cobs

- Static piles

Corn stover

- Baled and chopped

Cotton

Packaged, cartoned
Diapers
Cotton, linen
Dried Foods
Packaged, cartoned
Fish or Fish Products
Frozen
- Plastic trays, cartoned
Frozen Foods
Plastic trays

Forest residue, round wood, or chipped

- Branches, bark, cross-cut ends, edgings and treetops

Furniture

Wood
- No plastic coverings or foam plastic cushioning
Grains — Packaged in Cartons
- Barley
- Rice

- Oats

Margarine

Up to 50 percent oil (in paper or plastic containers)

Mattresses

Standard (box spring)

Nuts

- Packaged, cartoned

- Bagged

Paper Products

Books, magazines, stationery, plastic-coated paper food containers, newspapers, cardboard games, cartoned tissue products

Paper, Rolled

In racks or on side

- Medium- or heavyweight

Peanut hulls

- Bagged, totes and static piles

Photographic Film

- 35 mm in metal film cartridges in polyethylene cans in cardboard boxes

- Paper, in sheets, bagged in polyethylene, in cardboard boxes

PVC (polyvinyl chloride)

- Flexible (e.g., cable jackets, plasticized sheets)

- Rigid (e.g., pipe, pipe fittings)

- Bagged resins

Rags

Baled

- Natural fibers

Recovered construction wood

- No plastic coverings or foam plastic cushioning

Rice hulls

- Bagged, totes and static piles

Seasonal grasses

-Baled and chopped

Shingles

Asphalt-coated fiberglass

Shock Absorbers

Plastic dust cover

Skis

Wood

Straw

- Baled

Textiles

Natural fiber clothing or textile products

Synthetics (except rayon and nylon) —

50/50 blend or less

- Thread, yarn on wood or paper spools

- Fabrics

Tobacco Products

In paperboard cartons

Woody biomass, round wood or chipped

- Vase-shaped bushes, bamboo, willows, branches, bark and stem wood

Wood chips

- Bagged, totes and static piles

Wood pellets

- Bagged, totes andstatic piles

Wood Products

- Spools (empty)

- Toothpicks, clothespins, hangers in cartons

- Doors, windows, wood cabinets, and furniture

Additional Proposed Changes

File Name	Description	Approved
Open HHV_INL_draft_002.xlsx	The file, "HHV_INL_draft_002.xlsx" is abbreviated for "High Heating Value_Idaho National Laboratory." It was developed by INL to provide the NFPA13 Committee with comparative and peer-reviewed information that shows the heating values for a select set of biomass feedstock relative to two grades of coal (Bituminous and Sub Bituminous), Charcoal as well as Douglas fir wood and bark (i.e., Furniture) using standard test methods of ASTM D5865-10a, Standard Test Method for Gross Calorific Value of Coal and Coke Using Either an Isoperibol or Adiabatic Bomb Calorimeter.	

Statement of Problem and Substantiation for Public Input

The additions submitted to NFPA13 are intended to clarify the level of protection provided to certain “crop-residue”--as solid, biomass feedstock--to be used as biofuel are appropriately identified as Class III commodities.

The supplementary material in the form of file, "HHV_INL_draft_002.xlsx" was prepared by Idaho National Laboratory to provide the NFPA13 Committee with 1) Results for heat of combustion performed at INL using the standard test methods of ASTM D5865-10a, Standard Test Method for Gross Calorific Value of Coal and Coke Using Either an Isoperibol or Adiabatic Bomb Calorimeter, 2) Results that we've drawn from the literature, and 3) A simple spreadsheet compiled from publicly available HHV's, each showing values for HHV data applicable to a range of cellulosic biomass.

This comparative and peer-reviewed literature review demonstrates that the heating values for a select set of biomass feedstock are less than those for the two grades of Coal (Bituminous and Sub Bituminous), Charcoal, and Wood [Douglas fir wood and Douglas fir bark (i.e., Furniture)] identified in Table A.5.6.3.3 for Class III Commodities.

Material	HHV (GJ Mg-1)	HHV (Btu/lb)
Bituminous Coal	31.7	13629
Sub Bituminous Coal	32.9	14144
Charcoal	31.0	13328
Douglas fir	21.0	9028
Douglas fir bark	22.0	9458
Eucalyptus grandis	19.4	8340
Beech	20.3	8727
Sugar cane bagasse	17.3	7438
Wheat straw	17.5	7524
Poplar	20.7	8899
Rice hulls	15.3	6578
Rice straw	15.8	6793

The Biomass Feedstock Industry Committee on Codes and Standards (BFICOCS), led by Oak Ridge National Laboratory (ORNL), is an initiative of the Department of Energy Biomass Technologies Office (BTO). As part of the BTO integrated biorefinery efforts, the BFICOCS was assembled to conduct analysis of existing fire and building codes and to prepare proposed code changes designed to facilitate the development of the commercial-scale biomass industry while maintaining a focus on safety. The committee is made up of managers, engineers and code officials from industry, government laboratories, consulting firms, and the American Society of Agricultural and Biological Engineers (ASABE).

Fire codes related to storage, handling, and pre-processing of biomass are based on industries that operate in a significantly different manner than the growing biomass-based energy industry. Applying current research on biomass properties and knowledge of conventional and emerging storage, handling, and pre-processing technologies, the BFICOCS has submitted changes to both the NFPA and ICC development processes intent on benefiting both industry and the public.

Submitter Information Verification

Submitter Full Name: Darren Meyers
Organization: IECC LLC
Affilliation: Biomass Feedstock Industry Committee on Codes and Standards
Submittal Date: Thu May 30 14:13:54 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369937634386.xml

NFPA # 135848

Case # 12639

Code Fund Project Statement Form

Return to Amanda Kimball (akimball@nfpa.org)

Fire Protection Research Foundation, One Batterymarch Park, Quincy, MA 02169-7471

1) Proposed Project Title:

Sprinkler Protection Criteria for Automated Parking Structures

2) Problem Statement (one or two sentences addressing "what is the problem?"):

At present NFPA 13 does not have any protection criteria for automated parking structures. Automated parking structures are typically tall spaces where vehicles are stacked upon one another on multiple levels. Automated parking structures are becoming more and more common in the United States as they allow designers to more efficiently design parking structures. Due to the varying shapes and sizes of the vehicles, not to mention the materials used, the sprinkler industry is having difficulty understanding how frequently sprinklers should be provided and the impacts of the obstruction of spray pattern development. Additionally, this ends up being an enforcement nightmare because there is no direction and no matter how genuine and approach an engineer takes the AHJ has nothing to compare it to.

3) Research Objective (one or two sentences addressing "how will the problem be solved?"):

Identify if any research has been done on sprinkler protection criteria for these structures and/or develop a testing program to identify appropriate discharge densities and sprinkler spacing.

4) Project Description (one or two paragraphs on study design & tasks, e.g. literature review, computer modeling, hazard analysis, loss summary, code comparison, field usage survey, etc...):

This project could be approached in two phases:

Phase 1 would include a literature/testing review of information on sprinkler discharge criteria, sprinkler locations, and impacts of the vehicles on sprinkler spray patterns. These parking facilities are more common in Europe so there may be testing data from European countries. In addition, there are several manufacturers of these systems that may have testing data on these types of systems (however to my knowledge there is no specific testing to support these claims, but rather anecdotal evidence that treating them like right group a plastics would be the most appropriate). Phase 1 would include analysis of the data available to determine the knowledge gaps in this area.

Phase 2 would involve full scale testing if there are interested parties.

5) Relevant NFPA Document(s) & How Project Will Impact Them:

At present NFPA 13 or NFPA 14 note design guidance on how to handle the systems. NFPA was approached by one of their board members to help define how to protect these structures. If a literature review or testing review were to identify potential design approaches for the systems I believe it would be something that the technical committees review and put into standards.

I am looking at this simply from the sprinkler standpoint, however having designed and automated parking structure here in Boston I am well aware that the issues surrounding these structures goes far beyond sprinklers. We have many issues with the city of Boston trying to determine how to deal with ventilation, Drainage, emergency lighting, means of egress, manual firefighting operations (standpipe outlets) and other fire protection and life safety considerations. This project could potentially be a more general project just looking at the facilities and how they are being designed, rather than looking at sprinklers specifically. I believe that at some point there could be in occupancy standard for the design of automated parking structures that would address all of these requirements (similar to NFPA 88A).

6) OTHER ORGANIZATIONS THAT COULD POSSIBLY FUND, IF ANY:

I'm not sure if there is an automated parking facility Association or anything of that nature, however there are many manufacturers of the systems that might be willing to help out if testing would provide guidance to both AHJ's and designers on how to deal with these facilities.

7) WHEN DO YOU NEED PROJECT DELIVERABLES (ESTIMATED TIMEFRAME FOR COMPLETION, SENSE OF URGENCY):

The NFPA 13 committees just completed their ROC meeting for the 2013 edition. They will begin work on the 2016 addition in approximately 20 months with their pre-ROP meeting. I believe a literature review within the next year would allow the technical committees to set up a task group to review any reports and information that comes out of the literature review in time for the pre-ROP meeting.

8) SUBMITTED BY (STAFF LIAISON/TC CHAIR/ETC) AND DATE SUBMITTED:

Matthew J Klaus

Senior fire protection engineer and staff liaison to NFPA 13

October 18, 2011

Note: Code Fund projects have typically been reasonably small in size (~$30K) and a maximum one year effort.

Public Input No. 477-NFPA 13-2013 [New Section after A.6.1.1]

A.6.2.1.1 Where a sprinkler is removed from the fitting it was originally installed in, stresses on the frame and /or the operating mechanism and/or the seat can cause leakage and possible premature activation of the sprinkler if reinstalled. Removed sprinklers are also susceptible to damage from handling and storage and therefore can't be reinstalled.

However, if the entire sprinkler/fitting assembly is removed as a unit and the sprinkler itself is not removed from the fitting, the entire unit can be reinstalled. Examples of this include entire drops removed and reinstalled in another location and pieces of branch lines removed for repairs or maintenance.

Statement of Problem and Substantiation for Public Input

This new annex text explains the reasons for this new requirement being added during the last revision cycle. The second part of this annex text clarifies that sprinklers and fittings removed as a unit can be reinstalled.

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu May 30 15:10:21 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369941021346.xml

Public Input No. 338-NFPA 13-2013 [Section No. A.6.1.1]

Original Hide Markup

A.6.1.1

Included among items requiring listing are sprinklers, some pipe and some fittings, hangers, alarm devices, valves controlling flow of water to sprinklers, valve tamper switches, ~~electrically~~ and electrically operated solenoid valves ~~, and gauges~~ . Products are typically investigated in accordance with published standards. Examples of standards used to investigate several products installed in sprinkler systems are referenced in Table A.6.1.1 . This table does not include a comprehensive list of all product standards used to investigate products installed in sprinkler systems.

Table A.6.1.1 Examples of Standards for Sprinkler System Products

Category	Standard
Sprinklers	ANSI/UL 199, Automatic Sprinklers for Fire Protection Service
	FM 2000, Automatic Control Mode Sprinklers for Fire Protection
	ANSI/UL 1626, Residential Sprinklers for Fire Protection Service
	FM 2030, Residential Automatic Sprinklers
	ANSI/UL 1767, Early-Suppression Fast-Response Sprinklers
	FM 2008, Suppression Mode ESFR Automatic Sprinklers
	FM 1632, Telescoping Sprinkler Assemblies for Use in Fire Protection
	Systems for Anechoic Chambers
Valves	ANSI/UL 193, Alarm Valves for Fire Protection Service
	FM 1041, Alarm Check Valves
	ANSI/UL 260, Dry Pipe and Deluge Valves for Fire Protection Service
	FM 1021, Dry Pipe Valves
	FM 1020, Automatic Water Control Valves
	UL 262, Gate Valves for Fire Protection Service
	FM 1120, 1130, Fire Service Water Control Valves (OS & Y and NRS Type Gate Valves)
	ANSI/UL 312, Check Valves for Fire Protection Service
	FM 1210, Swing Check Valves
	UL 1091, Butterfly Valves for Fire Protection Service
	FM 1112, Indicating Valves (Butterfly or Ball Type)
	ANSI/UL 1468, Direct Acting Pressure Reducing and Pressure Restricting Valves
	ANSI/UL 1739, Pilot-Operated Pressure-Control Valves for Fire Protection Service
	FM 1362, Pressure Reducing Valves
	FM 1011/1012/1013, Deluge and Preaction Sprinkler Systems
	FM 1031, Quick Opening Devices (Accelerators and Exhausters) for Dry Pipe Valves
	FM 1042, Waterflow Alarm Indicators (Vane Type)
	FM 1045, Waterflow Detector Check Valves
	FM 1140, Quick Opening Valves $^{1}/_{4}$ Inch Through 2 Inch Nominal Size
Hangers	ANSI/UL 203, Pipe Hanger Equipment for Fire Protection Service
	FM 1951, 1952, 1953, Pipe Hanger Components for Automatic Sprinkler Systems
	FM 1950, Seismic Sway Brace Components for Automatic Sprinkler Systems
Fittings	ANSI/UL 213, Rubber Gasketed Fittings for Fire Protection Service
	FM 1920, Pipe Couplings and Fittings for Fire Protection Systems
	UL 1474, Adjustable Drop Nipples for Sprinkler Systems
	FM 1631, Adjustable and Fixed Sprinkler Fittings $^{1}/_{2}$ Inch through 1 Inch Nominal Size
	ANSI/UL 2443, Flexible Sprinkler Hose with Fittings for Fire Protection Service
	FM 1637, Flexible Sprinkler Hose with Fittings
~~Pressure Gages~~	~~UL 393, Indicating Pressure Gauges for Fire Protection Service - FM 2311, Pressure Gauges for Fire Protection Systems~~
Pipe — Aboveground	ANSI/UL 852, Metallic Sprinkler Pipe for Fire Protection Service
	FM 1630, Steel Pipe for Automatic Fire Sprinkler Systems
	ANSI/UL 1821, Thermoplastic Sprinkler Pipe and Fittings for Fire Protection Service
	FM 1635, Plastic Pipe & Fittings for Automatic Sprinkler Systems
	FM 1636, Fire Resistant Barriers for Use with CPVC Pipe and Fittings in Light Hazard Occupancies
Pipe — Underground	UL 1285, Polyvinyl Chloride (PVC) Pipe and Couplings for Underground Fire Service
	FM 1612, Polyvinyl Chloride (PVC) Pipe and Fittings for Underground Fire Protection Service
	FM 1613, Polyethylene (PE) Pipe and Fittings for Underground Fire Protection Service
	FM 1610, Ductile Iron Pipe and Fittings, Flexible Fittings and Couplings
	FM 1620, Pipe Joints and Anchor Fittings for Underground Fire Service Mains

Statement of Problem and Substantiation for Public Input

Guages are no longer required to be Listed. The reference to such should be removed.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 15:06:51 EDT 2013

and intend that, by checking this box, I am creating an electronic signature that w ill, upon my submission of this form, have the same legal force and effect as a handw ritten signature

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Public Input No. 15-NFPA 13-2013 [Section No. A.6.2.9.1]

Original Hide Markup

~~A.6.2.9.1~~

~~A minimum of two sprinklers of each type and temperature rating should be provided.~~

Statement of Problem and Substantiation for Public Input

This requirement belongs in the body of the standard.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 14-NFPA 13-2013 [New Section after 6.2.9.1]	

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Jan 15 15:46:12 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1358282772403.xml

Public Input No. 302-NFPA 13-2013 [Section No. A.6.3.1.1.1]

Original | Hide Markup

A.6.3.1.1.1

Extending the underground pipe, such as ductile iron and C-900 PVC into a building provides working room to transition to the appropriate aboveground piping. Environmental conditions should be considered as outlined in 24.1.6.1.2.

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_14_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

During the previous revision cycle, the intent of Proposal 13-86 and Comment 13-79 was to clarify that it was acceptable to bring underground pipe into the building to specifically allow the transition above the floor, without having to make any special provisions.
This clarification was lost however, when the TC amended the text that was offered, to address all piping and added the reference to 24.1.6.1.2. As written, the text now seems to suggest that spigot pieces always need to be protected from corrosion and mechanical damage. These changes are offered to provide the clarification as it was originally intended.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:46:55 EDT 2013

Origin (from sources other than the submitter)

Proposal 13-86 and Comment 13-79 from the previous revision cycle.

/TerraView/Content/13-2013.ditamap/2/C1368553615789.xml

Public Input No. 246-NFPA 13-2013 [Section No. A.6.3.7]

Original | Hide Markup

A.6.3.7

CPVC is a plastic material and consideration is necessary when other materials or chemicals come in contact with CPVC that can cause degradation of perfomance of the pipe due to interaction of materials. Compliance with 6.3. ~~6~~ 7 combined with following manufacturer's guidance on installation and compatible materials will help prevent premature performance degradation of CPVC piping. Excessive mechanical stress caused by hanging methods or excessive bending on CPVC piping beyond the recommended limitations can cause stress failure over time and should be avoided.

Statement of Problem and Substantiation for Public Input

Paragraph referenced by the annex refers to brass.

Submitter Information Verification

Submitter Full Name: RYAN NAGEL
Organization: USACE (United States Army Corps of Engineers)
Affilliation: Department of Defense
Submittal Date: Fri May 03 08:31:36 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367584296580.xml

Public Input No. 88-NFPA 13-2013 [Section No. A.6.10]

Original | Hide Markup

A.6.10

Table A.6.10 is a summary of the requirements for signs in NFPA 13.

Table A.6.10 Sprinkler System Signage Summary

Section	Sign Location	Sign Information/Requirements
6.7.4	Control valves	Identification sign
	Drain valves	
	Test connection valves	Sign must be made of weatherproof metal or rigid plastic and attached with corrosion-resistant wire or chain
7.6.1.4 and 7.6.1.5	Antifreeze system main valve	Indicate the following:
	Circulating closed loop systems	Antifreeze manufacturer
		Antifreeze type
		Antifreeze concentration
7.7.1.5	All valves controlling sprinklers	Sign worded as follows:
		"This valve controls fire protection equipment.
		Do not close until after fire has been extinguished.
		Use auxiliary valves when necessary to shut off supply to auxiliary equipment.
		Caution: Automatic alarm may be sounded if this valve is closed."
8.16.1.1.8	Control valves	Indicate valve function
		Indicate system being controlled
8.16.2.5.3.7	Dry valve	Number of low point drains
	Preaction valve	Location of each drain
8.17.2.4.5	Fire department connections not serving the whole building	Indicate portion of the building served by the fire department connection
8.17.2.4.7	All fire department connections	Indicate systems served by the fire department connection
		Indicate system pressure demand (for systems requiring more than 150 psi)
		Letters must be 1 in. in height

~~24~~

Section	Sign Location	Sign Information/Requirements
25 .5	Alarm valve	Indicate the following:
	Dry pipe valve	Location of the design area or areas
	Preaction valve	Discharge densities over the design area or areas
	Deluge valve	Required flow and residual pressure demand at the base of the riser
		Occupancy classification or commodity classification and maximum permitted storage height and configuration
		Hose stream allowance
		The installing contractor
		Sign must be made of weatherproof metal or rigid plastic and attached with corrosion-resistant wire or chain

~~24~~

Section	Sign Location	Sign Information/Requirements
25 .6	System control riser	Indicate the following:
	Antifreeze loops	Name and location of the facility
	Auxiliary systems	Occupancy and commodity classification
	Control valves	Flow test data
		Original main drain flow test results
		Presence of encapsulated pallet loads
		Presence of solid shelving
		Presence of flammable/combustible liquids
		Presence of hazardous materials
		Presence of other special storage
		Presence of antifreeze or other auxiliary systems
		Maximum storage height
		Aisle width
		Location of auxiliary drains and low point drains on dry pipe and preaction systems
		Installing contractor or designer
		Sign must be made of weatherproof metal or rigid plastic and attached with corrosion-resistant wire or chain
26.2.7.5	Fire department connection (FDC)	18 in. × 18 in. sign
		FDC symbol from NFPA 170
		Located at connection in plain sight from shore access point
A.18.17.1	Central station, auxiliary, remote station, or proprietary protective signaling systems	Recommended:
		Located near the device
		Direct people to call police or fire department when bell rings

Statement of Problem and Substantiation for Public Input

corrected typo. Only 24.5 and 24.6 were modified but the program underlined all the existing text.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Associ
Submittal Date: Wed Feb 27 15:10:41 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1361995841974.xml

Public Input No. 236-NFPA 13-2013 [New Section after A.7.2.5.1]

A.7.2.5.4.3 Any method of preventing or detecting a column of water that may inhibit the actuation of the dry valve that is acceptable to the AHJ shall be allowed. This can be an automatic drain, required periodic training including written instructions, cautions and a check list permanently displayed at the dry valve, visible or audible high water indicator with instructions on what to do if activated, etc.

Additional Proposed Changes

File Name	Description	Approved
NFPA_Public_Input_Form_13_2013_7_2_5_4_3.pdf	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This section as currently written isn't very clear. What does the committee mean by; An automatic high water level signaling device or an automatic drain shall be permitted? Since these are the only methods mentioned as being permitted, does that mean they are the only methods allowed for detecting or preventing the accumulation of water? Some sort of protection is necessary to prevent the accumulated of water above the clapper, especially for the low differential valves in 7.2.5.4.2 that can be externally reset and the protection should be required, not just permitted. Section 7.2.5.4.1 as currently written simply permits people to protect against water accumulation, as if people would be opposed to making sure there wasn't a column of water that might prevent the dry valve from opening. This change would at least require some sort of protection that is acceptable to the AHJ and the annex material would describe some methods that might be acceptable.

Submitter Information Verification

Submitter Full Name: Michael Henke
Organization: Potter Electric Signal Company
Submittal Date: Mon Apr 29 09:27:17 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1367242037859.xml

Public Input No. 35-NFPA 13-2013 [Sections A.7.6.1, A.7.6.2, A.7.6.2.1]

Original Hide Markup

Sections A.7.6.1, A.7.6.2, A.7.6.2.1

A.7.6.1

The definition of an antifreeze system states that water will discharge after the antifreeze leaves the pipes. Systems that are all antifreeze, including tanks of antifreeze solution that will not discharge plain water, are not true antifreeze systems. Such systems should not be used without consideration to issues such as the combustibility of the antifreeze solution and the friction loss in the piping during cold conditions. Any listing associated with an antifreeze sprinkler system should address the inability for the specific antifreeze solution tested to ignite when discharged from specific sprinklers.

A.7.6.2

Listed nonmetallic sprinkler pipe and fittings should be protected from freezing with compatible listed solutions only. In addition, due to antifreeze solution limitations, other methods of freeze protection such as electric heat tracing or insulated coverings, which are approved for use on nonmetallic piping, can be used to protect nonmetallic pipes from freezing.

The following is a list of research reports that have been issued by the Fire Protection Research Foundation (FPRF) related to the use of antifreeze in sprinkler systems:

(1) Antifreeze Systems in Home Fire Sprinkler Systems — Literature Review and Research Plan, Fire Protection Research Foundation, June 2010

(2) Antifreeze Systems in Home Fire Sprinkler Systems — Phase II Final Report, Fire Protection Research Foundation, December 2010

(3) Antifreeze Solutions Supplied through Spray Sprinklers — Interim Report, Fire Protection Research Foundation, February 2012

Table A.7.6.2 provides a summarized overview of the testing.

Table A.7.6.2 FPRF Antifreeze Testing Summary

Topic	Information
Scope of sprinklers tested	The following sprinklers were used during the residential sprinkler research program described in the report dated December 2010: (1) Residential pendent style having nominal K-factors of 3.1, 4.9, and 7.4 gpm/psi$^{1/2}$ (2) Residential concealed pendent style having a nominal K-factor of 4.9 gpm/psi$^{1/2}$ (3) Residential sidewall style having nominal K-factors of 4.2 and 5.5 gpm/psi$^{1/2}$
	The following sprinklers were used during the spray sprinkler research program described in the report dated February 2012: (1) Residential pendent style having a nominal K-factor of 3.1 gpm/psi$^{1/2}$ (2) Standard spray pendent style having nominal K-factors of 2.8, 4.2, 5.6, and 8.0 gpm/psi$^{1/2}$ (3) Standard spray concealed pendent style having a nominal K-factor of 5.6 gpm/psi$^{1/2}$ (4) Standard spray upright style having a nominal K-factor of 5.6 gpm/psi$^{1/2}$ (5) Standard spray extended coverage pendent style having a nominal K-factor of 5.6 gpm/psi$^{1/2}$
Antifreeze solution concentration	<50% glycerine and <40% propylene glycol antifreeze solutions: Solutions were not tested.
	50% glycerine and 40% propylene glycol antifreeze solutions: Large-scale ignition of the sprinkler spray did not occur in tests with sprinkler discharge onto a fire having a nominal heat release rate (HRR) of 1.4 megawatts (MW). Large-scale ignition of sprinkler spray occurred in multiple tests with sprinkler discharge onto a fire having a nominal HRR of 3.0 MW.
	55% glycerine and 45% propylene glycol antifreeze solutions: Large-scale ignition of the sprinkler spray occurred in tests with sprinkler discharge onto a fire having a nominal HRR of 1.4 MW.
	> 55% glycerine and > 45% propylene glycol antifreeze solutions: Large-scale ignition of the sprinkler spray occurred in tests with sprinkler discharge onto a fire having an HRR of less than 500 kW.
	70% Glycerine and 60% propylene glycol antifreeze solutions: Maximum antifreeze solution concentrations tested.
Sprinkler inlet pressure	Large-scale ignition of the sprinkler discharge spray was not observed when the sprinkler inlet pressure was 50 psi or less for tests using 50% glycerine or 40% propylene glycol.
Ceiling height	When discharging 50% glycerine and 40% propylene glycol antifreeze solutions onto fires having an HRR of 1.4 MW, no large-scale ignition of the sprinkler spray was observed with ceiling heights up to 20 ft.
	When discharging 50% glycerine and 40% propylene glycol antifreeze solutions onto fires having a HRR of 3.0 MW, large-scale ignition of the sprinkler spray was observed at a ceiling height of 20 ft.
Fire control	The test results described in the test reports dated December 2010 and February 2012 indicated that discharging glycerine and propylene glycol antifreeze solutions onto a fire can temporarily increase the fire size until water is discharged.
	As a part of the residential sprinkler research described in the report dated December 2010, tests were conducted to evaluate the effectiveness of residential sprinklers to control fires involving furniture and simulated furniture. The results of these tests indicated that 50% glycerine and 40% propylene glycol antifreeze solutions demonstrated the ability to control the furniture type fires in a manner similar to water.
	For standard spray type sprinklers, no tests were conducted to investigate the ability of these sprinklers to control the types and sizes of fires that these sprinklers are intended to protect.

A.7.6.2.1

Where existing antifreeze systems have been analyzed and approved to remain in service, antifreeze solutions should be limited to premixed antifreeze solutions of glycerine (chemically pure or United States Pharmacopoeia 96.5 percent) at a maximum concentration of 48 percent by volume, or propylene glycol at a maximum concentration of 38 percent by volume. The use of antifreeze solutions in all new sprinkler systems should be restricted to listed antifreeze solutions only. Where existing antifreeze systems are in service, the solution concentration should be limited to those noted in A.7.6.2.1, and the system requires an analysis and approval of the AHJ to remain in service.

See uploaded file.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_P_29_Rec_from_TIA.pdf	Rec text from TIA (balloted)	

Statement of Problem and Substantiation for Public Input

Note: This Proposal originates from Tentative Interim Amendment 13-13-1 (TIA 1066) issued by the Standards Council on August 9, 2012.

The information provided in the Fire Protection Research Foundation report “Antifreeze Solutions Supplied through Spray Sprinklers: Interim Report” illustrates that under certain conditions (pressure, fire size, k-factor, ceiling height, deflector design…etc) a 50% glycerine solution is capable of igniting and causing a dramatic increase in heat release rate. As noted in the FPRF report, these results highlight the “complicated interaction between sprinkler spray and the ignition source.”As a result of this additional testing, there are more questions that need to be answered, and the testing shows that concentrations of anti-freeze that previous testing indicated were acceptable and would not support combustion actually do with a stronger ignition source. In addition, sprinklers with larger orifices that require lower pressure than typical residential sprinklers and potentially a lager droplet distribution also ignited. It is clear that further testing is need to fully understand under what conditions an anti-freeze solutions are safe, anti-freeze solutions can not be allowed in sprinkler systems.

This TIA calls for the use of Listed Antifreeze Solutions. Using listed antifreeze solutions will ensure that the solution discharged from a sprinkler system will not ignite or cause a dramatic increase in heat release rate of a fire. The process for developing listed products will also allow for a continued improvement in fire and

life safety in environments meeting the NFPA Codes and Standards.

This TIA also calls for the continued acceptance of currently listed ESFR Antifreeze Systems. The listing process has already shown that, in some cases, it is possible to use current antifreeze solutions to provide the level of protection prescribed by NFPA 13. For this reason, it is proposed to allow the continued use of propylene-glycol solutions in systems and in protection scenarios that have been thoroughly tested to demonstrate such results. There are ESFR systems currently available that have been specifically tested and listed with a specific model of sprinkler and solution delivery method that provide an appropriate level of protection as to be considered “Early Suppression”.

Emergency Nature: The latest testing from The Fire Protection Research Foundation titled Antifreeze Solutions Supplied through Spray Sprinklers Interim Report (dated February 2012) shows that anti-freeze concentrations currently allowed in new NFPA 13 sprinkler systems may support combustion and increase the size of the fire. This is a safety issue that requires changes in the standard.

The following are two items which make this TIA of emergency nature. Only one is required for substantiation of an emergency nature.

(d) The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation During the latest revision cycle the committee evaluated the test data that was present at the time of the cycle. The committee could not anticipate that additional data would change our justifications during the process. The new data demonstrates that variables utilized in the development of the 2013 edition may lead to changes in the fire involvement.

Propylene glycol and glycerin antifreeze solutions discharged from sprinklers have the potential to ignite under certain conditions. Research testing has indicated that several variables may influence the potential for large scale ignition of the antifreeze solution discharged from a sprinkler. These variables include, but are not limited to, the concentration of antifreeze solution, sprinkler discharge characteristics, inlet pressure at the sprinkler, location of fire relative to the sprinkler, and size of fire at the time of sprinkler discharge.

(f) The proposed TIA intends to correct a circumstance in which the revised document has resulted in an adverse impact on a product or method that was inadvertently overlooked in the total revision process, or was without adequate technical (safety) justification for the action. Antifreeze solutions have been subject to recent testing and the new data shows that the installations found within the standard do not account for the complete safety of the occupant. The data appears to provide additional questions and challenges the parameters of installation found in the standard.

The use of propylene glycol and glycerin antifreeze solutions should only be considered when other sprinkler system design alternatives are not available or practical. If these solutions are used, all relevant data and information should be carefully reviewed and considered in the sprinkler system.

Submitter Information Verification

Submitter Full Name:	Terry Victor
Organization:	Tyco/SimplexGrinnell
Submittal Date:	Thu Jan 24 13:30:32 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359052232848.xml

Public Input No. 145-NFPA 13-2013 [Section No. A.8.1]

Original | Hide Markup

A.8.1

The installation requirements are specific for the normal arrangement of structural members. There will be arrangements of structural members not specifically detailed by the requirements. By applying the basic principles, layouts for such construction can vary from specific illustrations, provided the maximums specified for the spacing and location of sprinklers (see Section 8.4) are not exceeded.

Where buildings or portions of buildings are of combustible construction or contain combustible material, standard fire barriers should be provided to separate the areas that are sprinkler protected from adjoining unsprinklered areas. All openings should be protected in accordance with applicable standards, and no sprinkler piping should be placed in an unsprinklered area unless the area is permitted to be unsprinklered by this standard.

Water supplies for partial systems should be designed with consideration to the fact that in a partial system more sprinklers might be opened in a fire that originates in an unprotected area and spreads to the sprinklered area than would be the case in a completely protected building. Fire originating in a nonsprinklered area might overpower the partial sprinkler system.

~~Where sprinklers are installed in corridors only, sprinklers should be spaced up to the maximum of 15 ft (4.5 m) along the corridor, with one sprinkler opposite the center of any door or pair of adjacent doors opening onto the corridor, and with an additional sprinkler installed inside each adjacent room above the door opening. Where the sprinkler in the adjacent room provides full protection for that space, an additional sprinkler is not required in the corridor adjacent to the door.~~

Statement of Problem and Substantiation for Public Input

It is not clear how this annex language relates to this section. If the standard is going to prescribe how to protect corridors, it should be done in the body of the standard.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 13:25:51 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364318751535.xml

Public Input No. 146-NFPA 13-2013 [Section No. A.8.1.1]

Original Hide Markup

A.8.1.1

This standard contemplates full sprinkler protection for all areas including walk-in coolers, freezers, bank vaults, and similar areas. Other NFPA standards that mandate sprinkler installation might not require sprinklers in certain areas. Based upon experience and testing, sprinklers have been found to be effective and necessary at heights in excess of 50 ft (15.2 m). For a building to meet the intended level of protection afforded by NFPA 13, sprinklers must not be omitted from such high ceiling spaces. The requirements of this standard should be used insofar as they are applicable. The authority having jurisdiction should be consulted in each case. A building is considered sprinklered throughout when protected in accordance with the requirements of this standard.

In situations such as computer rooms where a gas system is installed, the sprinkler protection should not be eliminated. Many gas systems do not have the same duration requirements of a fire sprinkler system and if the fire is not extinguished with the initial discharge, the fire could grow large enough to overpower the sprinkler system. Use of a double interlock system can diminish the possibility of an accidental discharge.

Statement of Problem and Substantiation for Public Input

The importance of protecting all area is the purpose of this annex section. Some building codes indicate that sprinklers can be eliminated from rooms with gas systems. If the committee is serious about their desire to sprinkler all areas, then this reference to gas systems and computer rooms is needed as this is the most common situation where sprinklers are omitted.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 13:27:39 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364318859291.xml

Public Input No. 288-NFPA 13-2013 [Section No. A.8.4.7.2]

Original Hide Markup

~~A.8.4.7.2~~

~~The purpose of this requirement is to avoid scale accumulation.~~

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_6_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This revision is proposed in light of the Committee Action and Statement for Comment 13-315 from the previous cycle. If as per the Committee's explanation that "The TC feels that the corrosion issue is pervasive …. Internal pipe inspections have revealed that dry galvanized systems have the same level of corrosion as black steel." If this is the case then there is no reason to mandate the extra expense for galvanized pipe, since it will corrode just as badly as black steel pipe.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:24:03 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368552243948.xml

Public Input No. 410-NFPA 13-2013 [Section No. A.8.5.5.1]

Original | Hide Markup

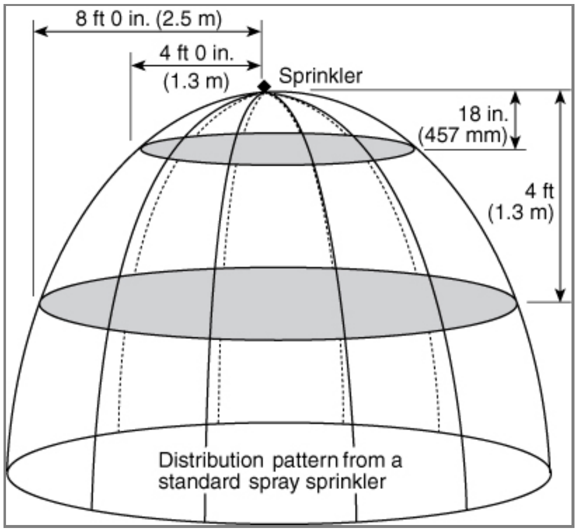
A.8.5.5.1

See Figure A.8.5.5.1 for a represdentation of a typical spray sprinkler pattern .

NFPA 13 strives to minimize the effect of obstructions through the use of specific criteria in sections 8.5.5, 8.6.5, 8.7.5, 8.8.5, 8.9.5, 8.10.6, 8.10.7, 8.11.5 and 8.12.5. The obstruction criteria for storage sprinklers in 8.11.5 and 8.12.5 is the most stringent. For other types of sprinklers, dry spaces caused be obstructions such as columns and wall configurations will occur and can comply with the standard. The general rules known as the "three-times rule" and the "four-times rule" define dry areas or "shadow areas" that are acceptable behind obstructions like columns and walls. Tests have shown that the larger the column, the larger the dry area behind the column will be and the longer it will take for sprinklers on the other side of the column to react to the fire behind the column. In a very large compartment, the delay may become unacceptable. The delay in sprinkler response can be minimized with smaller columns, smaller compartments, or putting sprinklers on the other side of the column.

With the situation of walls jutting out or bumping out, the sprinkler does not appear to be significantly delayed in activation. Tests have shown that once the sprinkler activates, water will not get to every square foot of space behind the bump out, but that significant water spray should prevent the fire from spreading beyond the small area of the shadow.

Figure A.8.5.5.1 Obstructions to Sprinkler Discharge Pattern Development for Standard Upright or Pendent Spray Sprinklers.



Additional Proposed Changes

File Name	Description	Approved
Open Shadow_Area-Columns.pdf	This is one of the tests referred to in the text. It is intended as part of our substantiation	
Open Shadow_Area-Bump_Out.pdf	This is the second of the tests referred to in our text. It is intented as part of our substantiation	

Statement of Problem and Substantiation for Public Input

The standard needs to address shadow areas in some manner. We tried last cycle to address the issue, but could not come to a complete consensus. We are attempting to open the discussion again, this time with some sprinkler response and water collection data. See the enclosed two test programs which were developed by the NFSA Shadow Area Task Group.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Fri May 24 10:15:11 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369404911888.xml

NFPA 13 Column Testing

Testing was conducted at the Viking Corporation burn building to determine the effects of various size columns on sprinkler performance. Floor collection, wall wetting and a sprinkler response test were conducted with a 9” column, a 24” column and no column, in a 20’ x 40’ room, with an 8” ceiling. For this testing, the following sprinklers were used; VK468 (4.9k residential pendent), VK472 (5.8k residential pendent), VK600 (5.6k ECLH pendent), VK602 (8.0k ECLH pendent), and VK608 (11.2k ECLH pendent). All the sprinklers are currently UL Listed.

The floor collection layout is shown in fig. 1, 1’ x 1’ x 1’ collection buckets were used.

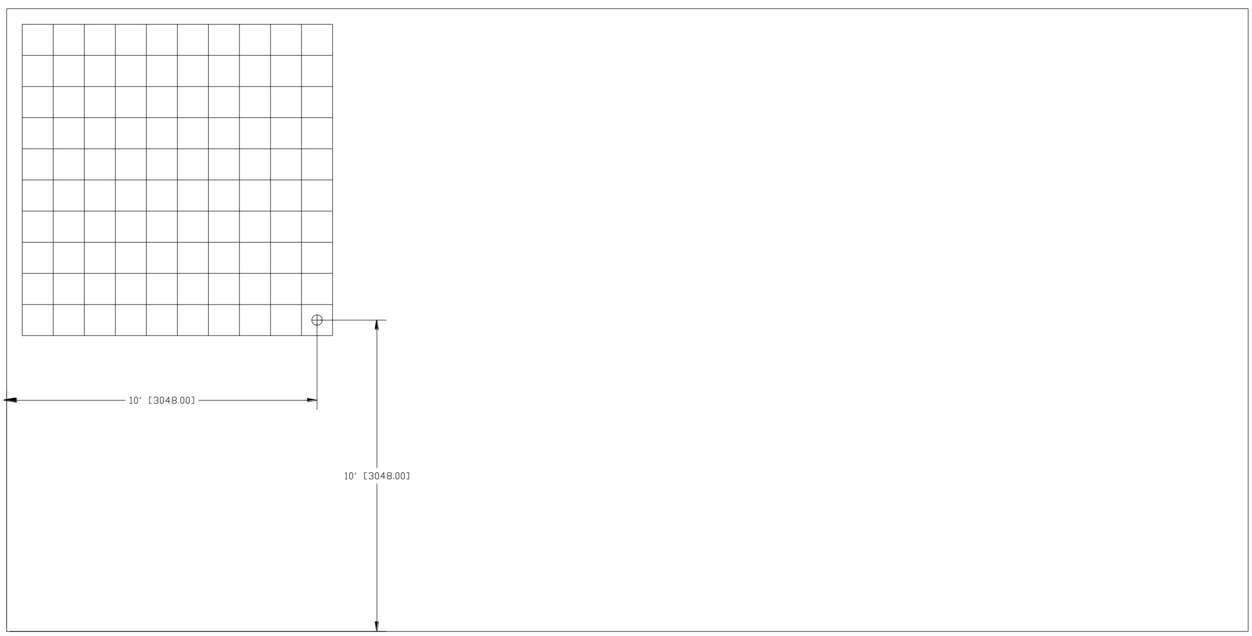


Fig. 1

The wall wetting and the room response tests were conducted in the same room. For the wall wetting tests, Kraft paper was attached to the walls. For the residential sprinklers, the UL criteria is the paper must be wet 28” down from the ceiling. For the commercial ECLH sprinklers, the UL criteria is the paper must be wet 30” when measured from the floor up. For the column testing, a 9” x 9” column was positioned 36” away from the sprinkler (when measured diagonally from the sprinkler to the corner of the room) and a 24” column was also positioned 36” away from the sprinkler. The position of the column is shown in the layout for the room response test. For the floor collections with the columns, the necessary pans were removed. This is shown on the floor collection data sheets. The room response testing was conducted using a natural gas sand burner, outlined in UL 199 Figure 31.3, flowing 400 scfm. An example of the room layout is shown in Fig. 2. The results of the room response tests are shown in Table 1.

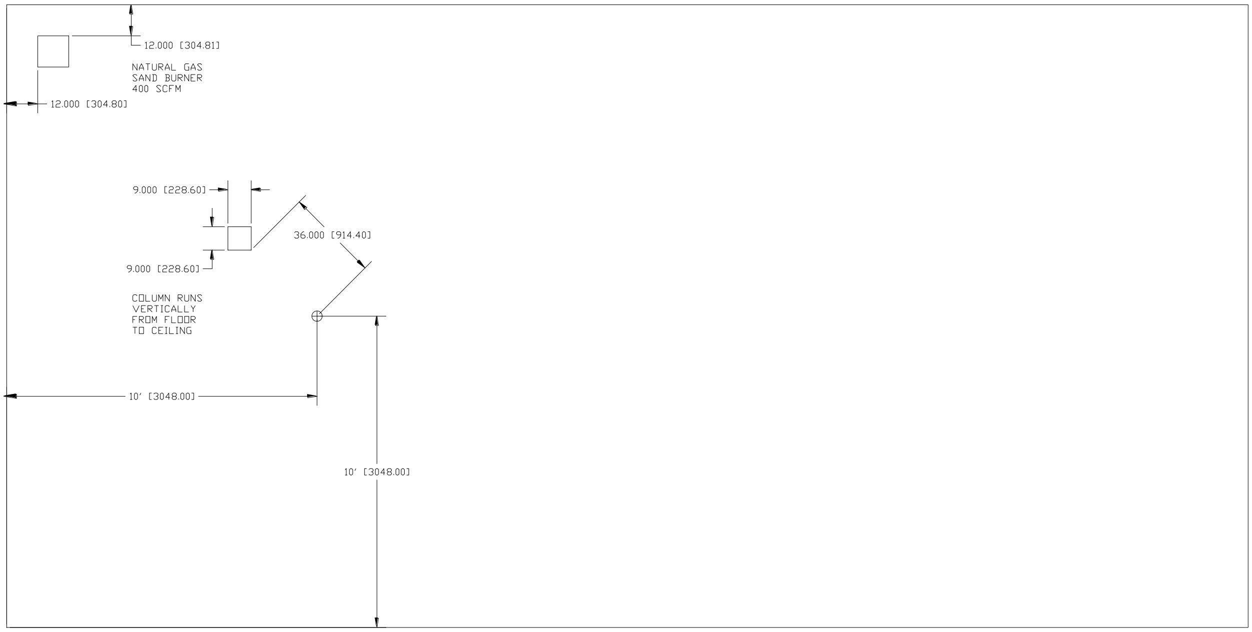


Fig. 2

Room Response Test		
Testing was conducted using a recessed pendent sprinkler with a 155°F 3mm glass bulb		
	Operation time of sprinkler	
No column	1:44	
9" column	4:49	
24" column	test was stopped at 10 minutes and sprinkler had not operated	

Table 1

Summary

The 9” and 24” column had a significant impact on the floor collection and wall wetting results on all the sprinklers tested with the 24” column having a bigger impact on the results. Every test with the columns produced a large amount of buckets without any water as well as areas of paper in the wall wetting test that were completely dry.

For the wall wetting tests conducted on the ECLH sprinklers, paper was hung on the wall with the top of the paper at 30”. Water hit higher on the wall in many areas, but was only measured 30” up from the floor to confirm compliance with applicable UL listing requirements. The wall wetting tests on the ECLH sprinklers with the 9” column are somewhat misleading. During the test, the paper was getting wet and gradually filled in over the course of the 10 minutes with the column present. However it should be noted that the wetting was the result of indirect mist/overspray and not direct impingement. Without the column, large drops were produced and wet the paper immediately.

The most noticeable impact was during the room response test. With the 24” column, the sprinkler failed to operate.

U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK468 K = 4.9 Type: Recessed Pendent Residential

Flow: 20 GPM Test Duration: 20 Min. Date: 11/16/2012

Frame Arms: ____ Parallel x Perpendicular

N ⇩

Sprinkler X

6	5	15	14	4	3	2	2	2	2
3	3	12	8	4	3	3	2	2	2
4	3	3	3	3	3	2	3	3	3
4	4	4	3	3	4	3	2	2	2
5	4	2	2	2	3	5	5	2	2
6	3	2	2	2	2	3	5	5	2
7	3	2	3	2	2	2	2	4	3
7	3	2	3	3	2	2	2	2	2
7	3	2	2	5	3	2	2	2	2
8	4	3	4	5	7	2	2	2	2

Floor Dist.

Average: 3.490

Low: 2.000

High: ____

Notes: No column

Tested By: ____

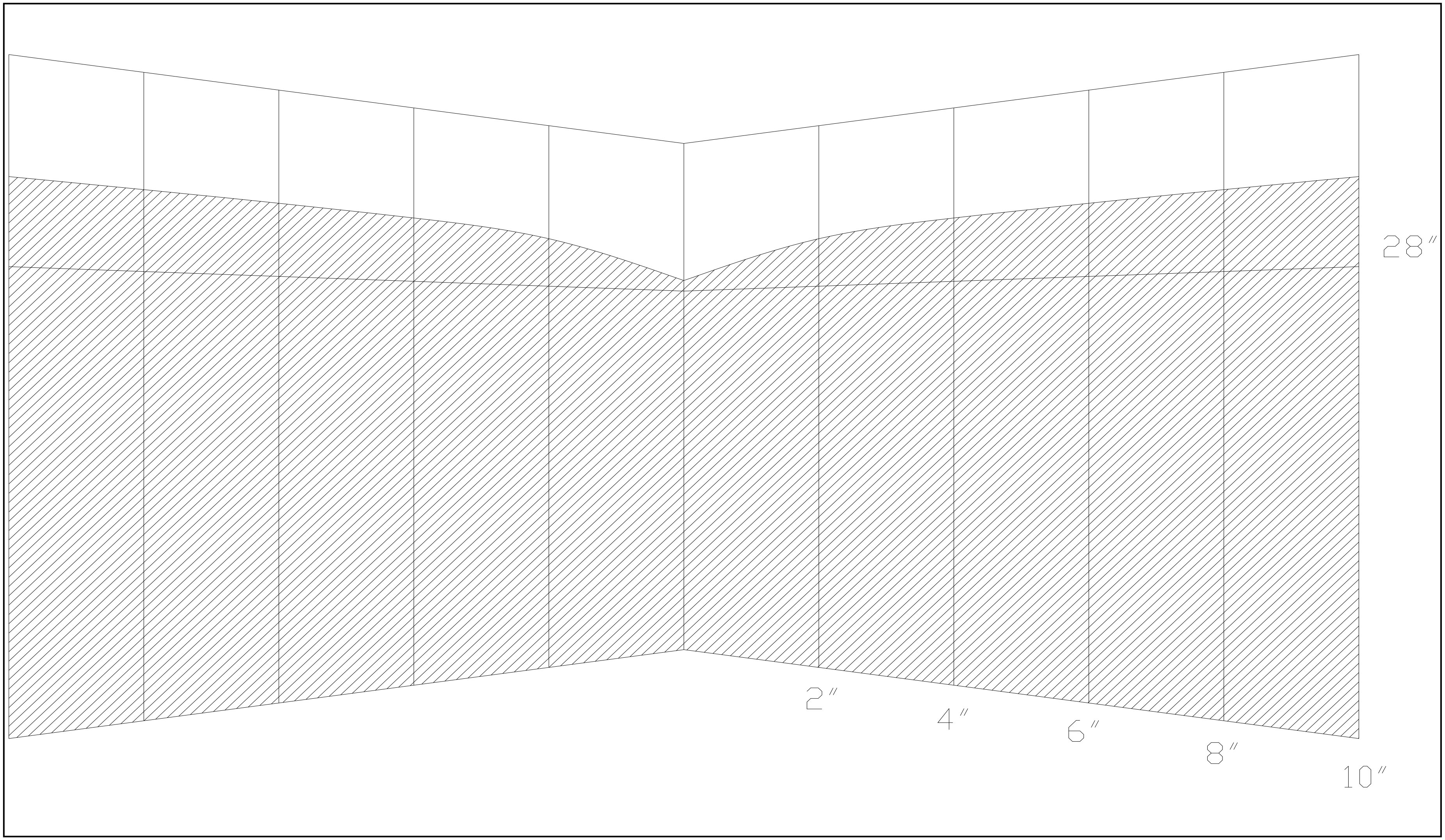
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK468 K = 4.9 Type: Recessed Pendent Residential No column

Flow: 20 GPM Test Duration: 10 Min. Date: 11/16/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK468 K = 4.9 Type: Recessed Pendent Residential

Flow: 20 GPM Test Duration: 20 Min. Date: 11/14/2012

Frame Arms: ______ Parallel x Perpendicular

N

Sprinkler X

7	6	15	14	4	3	2	2	2	2
3	4	12	12	7	7	4	2	2	2
3	3			7	6	4	3	3	3
4	5			1	4	5	3	3	2
5	4	6	0	0	1	4	5	1	3
6	4	7	2	0	0	1	3	3	5
7	5	8	4	1	0	0	0	3	2
7	4	6	5	2	0	0	0	0	0
7	3	3	5	5	2	0	0	0	0
6	3	3	5	7	4	1	0	0	0

Floor Dist.

Average: 3.390

Low: 0.000

High: ______

Notes: 9" column

Tested By: ______________________

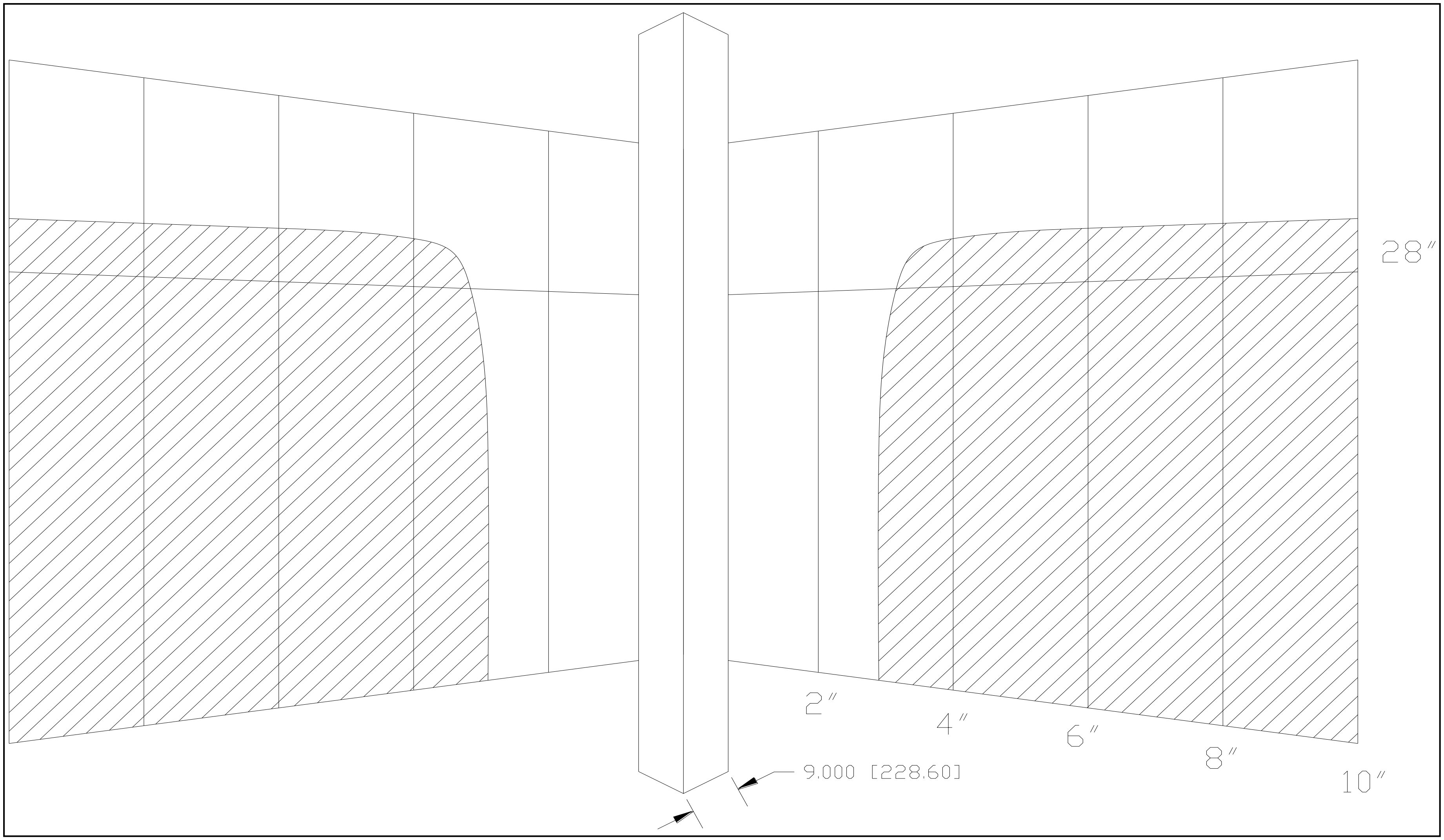
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK468 K = 4.9 Type: Recessed Pendent Residential 9" column

Flow: 20 GPM Test Duration: 10 Min. Date: 11/14/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK468 K = 4.9 Type: Recessed Pendent Residential

Flow: 20 GPM Test Duration: 20 Min. Date: 11/13/2012

Frame Arms: ______ Parallel x Perpendicular

N

Sprinkler X

6	4	5	20	10	6	4	3	2	3
4	4	8	7	6	2	7	3	3	3
4	5				12	4	2	3	6
7	7				0	1	1	1	2
9	7				0	0	0	0	1
11	8	14	1	0	0	0	0	0	0
9	7	13	3	0	0	0	0	0	0
7	5	6	3	0	0	0	0	0	0
5	3	3	2	2	0	0	0	0	0
4	3	3	3	2	0	0	0	0	0

Floor Dist.

Average: 2.990

Low: 0.000

High: ______

Notes: 24" column

Tested By: ______

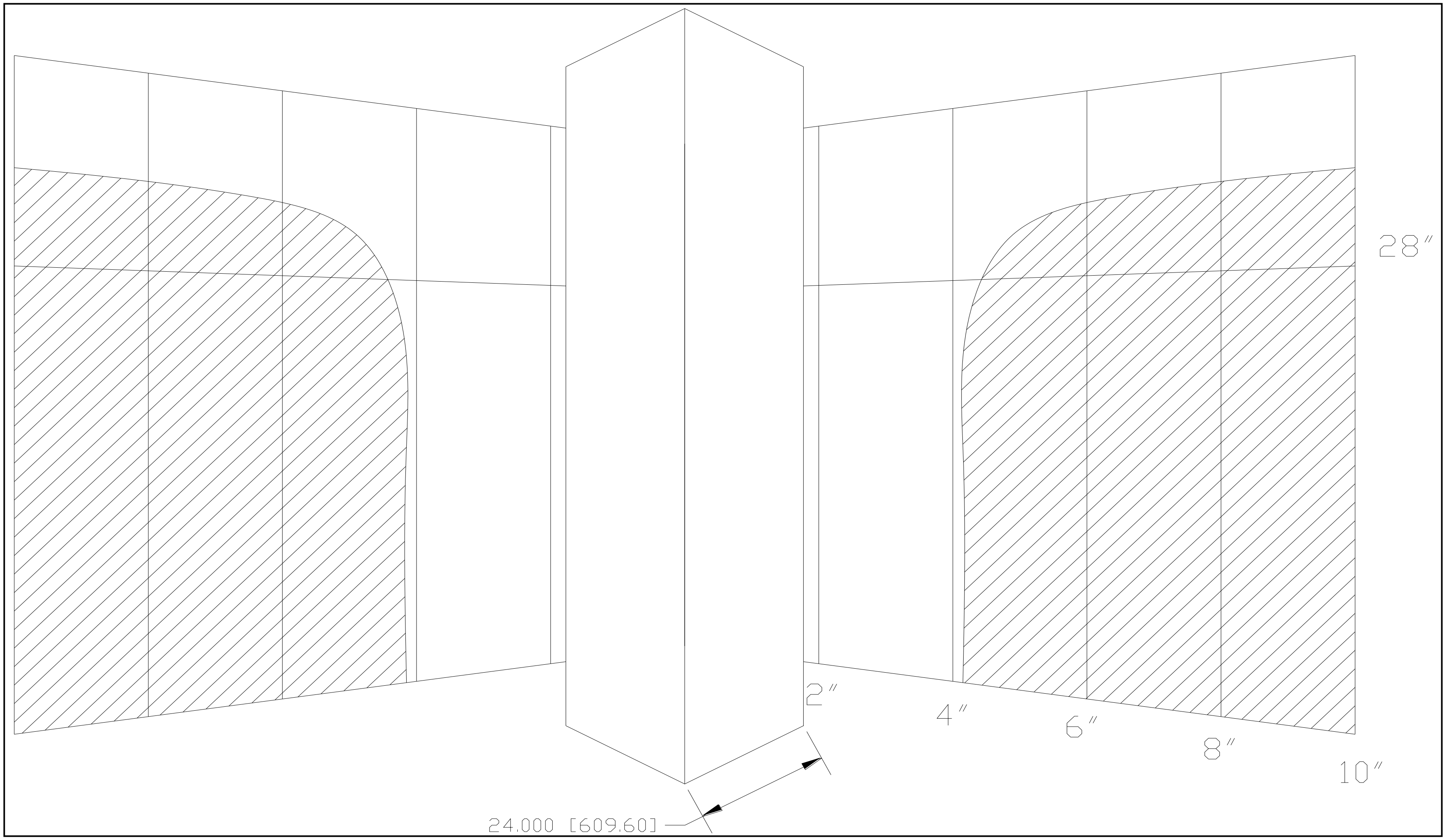
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK468 K = 4.9 Type: Recessed Pendent Residential 24" column

Flow: 20 GPM Test Duration: 10 Min. Date: 11/13/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK472 K = 5.8 Type: Recessed Pendent Residential

Flow: 21 GPM Test Duration: 20 Min. Date: 11/16/2012

Frame Arms: ______ Parallel x Perpendicular

N ⇩

Sprinkler X

2	2	14	18	7	4	3	2	2	3
3	2	6	4	4	3	3	2	2	3
3	3	5	2	2	2	2	2	2	2
3	3	3	2	2	2	2	2	2	4
4	3	2	2	2	2	2	2	2	2
6	3	2	2	2	2	2	2	2	2
7	3	2	2	2	2	3	4	4	2
7	3	2	2	3	2	2	3	6	12
7	2	2	2	3	5	2	3	3	8
6	4	7	5	2	11	3	2	4	4

Floor Dist.

Average: 3.450

Low: 2.000

High: ______

Notes: No column

Tested By: ______________________

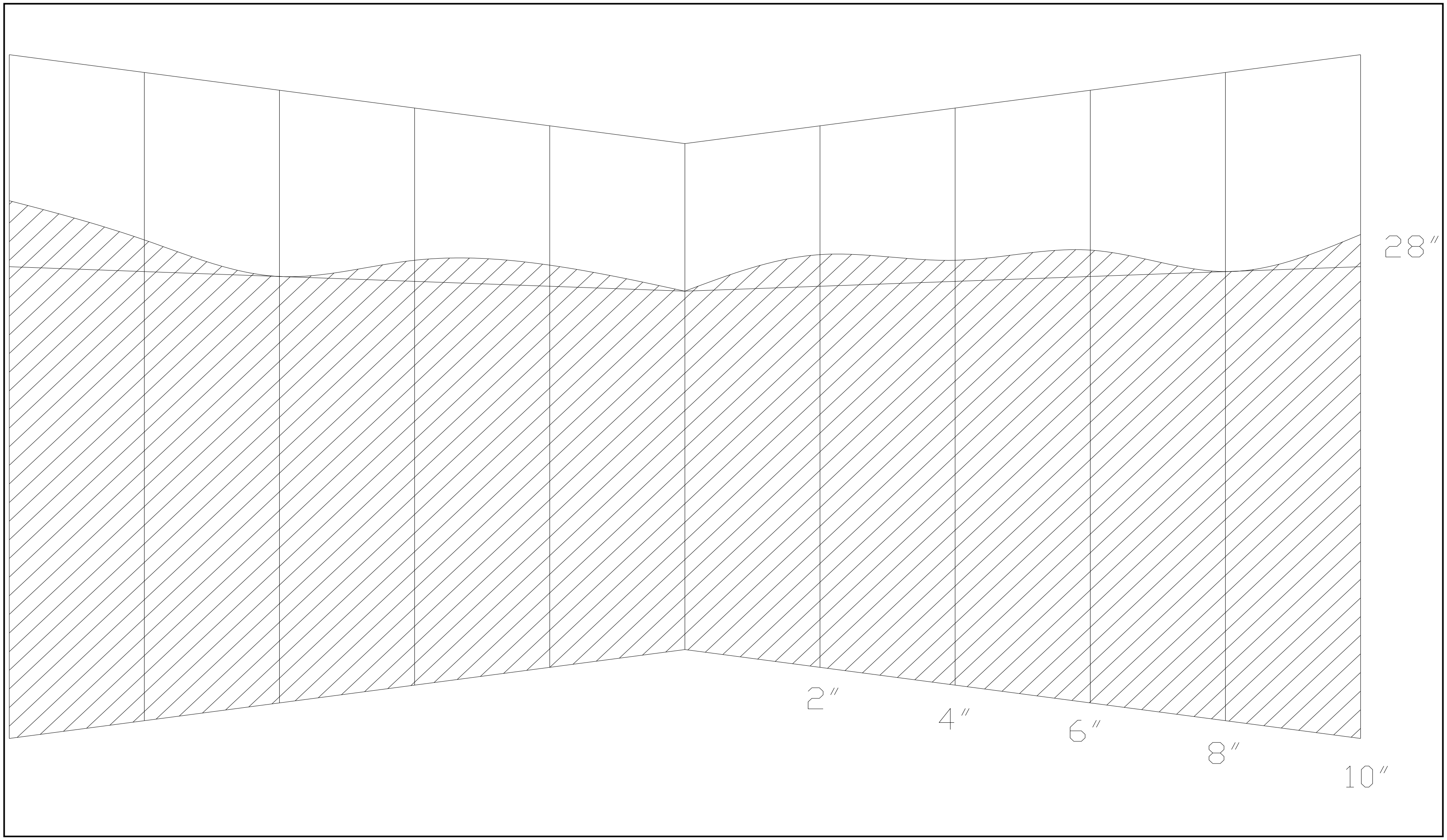
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK472 K = 5.8 Type: Recessed Pendent Residential No column

Flow: 21 GPM Test Duration: 10 Min. Date: 11/16/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK472 K = 5.8 Type: Recessed Pendent Residential

Flow: 21 GPM Test Duration: 20 Min. Date: 11/14/2012

Frame Arms: ______ Parallel x Perpendicular

N

Sprinkler X

2	2	12	16	5	3	2	2	2	3
3	2	8	8	8	8	5	3	2	4
2	2			4	5	3	3	3	5
2	2			1	2	2	1	1	4
3	3	6	2	0	0	2	3	1	1
5	3	6	3	0	0	1	4	5	2
7	2	4	4	2	0	0	0	6	10
7	2	2	3	4	2	0	0	0	4
7	2	2	2	5	5	1	0	0	0
8	3	4	6	7	9	6	1	0	0

Floor Dist.

Average: 3.190

Low: 0.000

High: ______

Notes: 9" column

Tested By: ______________________

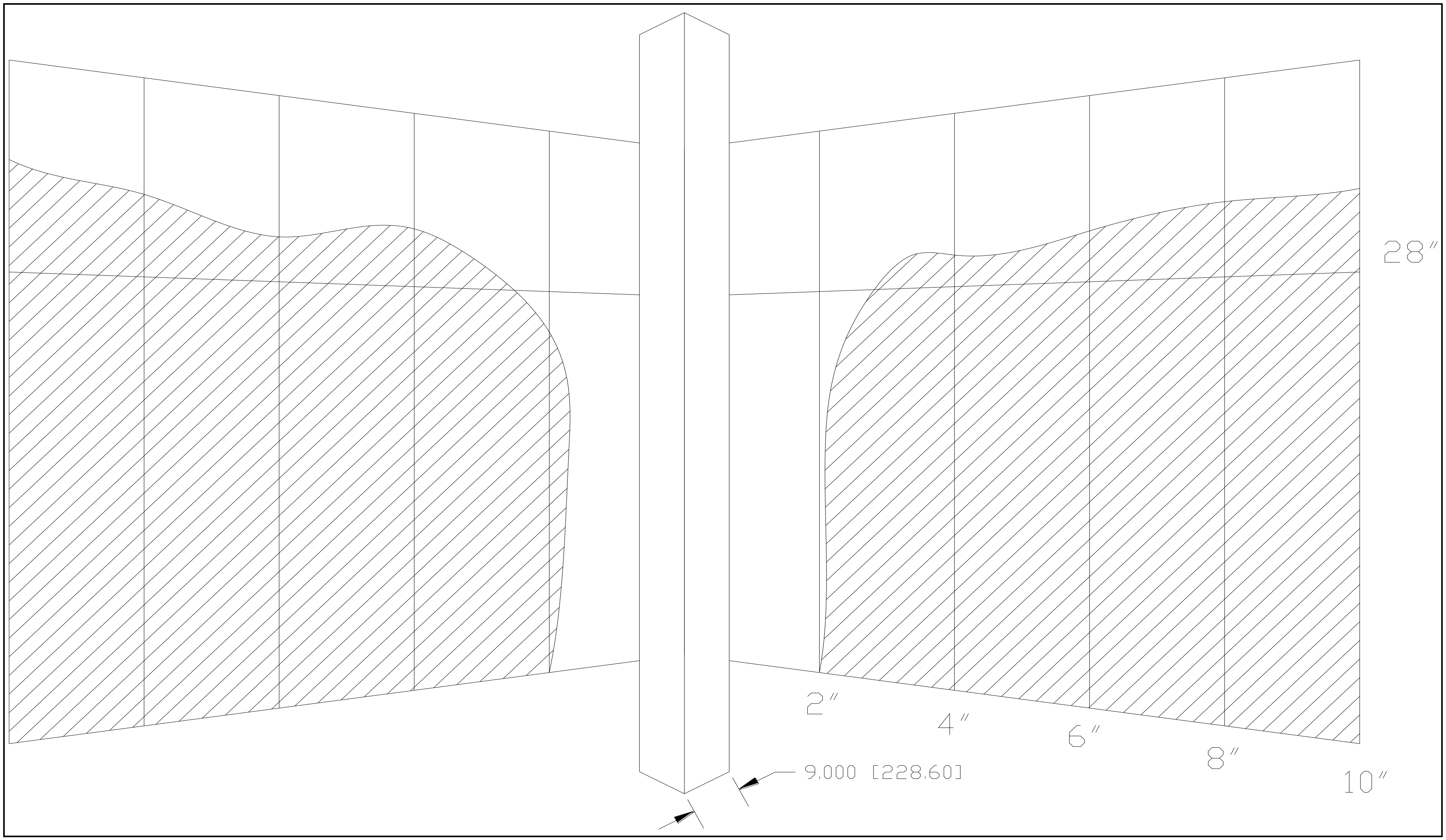
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK472 K = 5.8 Type: Recessed Pendent Residential 9" column

Flow: 21 GPM Test Duration: 10 Min. Date: 11/14/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK472 K = 5.8 Type: Recessed Pendent Residential

Flow: 21 GPM Test Duration: 20 Min. Date: 11/13/2012

Frame Arms: ______ Parallel x Perpendicular

N

Sprinkler X

2	2	10	17	6	3	3	3	2	3
3	2	6	5	5	9	13	9	4	3
3	3				11	11	6	3	4
3	3				0	0	1	1	4
4	4				0	0	0	0	1
6	6	10	0	0	0	0	0	0	1
7	8	12	0	0	0	0	0	0	0
8	7	9	1	0	0	0	0	0	0
9	4	5	2	0	0	0	0	0	0
8	3	5	6	4	1	0	0	0	0

Floor Dist.

Average: 2.940
Low: 0.000
High: ______

Notes: 24" column

Tested By: ______

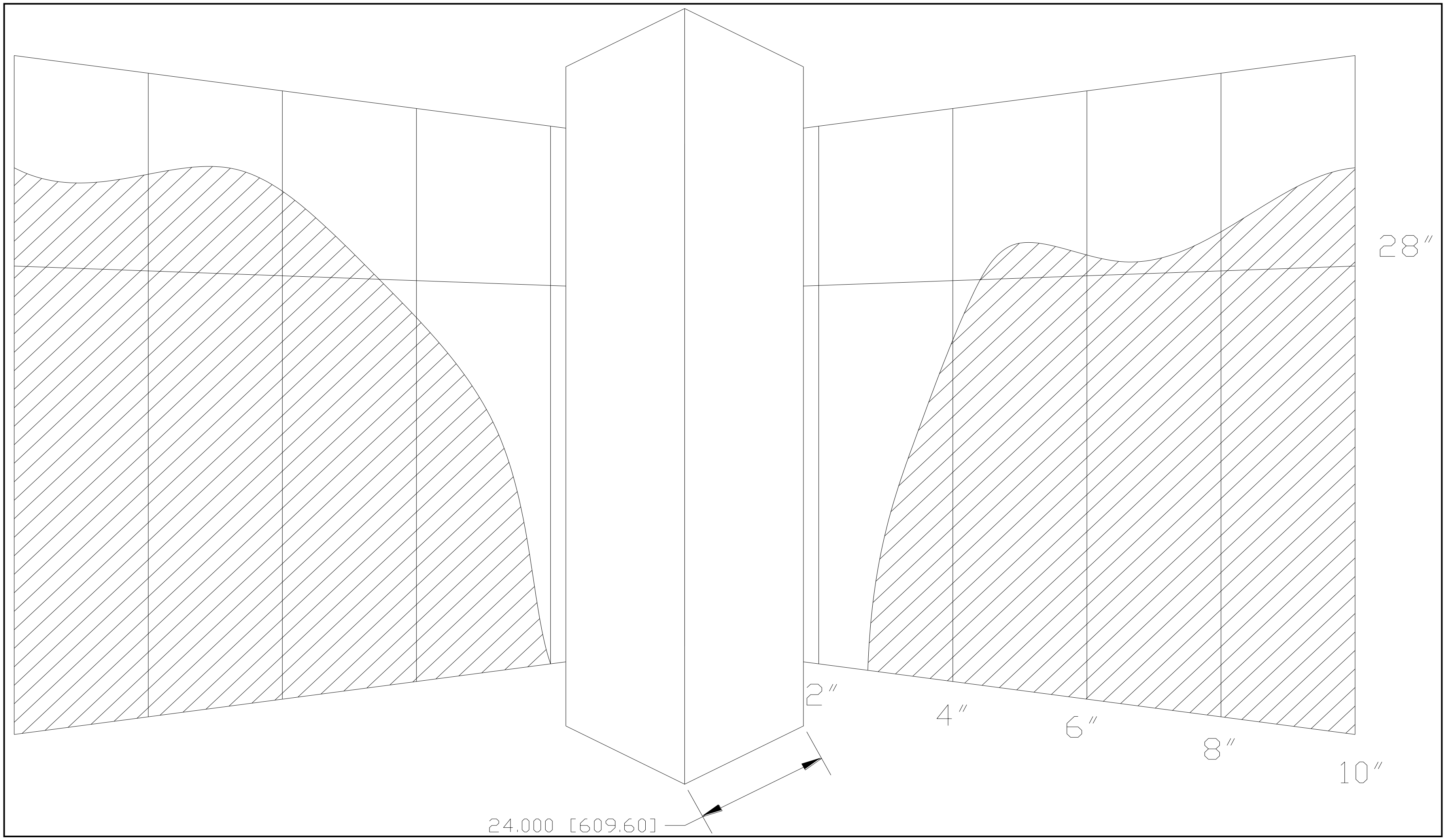
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK472 K = 5.8 Type: Recessed Pendent Residential 24" column

Flow: 21 GPM Test Duration: 10 Min. Date: 11/13/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK600 K = 5.6 Type: Recessed Pendent ECLH

Flow: 40 GPM Test Duration: 20 Min. Date: 11/16/2012

Frame Arms: ____ Parallel x Perpendicular

N ⇩

Sprinkler X

3	2	3	9	25	16	7	4	3	3
1	1	3	25	19	7	6	5	3	3
1	1	1	5	4	4	6	6	5	4
1	1	1	2	3	4	5	6	6	5
1	2	2	3	3	3	5	7	7	5
2	3	5	4	4	4	5	7	8	6
9	7	6	5	4	4	5	7	9	8
8	7	5	4	4	4	5	7	10	11
8	6	4	4	4	5	6	7	11	13
6	5	6	9	9	9	8	8	12	18

Floor Dist.

Average: 5.920

Low: 1.000

High: ____

Notes: No column

Tested By: ____________

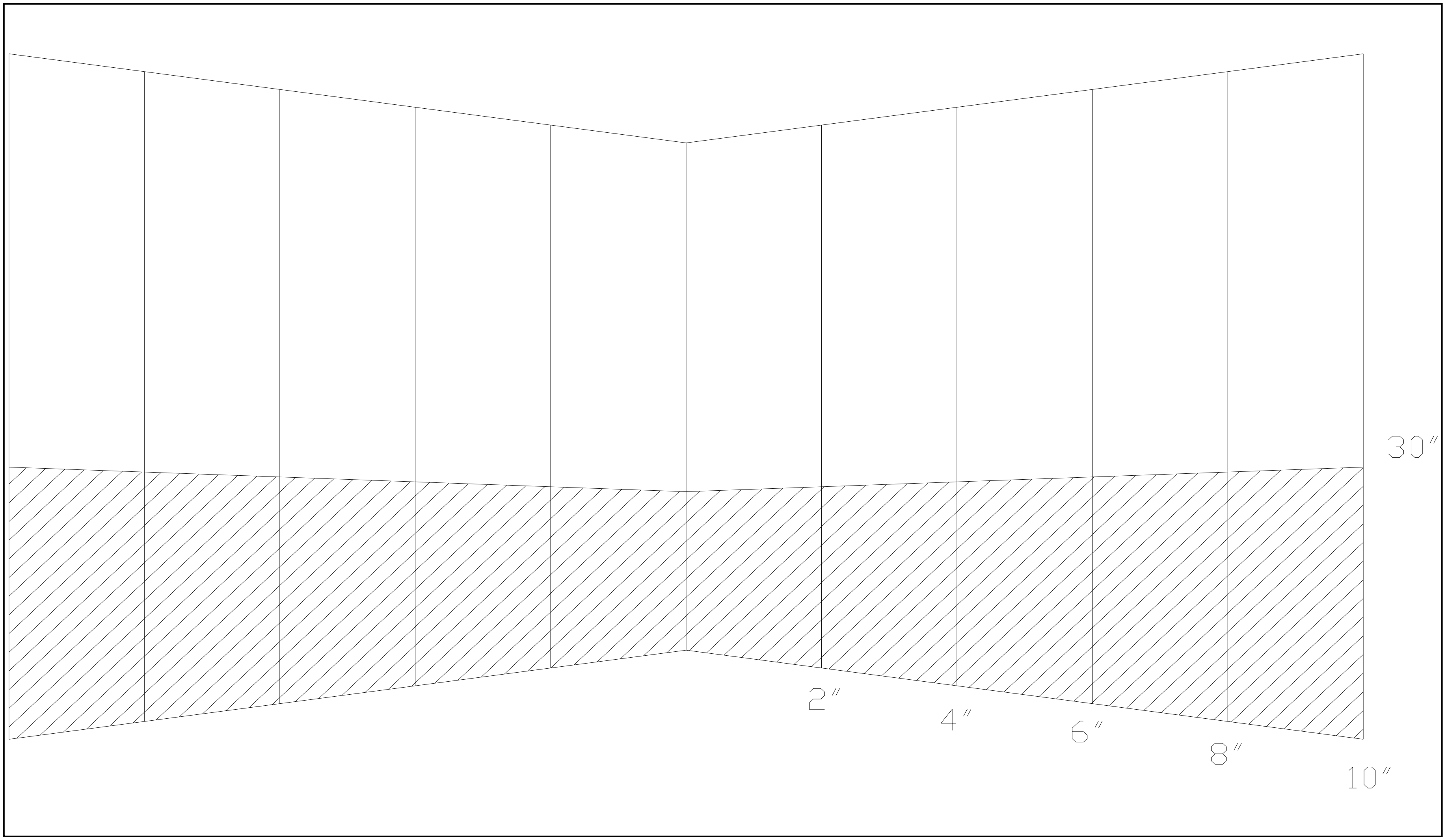
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK600 K = 5.6 Type: Recessed Pendent ECLH No column

Flow: 40 GPM Test Duration: 10 Min. Date: 11/16/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK600 K = 5.6 Type: Recessed Pendent ECLH

Flow: 40 GPM Test Duration: 20 Min. Date: 11/14/2012

Frame Arms: ______ Parallel x Perpendicular

N

Sprinkler X

4	3	3	5	22	21	12	9	5	4
3	3	4	20	20	10	10	12	9	6
2	3			6	6	7	9	9	7
3	4			4	3	4	5	5	6
4	4	7	6	2	1	2	3	3	4
7	7	10	7	2	0	1	2	2	3
13	9	13	9	3	0	0	0	1	2
6	6	14	11	5	1	0	0	0	0
4	5	13	11	7	3	0	0	0	0
4	5	9	12	9	7	3	0	1	1

Floor Dist.

Average: 5.320
Low: 0.000
High: ______

Notes: 9" column

Tested By: ______________________

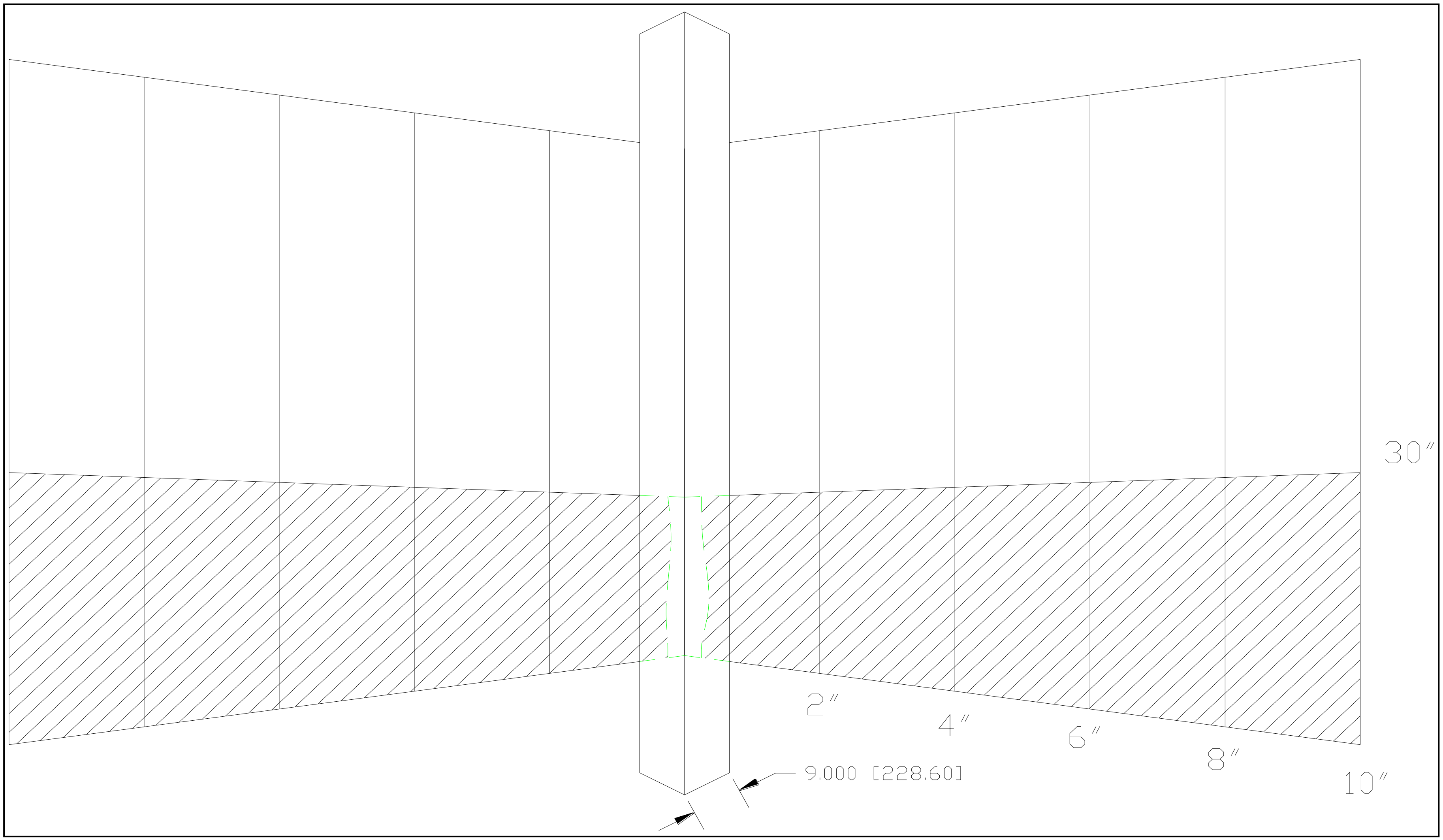
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK600 K = 5.6 Type: Recessed Pendent ECLH 9" column

Flow: 40 GPM Test Duration: 10 Min. Date: 11/14/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK600   K = 5.6   Type: Recessed Pendent ECLH

Flow: 40 GPM   Test Duration: 20 Min.   Date: 11/13/2012

Frame Arms: ____ Parallel x Perpendicular

N

Sprinkler X

5	3	3	4	17	20	13	11	6	5
5	4	6	24	19	12	15	17	13	7
4	5				6	7	9	9	8
3	4				1	1	2	4	6
4	3				0	0	0	1	4
4	5	9	4	0	0	0	0	0	1
9	8	10	2	0	0	0	0	0	0
4	9	12	1	0	0	0	0	0	0
3	13	17	2	0	0	0	0	0	0
5	19	20	6	3	0	0	0	0	0

Floor Dist.

Average: 4.560

Low: 0.000

High: ____

Notes: 24" column

Tested By: ____

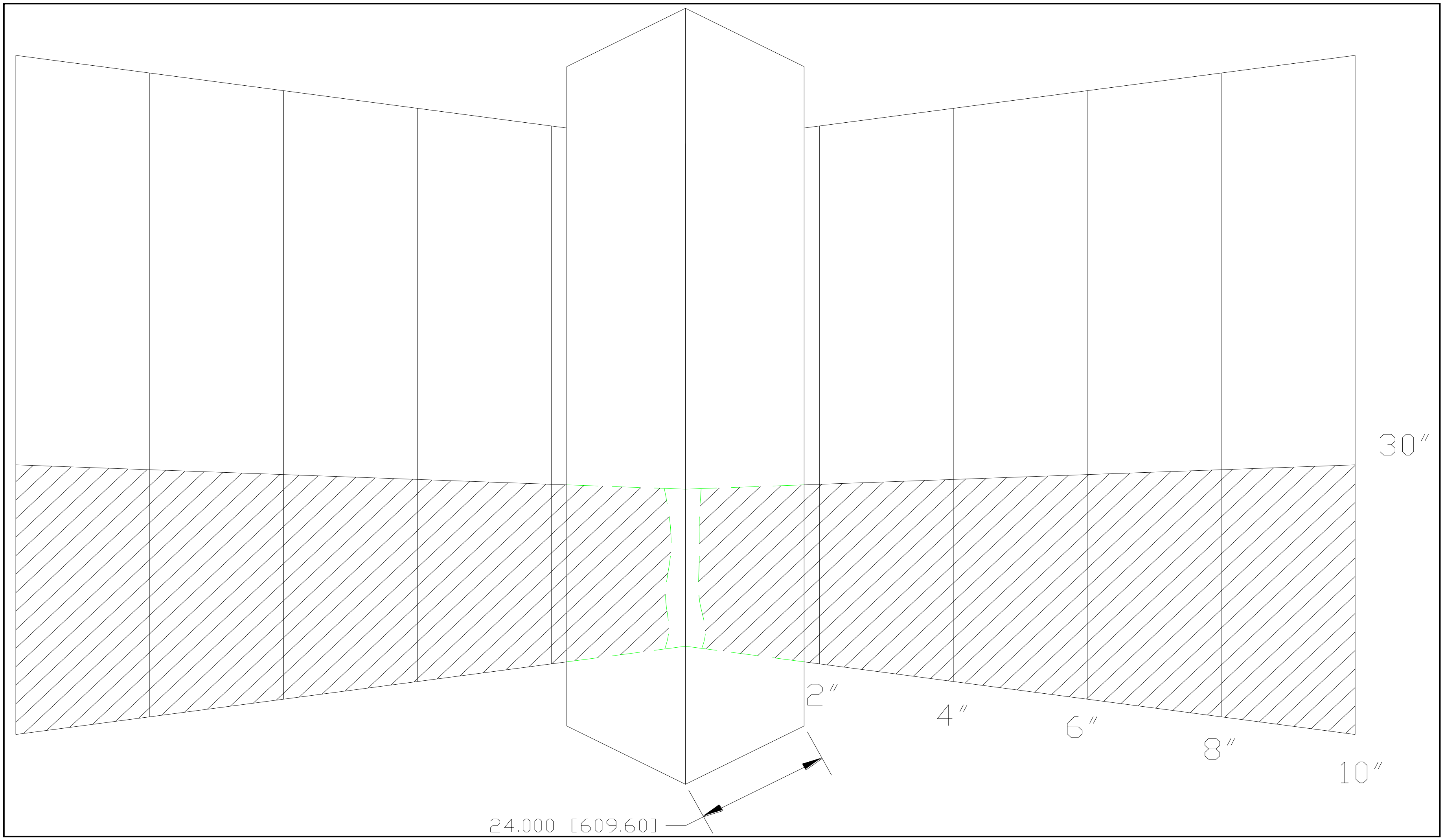
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK600 K = 5.6 Type: Recessed Pendent ECLH 24" column

Flow: 40 GPM Test Duration: 10 Min. Date: 11/13/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK602 K = 8.0 Type: Recessed Pendent ECLH

Flow: 40 GPM Test Duration: 20 Min. Date: 11/15/2012

Frame Arms: ____ Parallel x Perpendicular

N ⇩

Sprinkler X

5	4	6	14	18	9	6	6	5	9
3	4	6	15	8	6	5	4	3	7
3	3	4	5	4	3	4	4	3	6
3	4	5	5	5	4	4	4	4	7
6	6	5	6	7	6	4	4	4	6
5	4	4	5	9	8	5	4	4	6
5	4	4	4	8	12	7	4	4	7
6	4	4	4	4	9	12	6	4	7
5	4	4	4	4	4	9	8	5	7
7	9	14	15	9	7	7	10	8	8

Floor Dist.

Average: 6.020

Low: 3.000

High: ____

Notes: No column

Tested By: ____

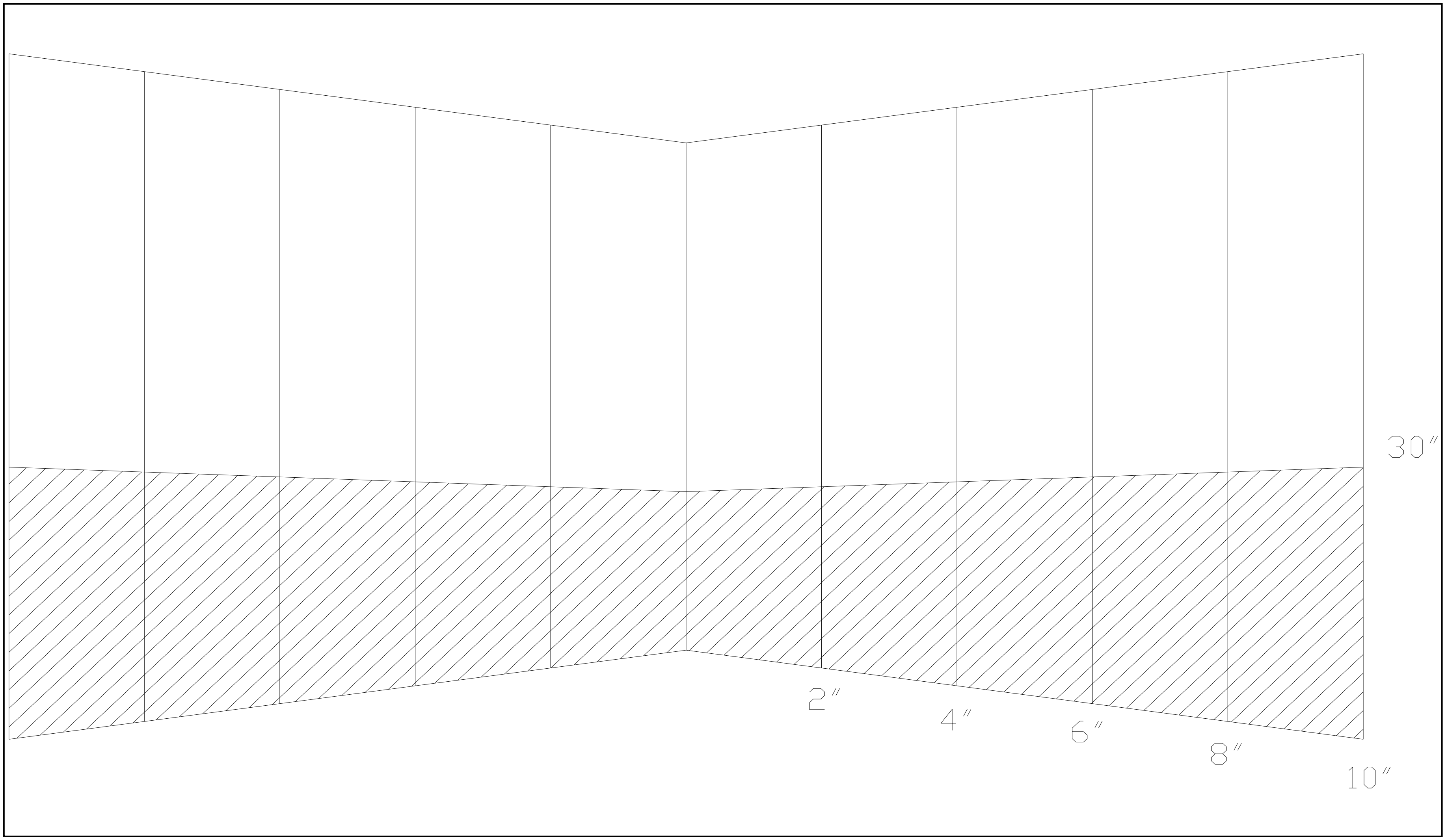
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK602 K = 8.0 Type: Recessed Pendent ECLH No column

Flow: 40 GPM Test Duration: 10 Min. Date: 11/15/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK602 K = 8.0 Type: Recessed Pendent ECLH

Flow: 40 GPM Test Duration: 20 Min. Date: 11/15/2012

Frame Arms: ______ Parallel x Perpendicular

N ⇩

Sprinkler X

5	3	2	7	7	6	6	6	5	11
6	7	6	11	13	13	12	8	6	9
5	8			10	8	8	8	6	8
6	8			2	2	4	5	6	10
7	12	19	4	0	0	2	3	4	10
6	12	17	8	2	0	0	1	3	10
5	11	11	6	4	0	0	0	1	8
4	8	6	4	4	2	0	0	0	6
4	6	6	4	4	3	1	0	0	2
11	13	15	11	7	8	6	3	1	0

Floor Dist.

Average: 5.580

Low: 0.000

High: ______

Notes: 9" column

Tested By: ______

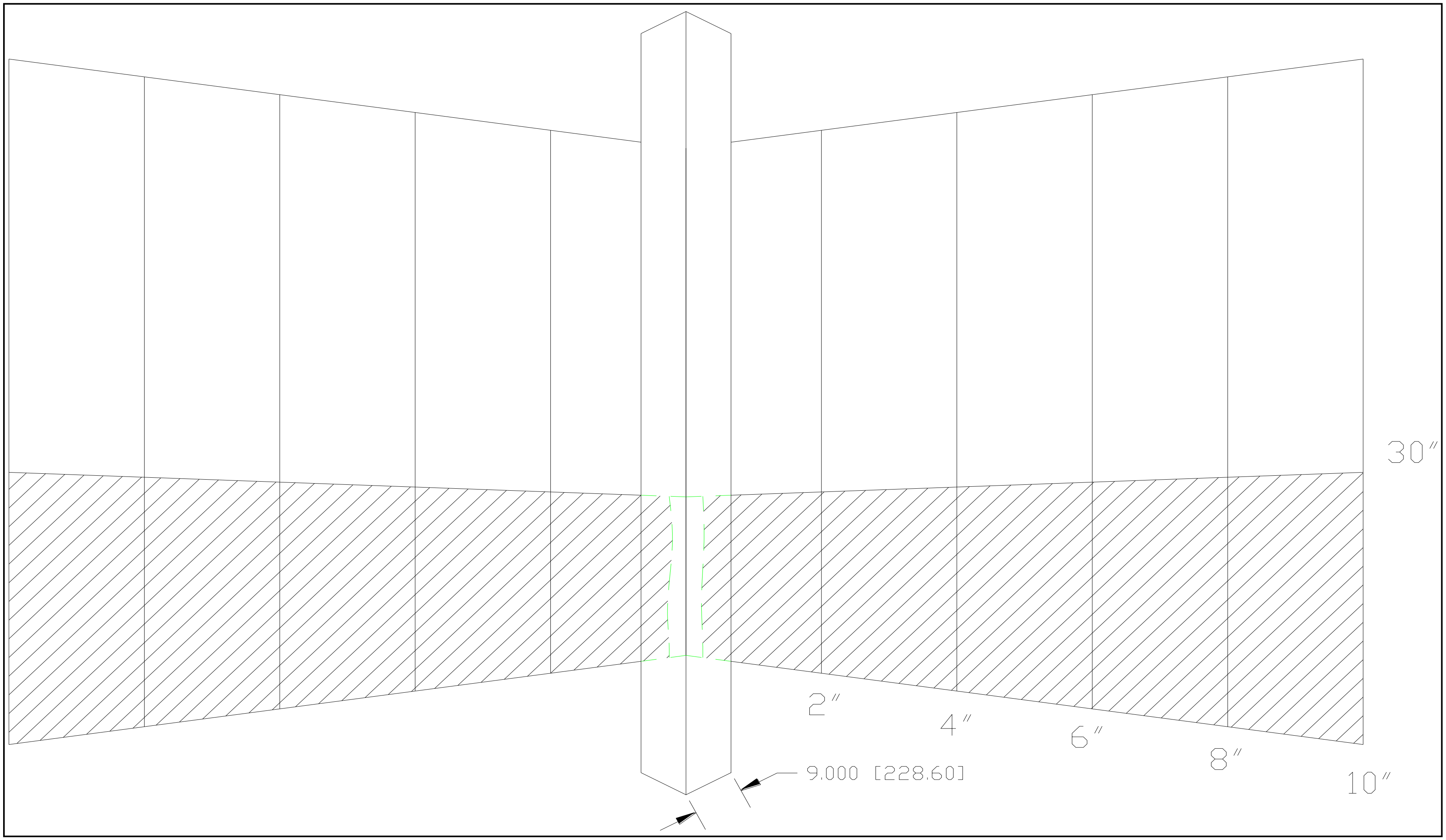
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK602 K = 8.0 Type: Recessed Pendent ECLH 9" column

Flow: 40 GPM Test Duration: 10 Min. Date: 11/15/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK602 K = 8.0 Type: Recessed Pendent ECLH

Flow: 40 GPM Test Duration: 20 Min. Date: 11/13/2012

Frame Arms: ______ Parallel x Perpendicular

N

Sprinkler X

5	4	2	6	6	6	8	9	7	10
4	5	5	8	8	12	18	18	12	11
4	6				11	9	10	10	11
5	7				0	0	2	4	10
7	9				0	0	0	0	8
7	10	21	0	0	0	0	0	0	5
6	15	16	0	0	0	0	0	0	3
6	19	16	2	0	0	0	0	0	0
6	17	10	3	1	0	0	0	0	0
9	14	11	8	7	3	2	0	0	0

Floor Dist.

Average: 4.940

Low: 0.000

High: ______

Notes: 24" column

Tested By: ______________________

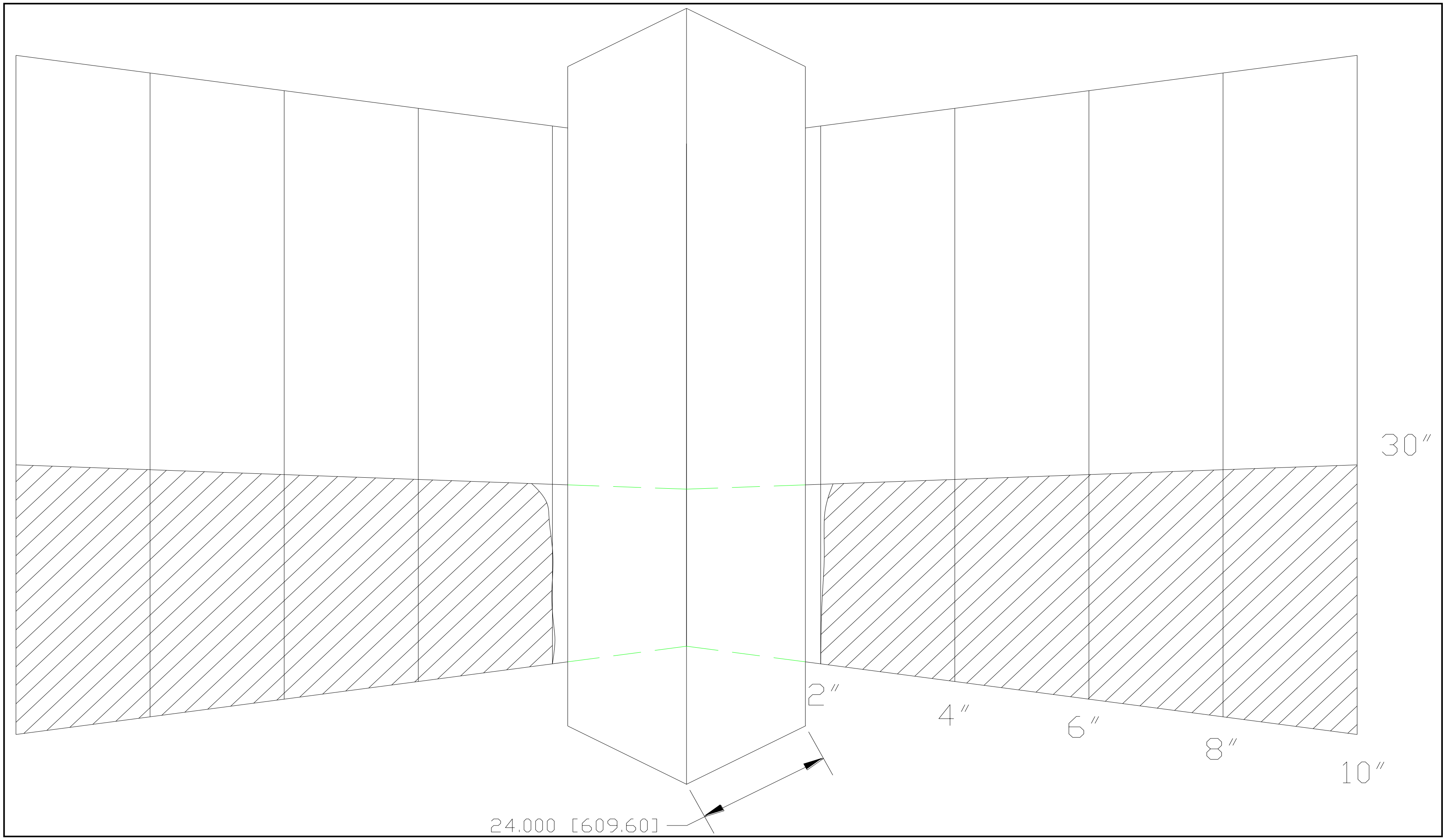
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK602 K = 8.0 Type: Recessed Pendent ECLH 24" column

Flow: 40 GPM Test Duration: 10 Min. Date: 11/13/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK608 K = 11.2 Type: Recessed Pendent ECLH

Flow: 40 GPM Test Duration: 20 Min. Date: 11/15/2012

Frame Arms: ______ Parallel x Perpendicular

N

Sprinkler X

3	3	5	21	7	3	2	2	2	5
3	3	8	15	5	3	2	2	2	5
5	5	4	3	3	3	2	3	3	5
9	8	7	3	2	2	2	3	3	6
6	8	9	5	2	2	2	3	3	6
4	6	12	8	3	2	2	3	4	8
3	4	11	13	5	3	3	3	4	14
4	3	5	12	9	4	3	3	4	22
4	4	4	7	9	5	3	4	5	14
12	9	7	8	9	9	6	5	5	9

Floor Dist.

Average: 5.500
Low: 2.000
High: ______

Notes: No column

Tested By: ______________________

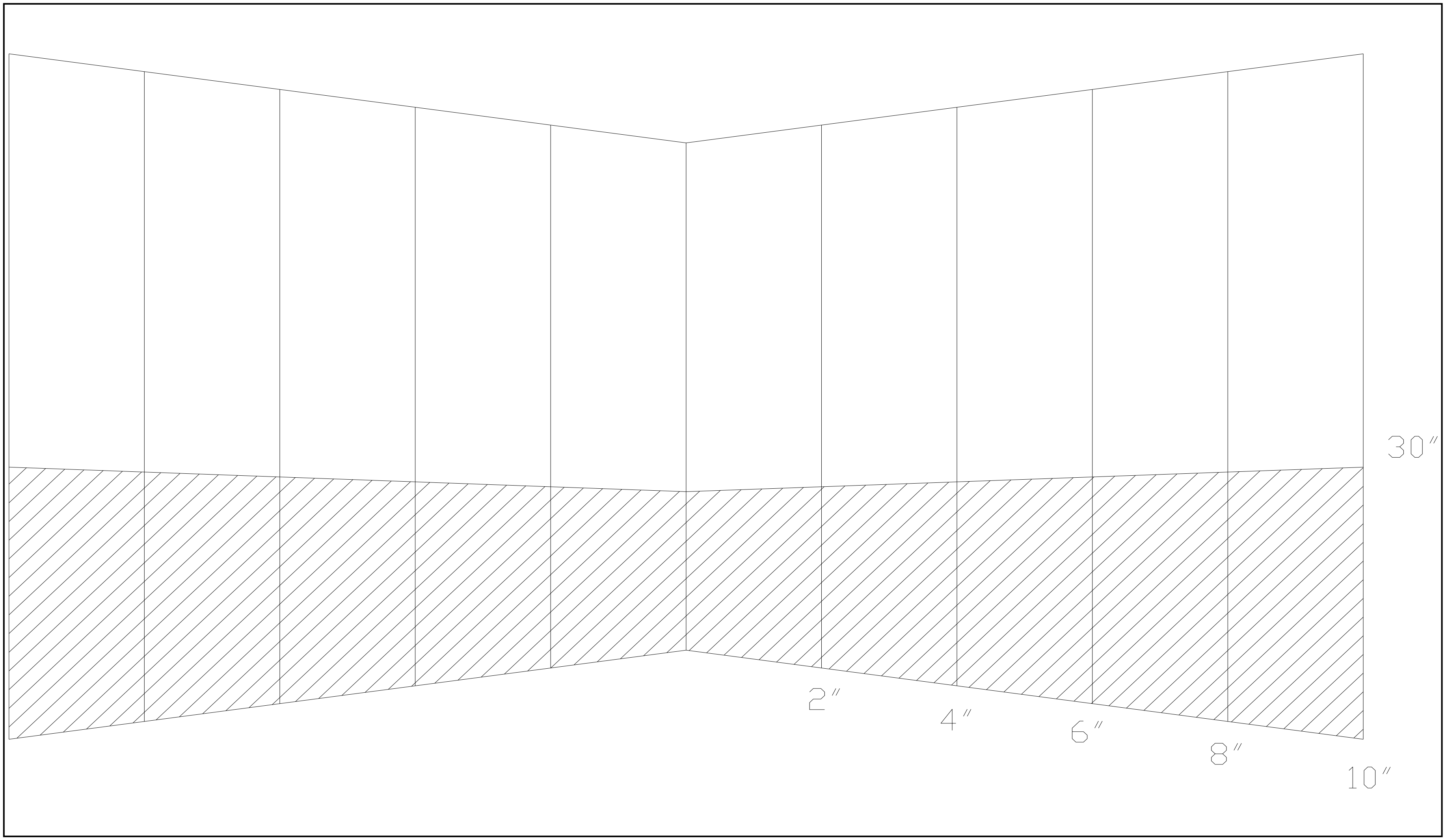
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK608 K = 11.2 Type: Recessed Pendent ECLH No column

Flow: 40 GPM Test Duration: 10 Min. Date: 11/15/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK608 K = 11.2 Type: Recessed Pendent ECLH

Flow: 40 GPM Test Duration: 20 Min. Date: 11/15/2012

Frame Arms: ______ Parallel x Perpendicular

N

Sprinkler X

4	3	5	22	9	4	3	3	3	5
3	4	9	19	8	4	3	3	3	5
4	5			12	9	7	5	3	5
9	9			4	6	7	5	4	5
7	12	7	1	0	1	3	5	4	6
6	14	13	5	0	0	1	3	5	9
5	11	14	11	3	0	0	0	3	14
4	7	8	12	7	1	0	0	0	16
4	5	5	8	8	3	0	0	0	9
11	8	7	9	10	9	5	1	0	2

Floor Dist.

Average: 5.430

Low: 0.000

High: ______

Notes: 9" column

Tested By: ______

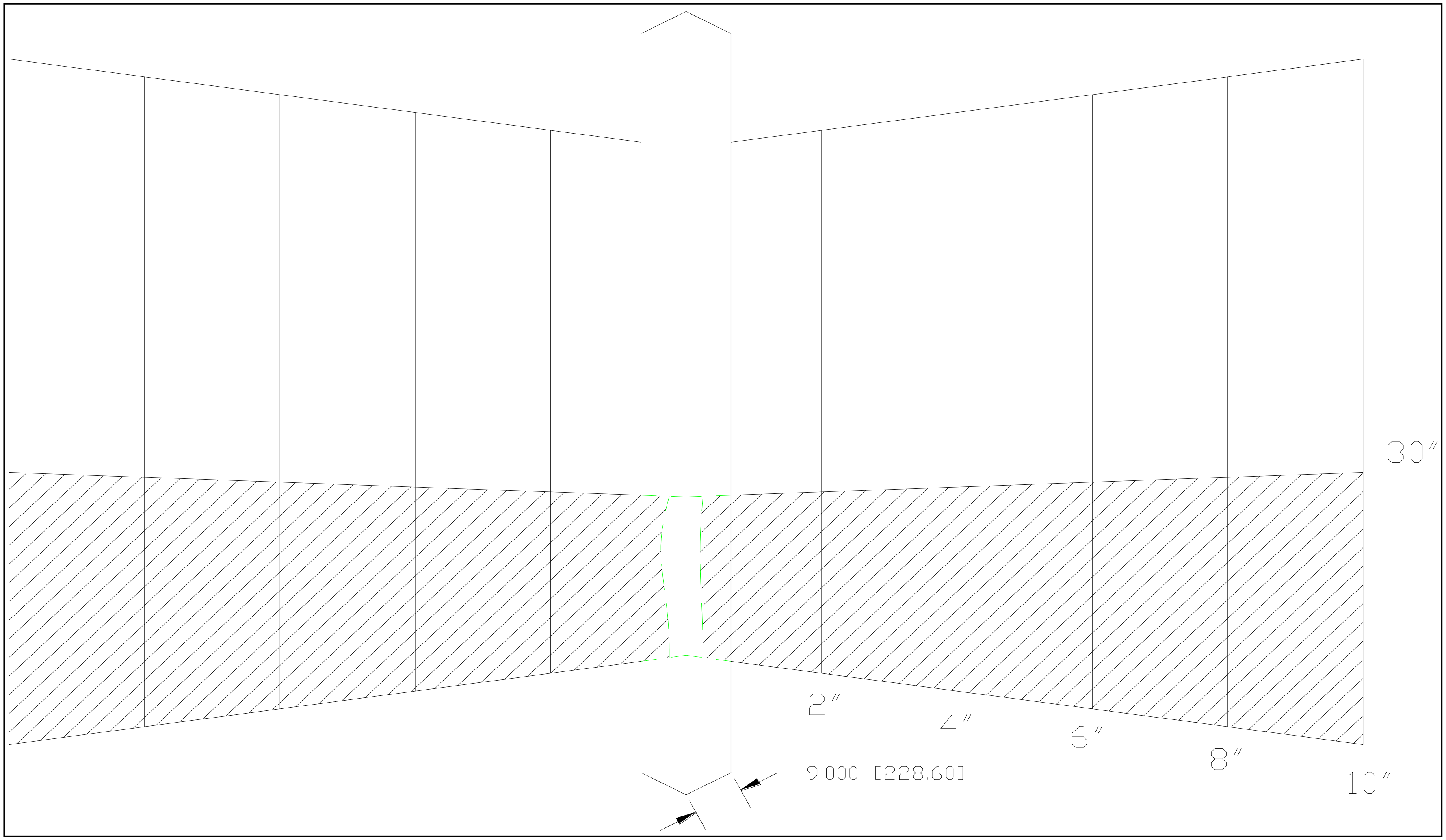
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK608 K = 11.2 Type: Recessed Pendent ECLH 9" column

Flow: 40 GPM Test Duration: 10 Min. Date: 11/15/2012



U.L.1626.24 RESIDENTIAL FLOOR COLLECTION DATA

Coverage Area 20' X 20'

Model: VK608 K = 11.2 Type: Recessed Pendent ECLH

Flow: 40 GPM Test Duration: 20 Min. Date: 11/14/2012

Frame Arms: ______ Parallel x Perpendicular

N

Sprinkler X

4	3	5	22	10	5	4	5	4	6
3	4	7	18	9	7	11	19	18	14
4	5				12	16	15	15	14
9	9				0	1	2	4	7
6	7				0	0	0	2	6
4	7	22	2	0	0	0	0	0	3
4	10	24	7	0	0	0	0	0	0
4	13	16	11	1	0	0	0	0	0
5	10	9	9	4	0	0	0	0	0
13	10	8	9	10	0	0	0	0	0

Floor Dist.

Average: 5.270

Low: 0.000

High: ______

Notes: 24" column

Tested By: ______

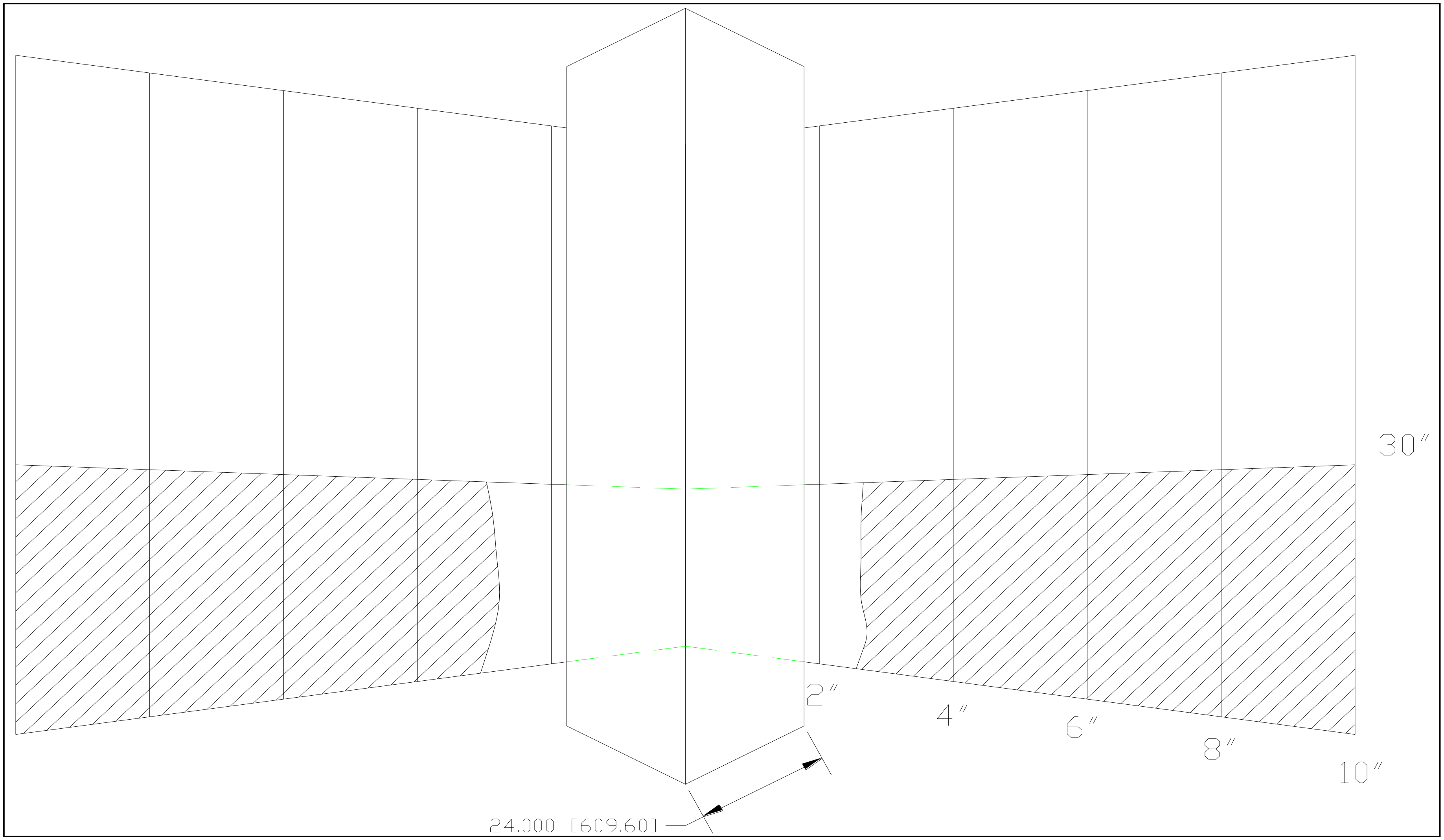
Form RD-1033B

U.L.1626.24 RESIDENTIAL WALL WETTING DATA

Coverage Area 20' X 20'

Model: VK608 K = 11.2 Type: Recessed Pendent ECLH 24" column

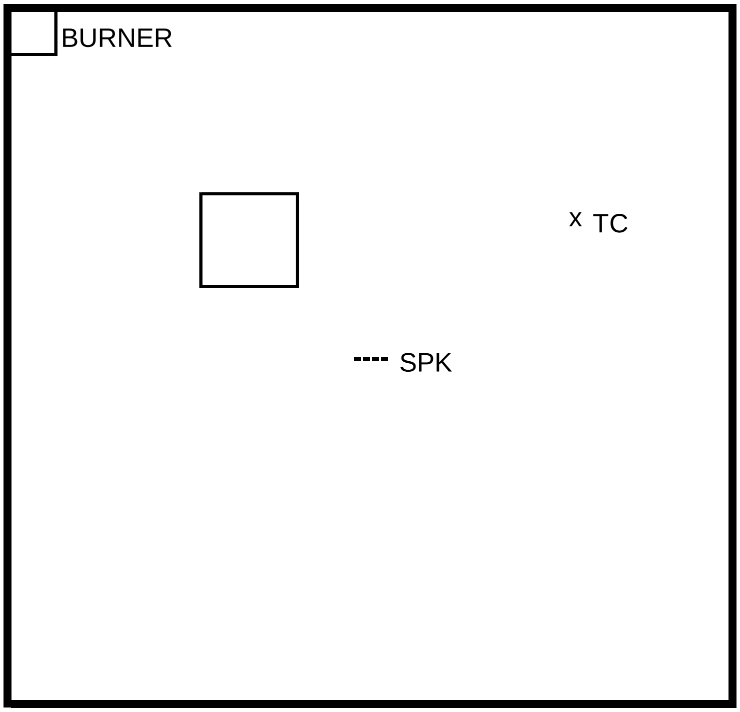
Flow: 40 GPM Test Duration: 10 Min. Date: 11/14/2012



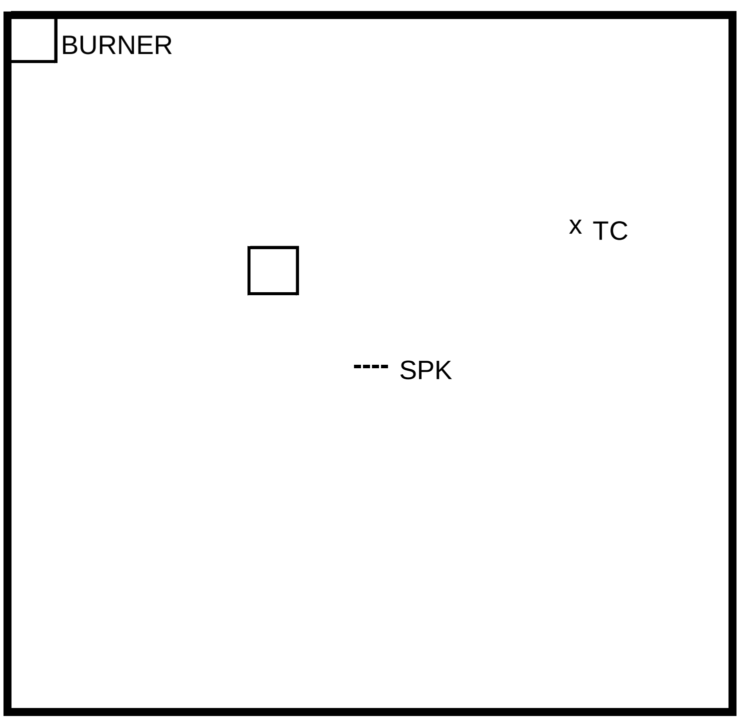
15' x 15' Room

500 cfh

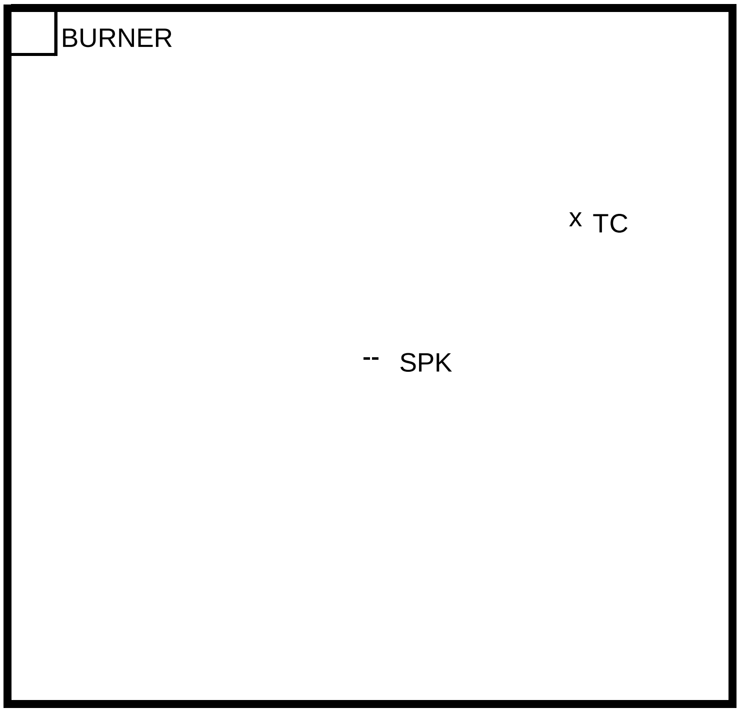
VK466 - 155F



24" Column
#1 - 42.1 sec
#2 - 41.3 sec
#3 - 42.1 sec



9" Column
#1 - 37.3 sec
#2 - 36.4 sec
#3 - 38.1 sec

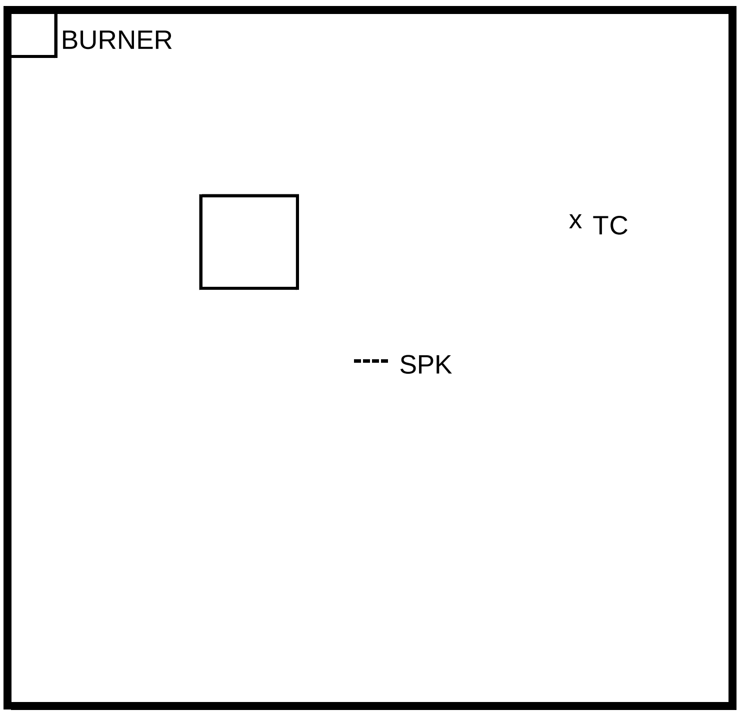


NoColumn
#1 - 19.9 sec
#2 - 20.2 sec
#3 - 19.7 sec

15' x 15' Room

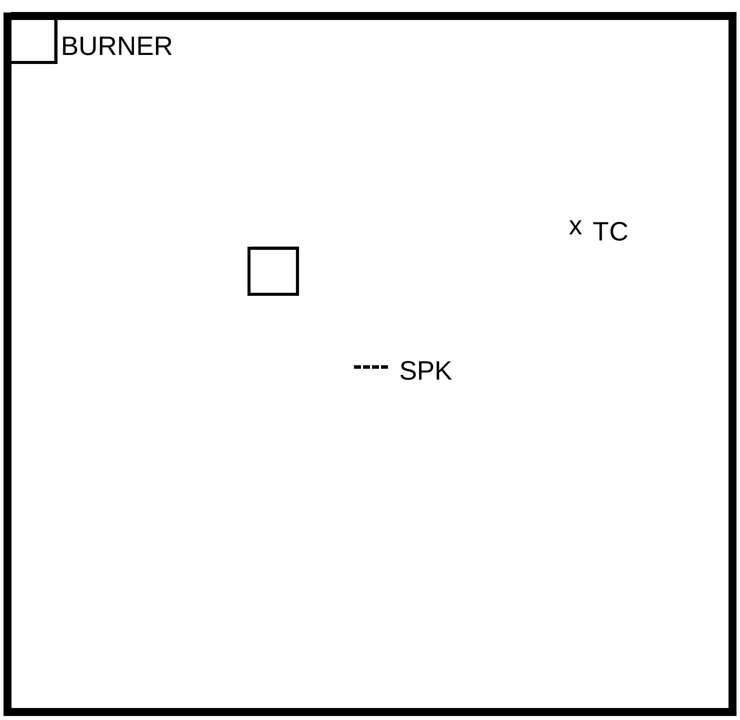
500 cfh

VK466 - 155F



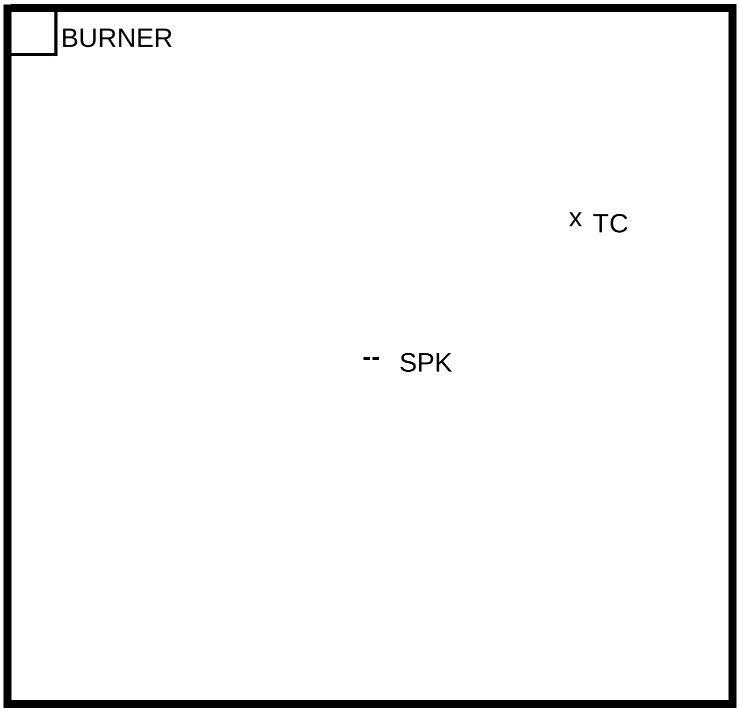
24" Column
#1 - 42.1 sec
#2 - 41.3 sec
#3 - 42.1 sec

41.8 Average in seconds



9" Column
#1 - 37.3 sec
#2 - 36.4 sec
#3 - 38.1 sec

37.3 Average in seconds



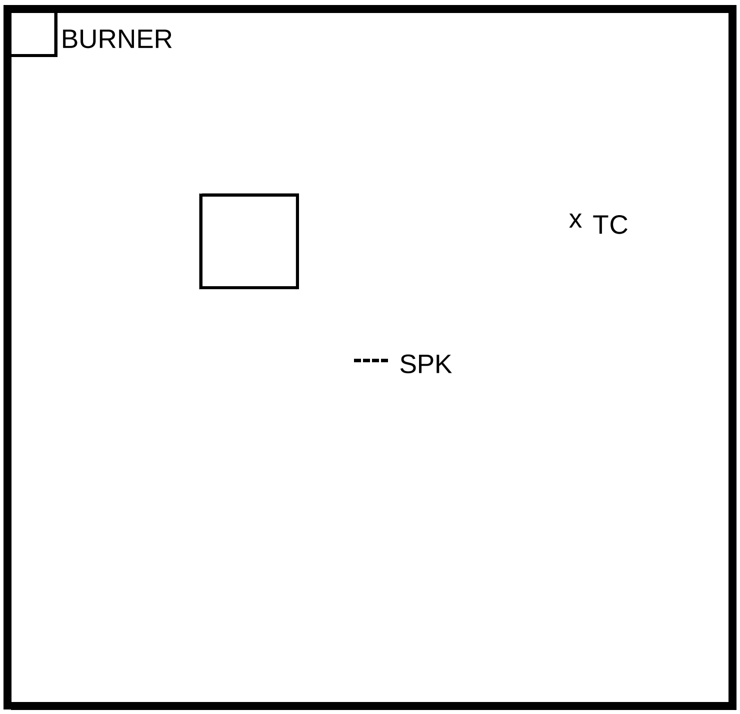
NoColumn
#1 - 19.9 sec
#2 - 20.2 sec
#3 - 19.7 sec

19.9 Average in seconds

15' x 15' Room

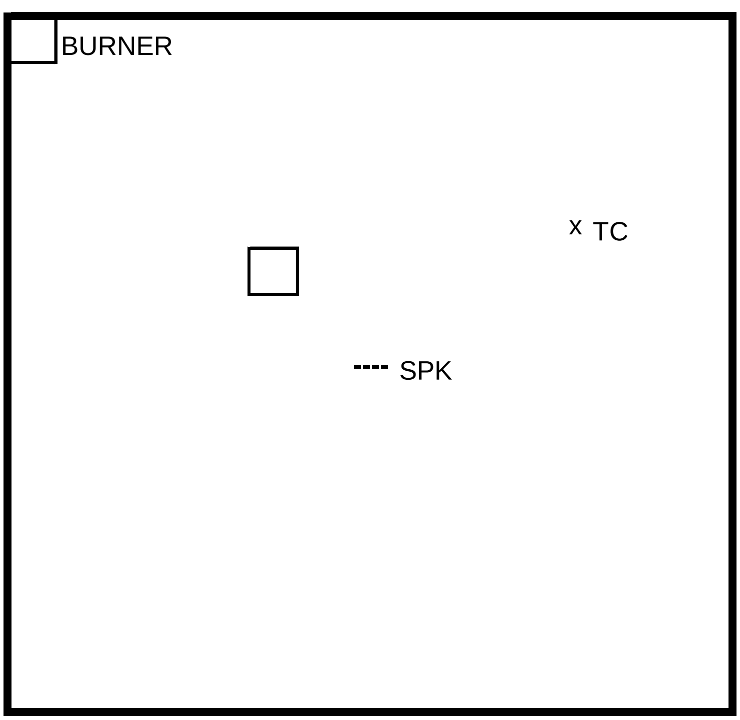
160 cfh

VK466 - 155F



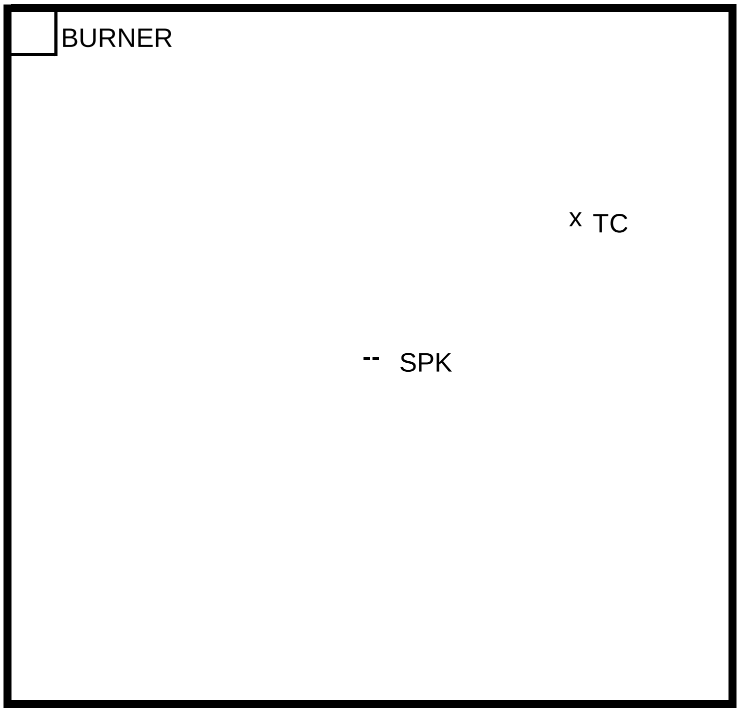
24" Column
300.1 sec
214.0 sec
283.6 sec
299.6 sec
295.0 sec
347.0 sec

289.9 Average in seconds



9" Column
213.6 sec
232 sec
208 sec

217.9 Average in seconds



NoColumn
85.9 sec
97.2 sec
85.8 sec

89.6 Average in seconds

Sensitivity Testing of a Residential Horizontal Sidewall Sprinkler with Shadow Areas

Testing was conducted at The Viking Corporation test facility to determine the effects on sensitivity of a shadow area on the currently listed Viking Model VK486 residential horizontal sidewall sprinkler. Testing was conducted in a 16 x 20 ft. coverage area and with a shadow area consisting of 4' "bumped out wall section". The testing was conducted using an 8 ft. ceiling, with the sprinkler installed both 4" and 12" from the ceiling, with doorways and openings closed, and using a natural gas sand burner (described in UL1626) flowing at 500 scfm. Tests were conducted in the same coverage area without bumped out wall sections for comparison purposes and a total of 6 samples were tested in each configuration.

The test room layout using the 4' x 14' bumped out wall creating a shadow area is shown in Fig. 1.

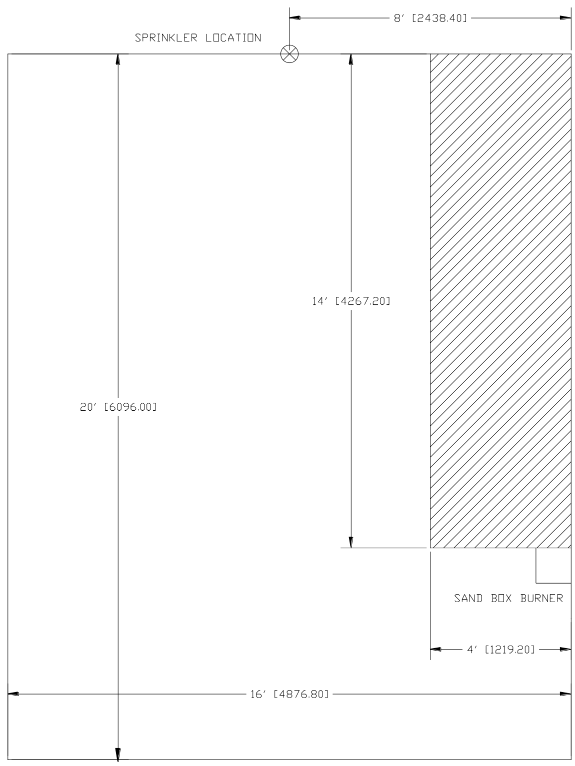


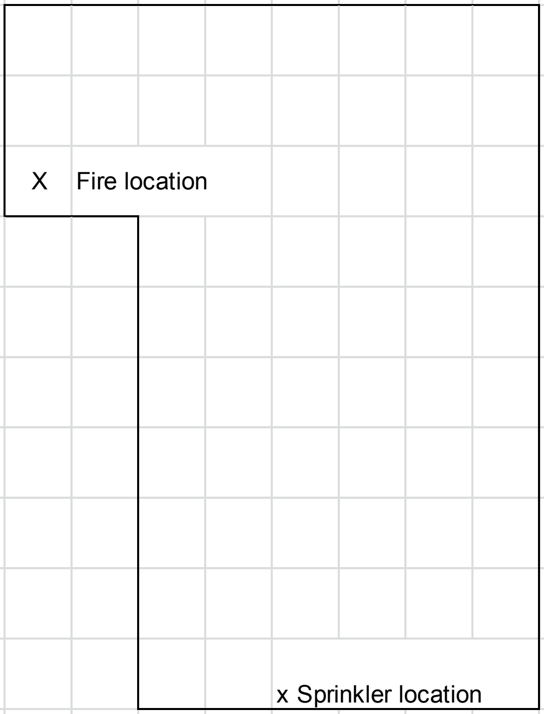
Fig. 1

The data for the room response test is shown below.

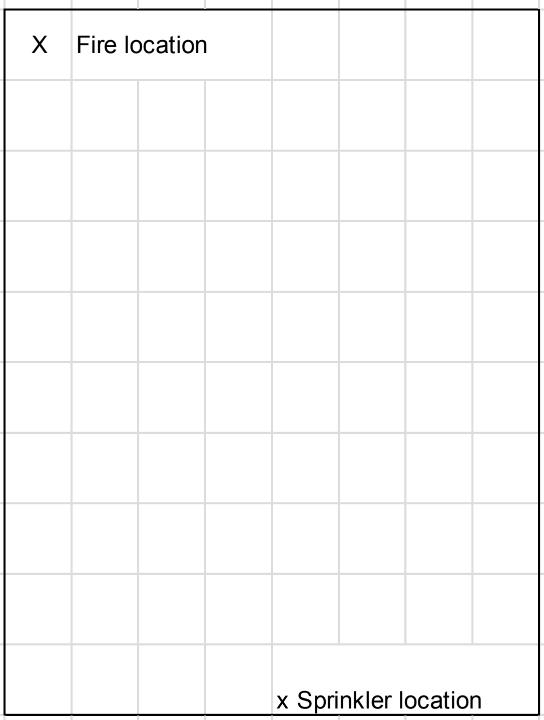
Viking VK486 155°F

Gas flow rate - 500 scfm

Numbers shown are sprinkler response time in seconds



20'x16' Room with 14'x4' bumpout		
Sample	4" Down	12" Down
1	48.0	46.0
2	45.2	42.5
3	52.3	47.2
4	46.1	47.2
5	46.6	48.5
6	49.8	47.0
Average	48.0	46.4



20'x16' Room without bumpout		
	4" Down	12" Down
1	61.8	60.6
2	61.2	58.7
3	65.2	61.6
4	66.8	61.0
5	63.9	54.9
6	65.3	58.8
Average	64.0	59.3

Distribution Testing of Various Residential and Commercial Horizontal Sidewall Sprinklers with Shadow Areas

Testing was conducted at The Viking Corporation test facility to determine the effects on water distribution of various shadow areas on listed/approved residential and commercial horizontal sidewall sprinklers. Distribution tests were conducted on various sprinklers listed/approved for use in 16 x 20 ft. coverage areas and with shadow areas consisting of 2' and 4' "bumped out wall sections". Testing was conducted with an 8 ft ceiling and with doorways and openings closed. The Viking Models VK486 (4.0k residential sidewall sprinkler), VK460 (5.8k residential sidewall sprinkler), VK605 (5.6k EC/QREC sidewall sprinkler), and VK630 (8.0k QREC sidewall sprinkler), were used for this testing. The listed/approved flow rate(s) were used for each sprinkler.

The distribution test layout using the 4' x 14' bumped out wall creating a shadow area is shown in Fig. 1.

Fig. 1

Other shadow area configurations that were tested include bumped out wall dimensions of, 4' x 12', 4' x 10', 4' x 8', 4' x 6', 4' x 4', 2' x 12', 2' x 10', 2' x 8', 2' x 6', and 2' x 4'.

Distribution tests were conducted using 1' x 1' x 1' collection pans. Tests were run for 20 minutes. All shadow area distribution tests utilized collection pans located in the actual shadow area only. For example, in Fig. 1, the 4' x 6' area at the end of the bumped out wall is where the collection pans were located. For comparison purposes distribution tests without any bumped out wall section were conducted with the water collected in one half of the coverage area of the sprinkler

The results of the floor collections for all configurations are shown on the following pages.

Open room VK486

VK486 22 GPM Sprinkler location

X

4'	6'	7'	8'	
8	7	4	2	
8	5	3	2	2'
15	5	2	2	
11	5	2	2	4'
6	4	2	2	
5	3	3	3	6'
4	3	3	5	
3	4	3	7	8'
4	3	3	8	
3	3	4	8	10'
3	3	4	9	
2	3	4	10	12'
2	3	4	12	
2	3	4	12	14'
3	3	3	12	
3	3	4	11	16'
3	3	4	10	
3	3	4	9	18'
3	3	4	8	
X	X	X	X	20'

Open room VK460

VK460 26 GPM Sprinkler location

								X				4'	6'	7'	8'	
												2	5	6	4	
												3	5	7	6	2'
												4	7	10	8	
												4	6	7	6	4'
												4	4	3	5	
												6	4	2	6	6'
												6	4	2	7	
												3	2	2	7	8'
												3	2	2	6	
												3	2	2	6	10'
												3	3	2	5	
												3	3	3	6	12'
												3	3	3	7	
												4	4	4	8	14'
												5	5	5	9	
												5	5	5	9	16'
												5	7	6	9	
												6	7	7	8	18'
												7	10	11	11	
												X	X	X	X	20'

Open room VK605

VK605 32 GPM (12" down) Sprinkler location

X

4'	6'	7'	8'	
22	25	16	8	
13	11	6	4	2'
12	11	7	8	
16	15	9	11	4'
16	17	11	12	
12	16	14	15	6'
7	13	15	20	
5	9	13	23	8'
4	7	11	22	
3	5	8	21	10'
2	3	4	19	
2	2	4	18	12'
2	2	3	17	
2	2	3	14	14'
2	2	2	11	
2	2	2	7	16'
2	2	2	5	
2	2	2	4	18'
2	2	2	3	
X	X	X	X	20'

Open room VK630

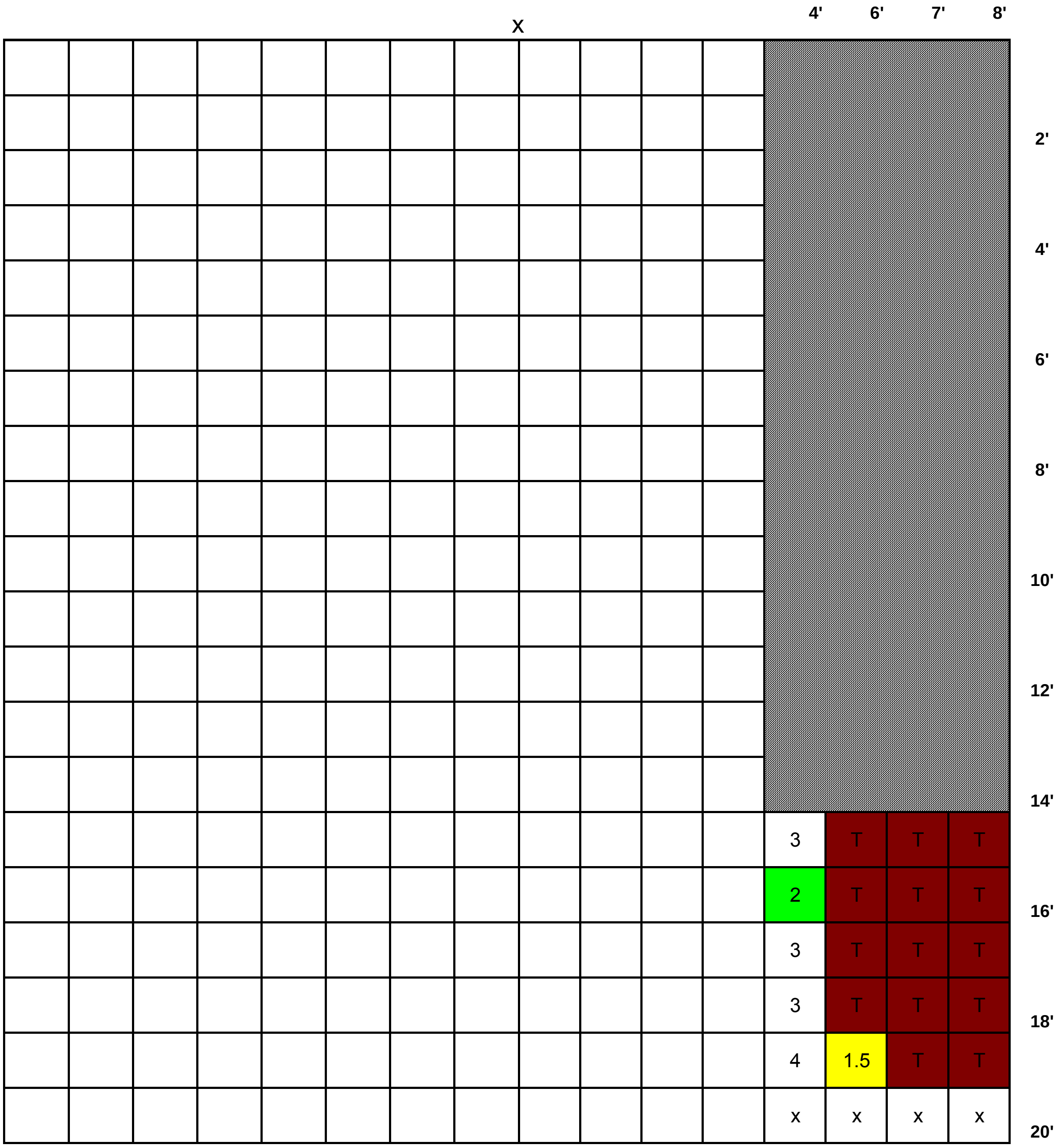
VK630 32 GPM Sprinkler location

X

												4'	6'	7'	8'	
												2	2	3	8	
												2	2	3	8	2'
												2	3	3	8	
												3	4	3	10	4'
												5	5	3	11	
												13	8	3	11	6'
												28	11	3	12	
												28	11	3	14	8'
												28	10	4	17	
												21	8	5	21	10'
												5	5	5	25	
												3	3	5	28	12'
												3	3	5	28	
												4	4	6	24	14'
												4	4	5	19	
												5	5	6	15	16'
												5	5	5	11	
												6	6	5	8	18'
												7	6	5	6	
												X	X	X	X	20'

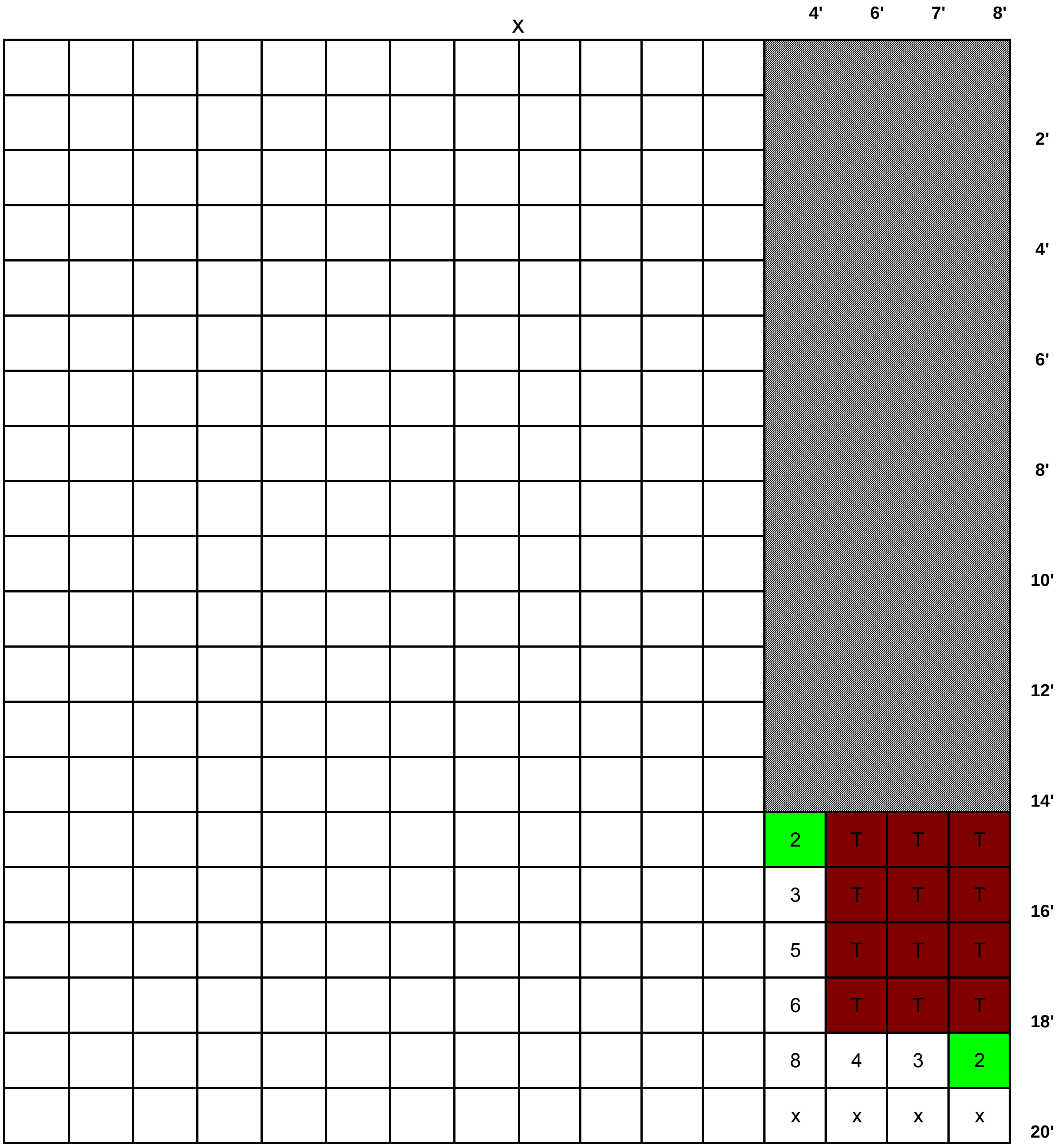
4'wall 6'gap VK486

VK486 22 GPM Sprinkler location



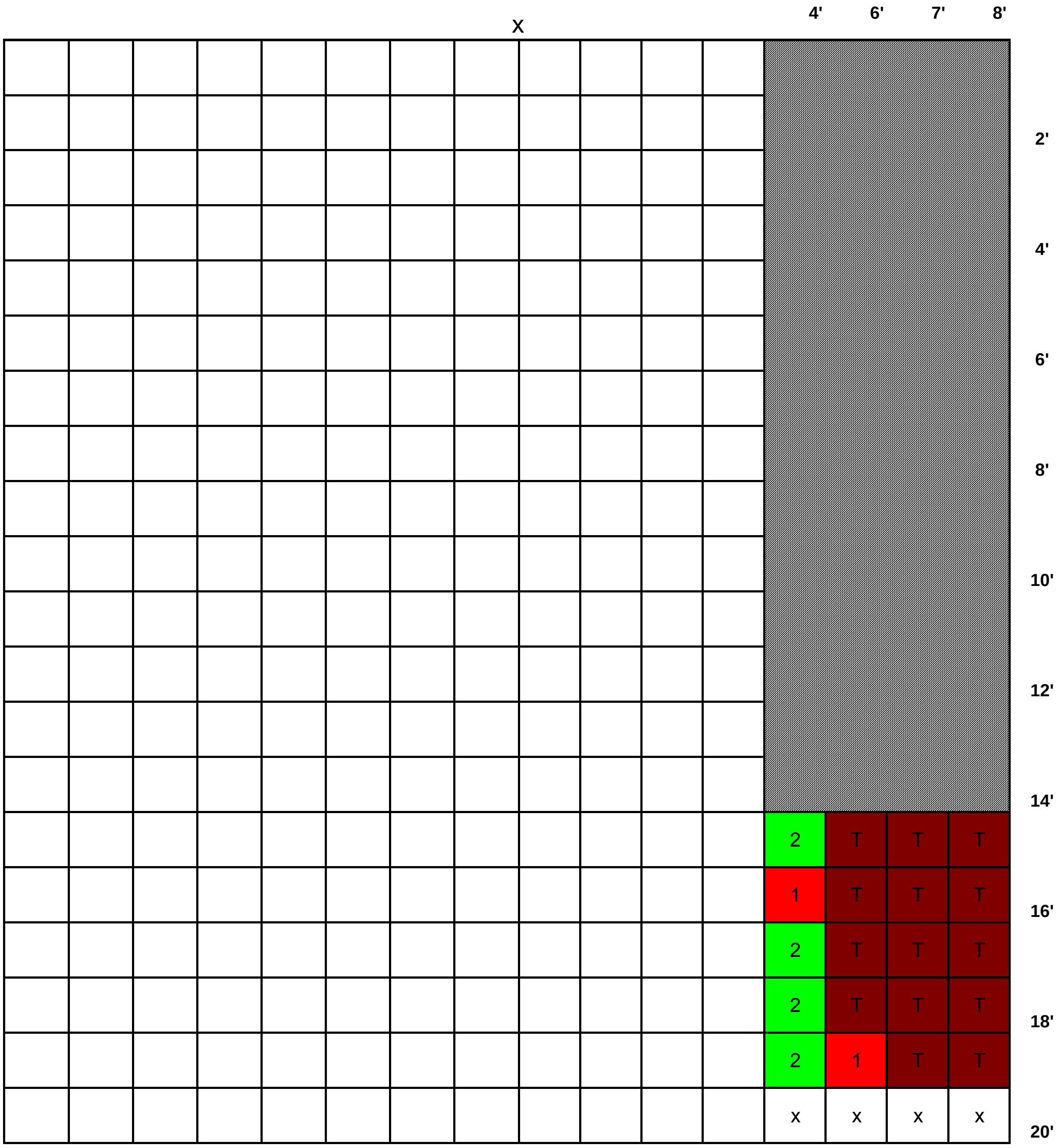
4'wall 6'gap VK460

VK460 26 GPM Sprinkler location



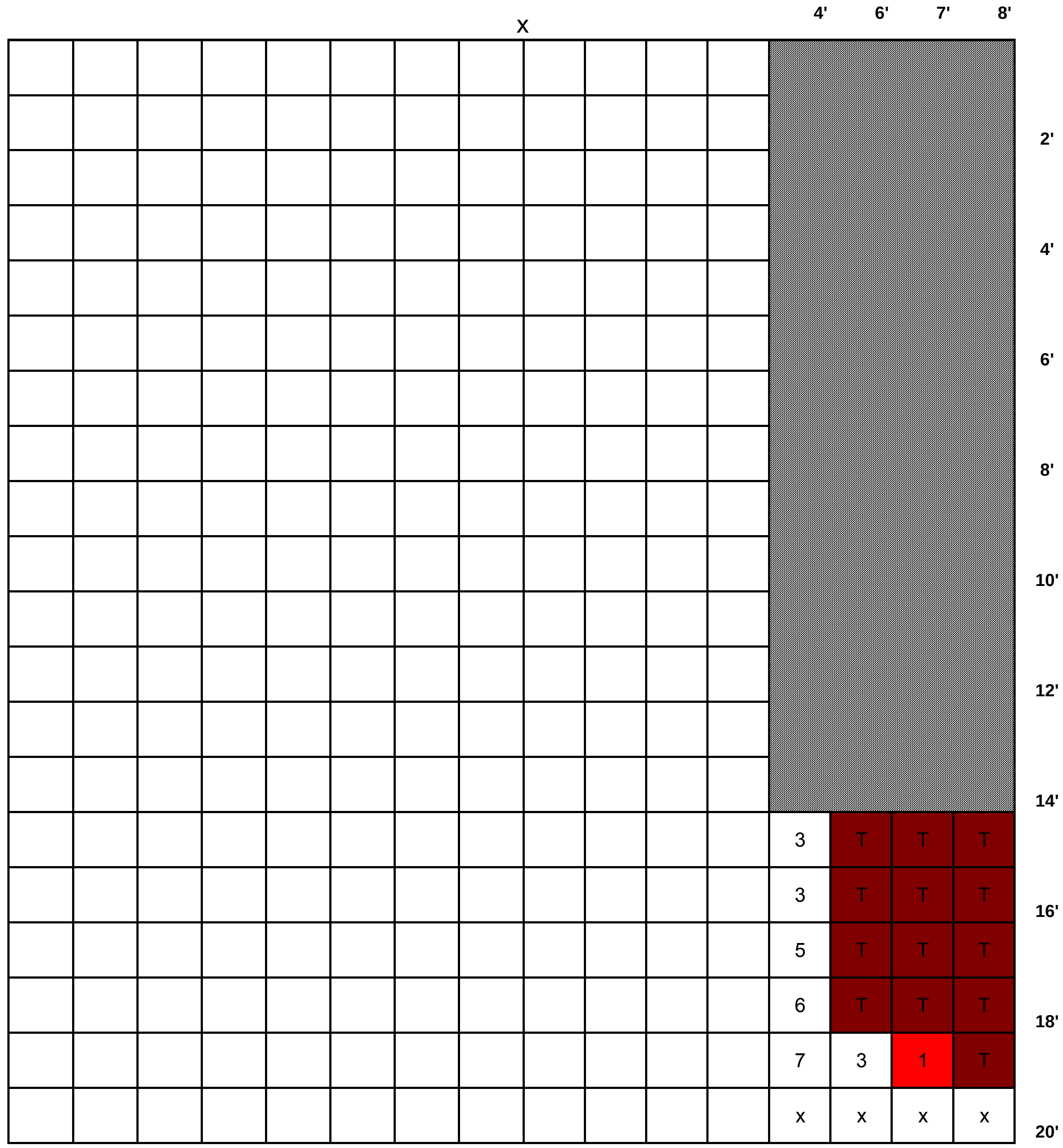
4'wall 6'gap VK605

VK605 32 GPM (12" down) Sprinkler location



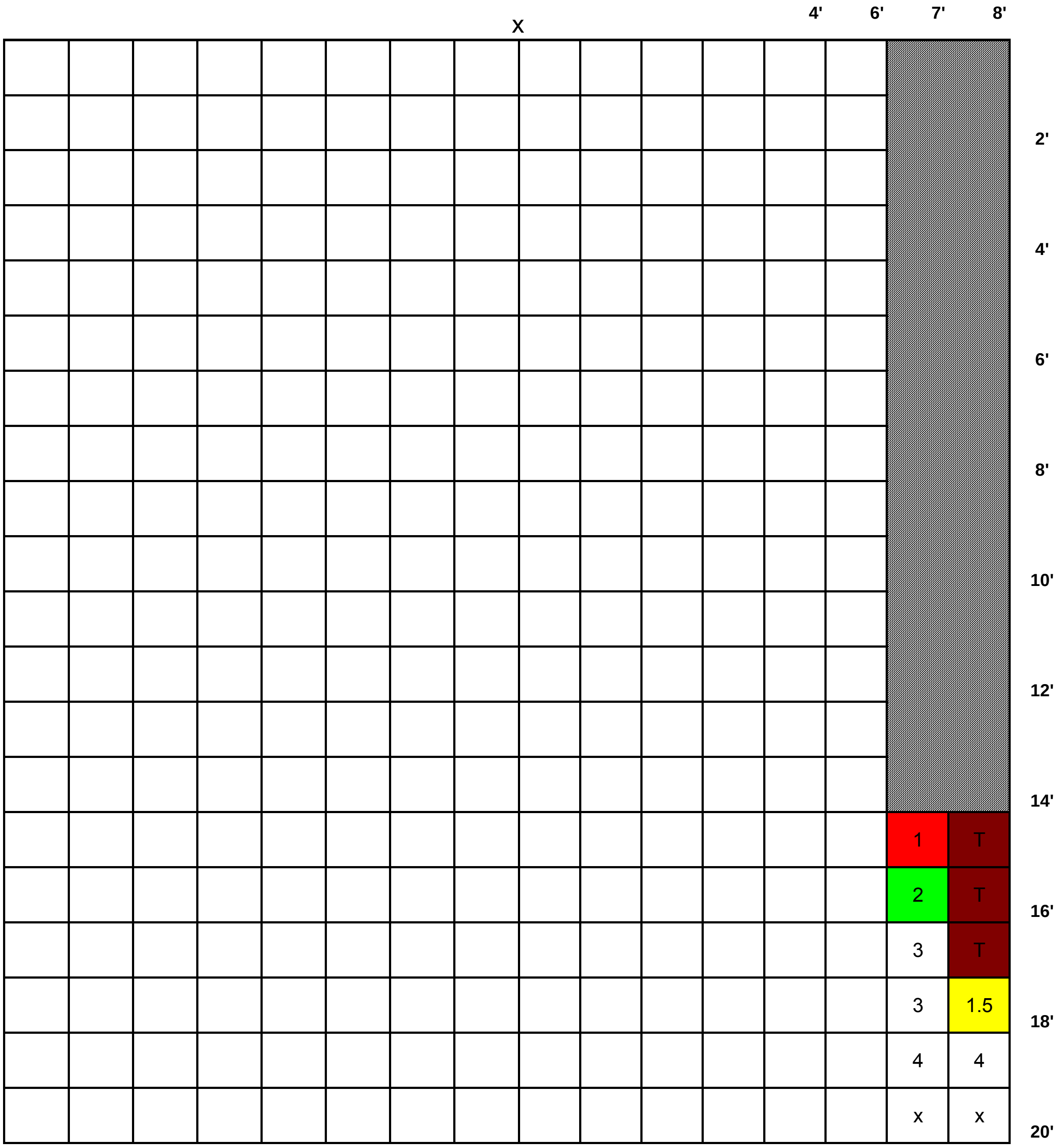
4'wall 6'gap VK630

VK630 32 GPM Sprinkler location



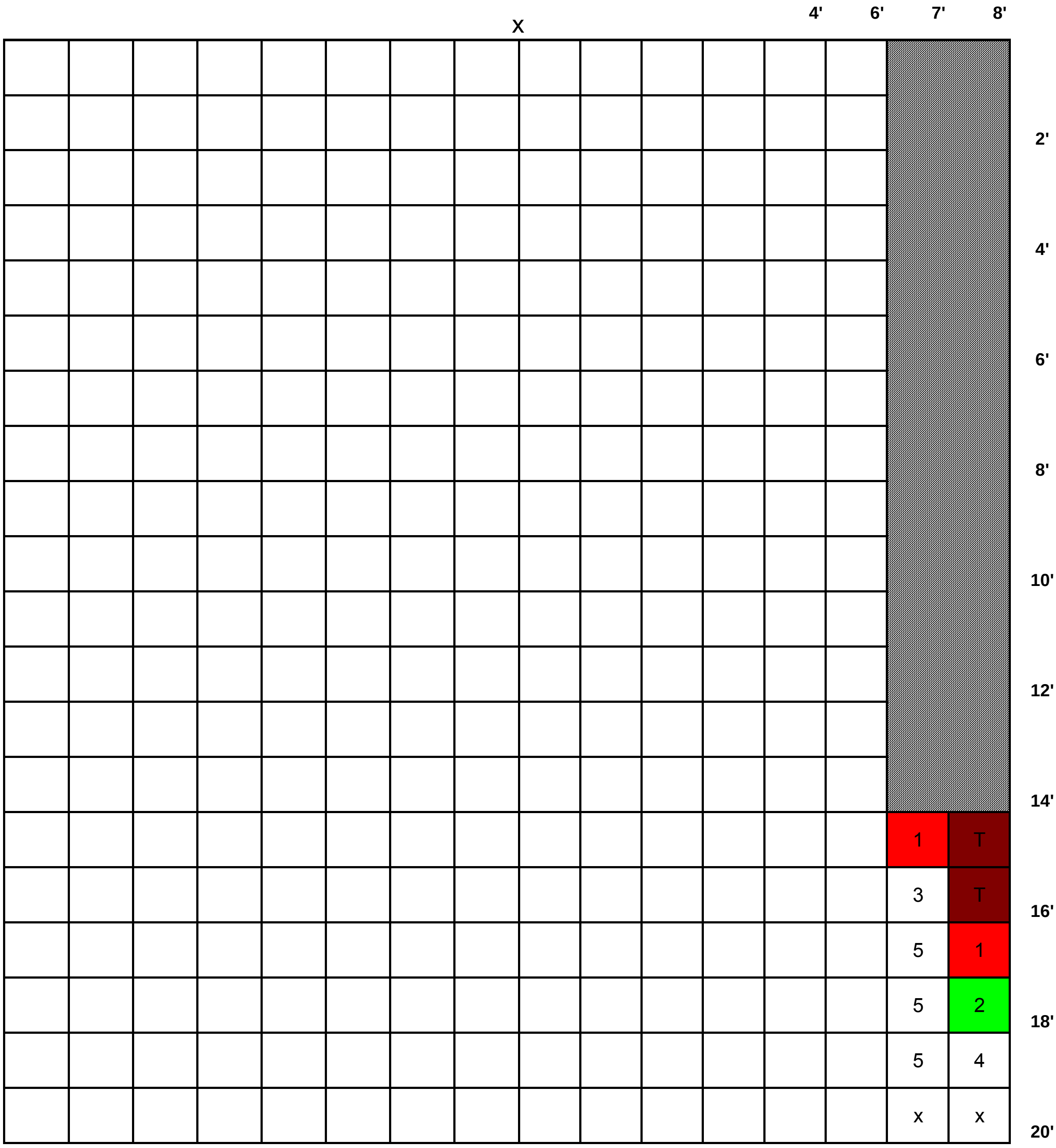
2'wall 6'gap VK486

VK486 22 GPM Sprinkler location



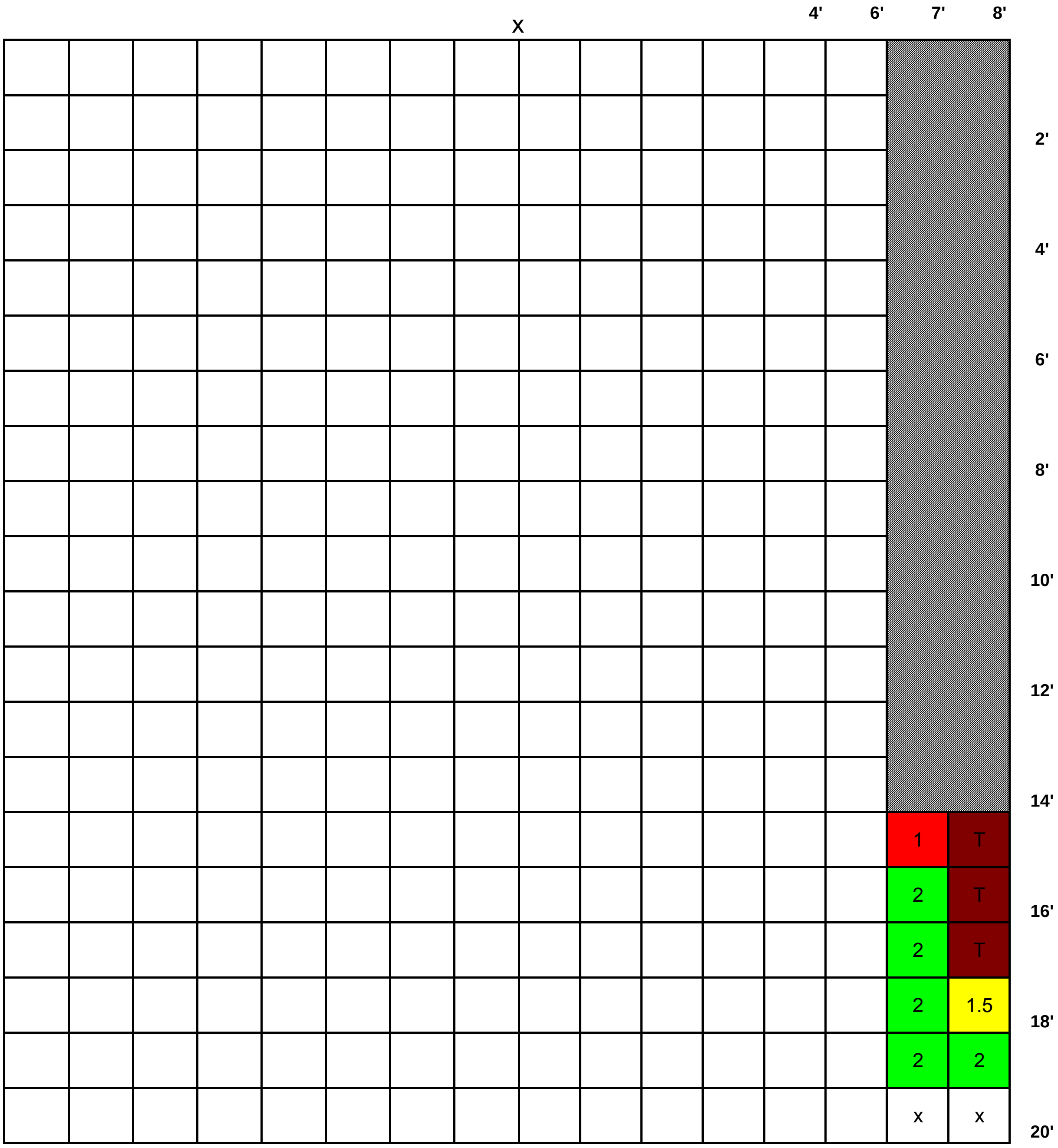
2'wall 6'gap VK460

VK460 26 GPM Sprinkler location



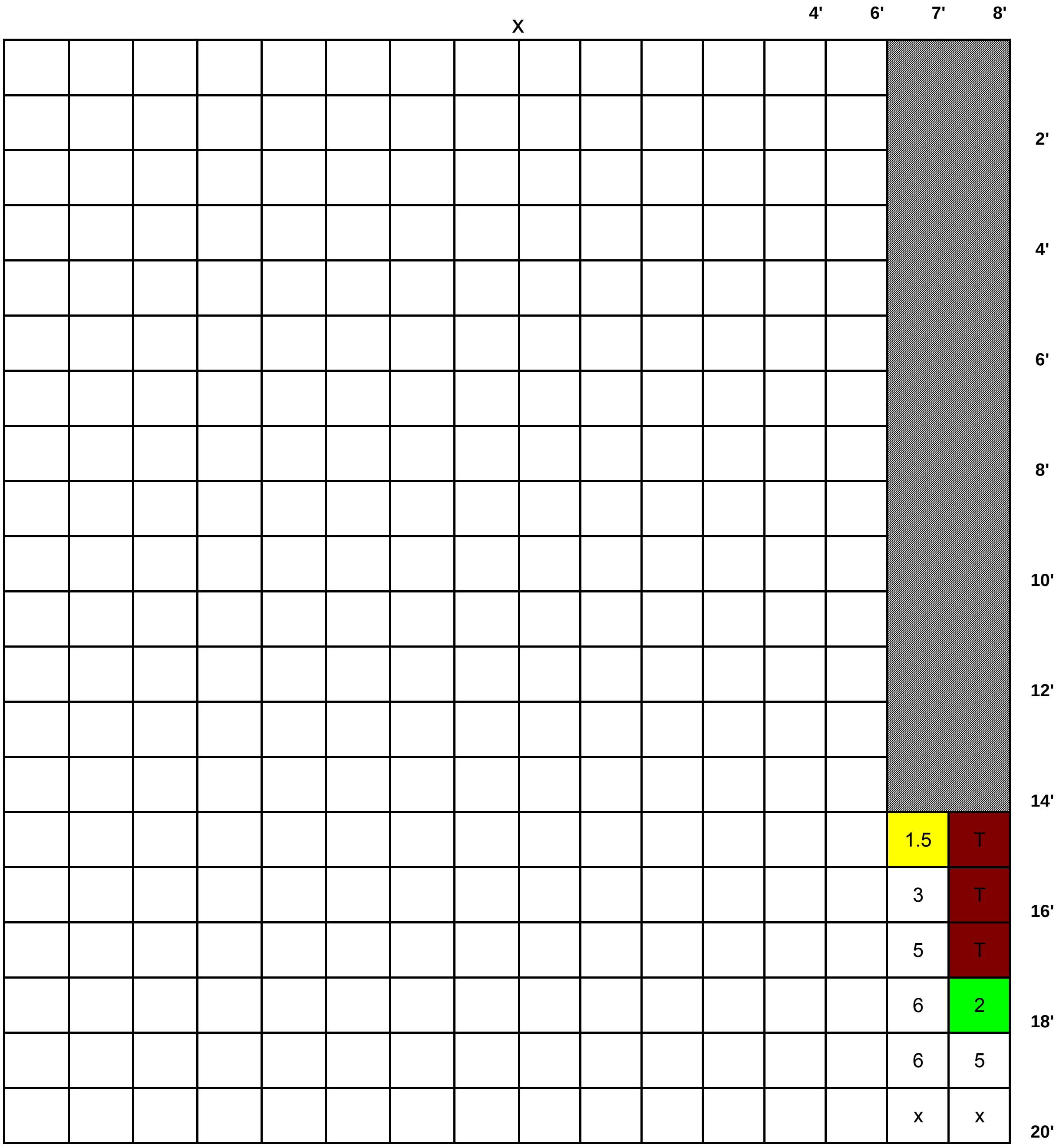
2'wall 6'gap VK605

VK605 32 GPM (12" down) Sprinkler location



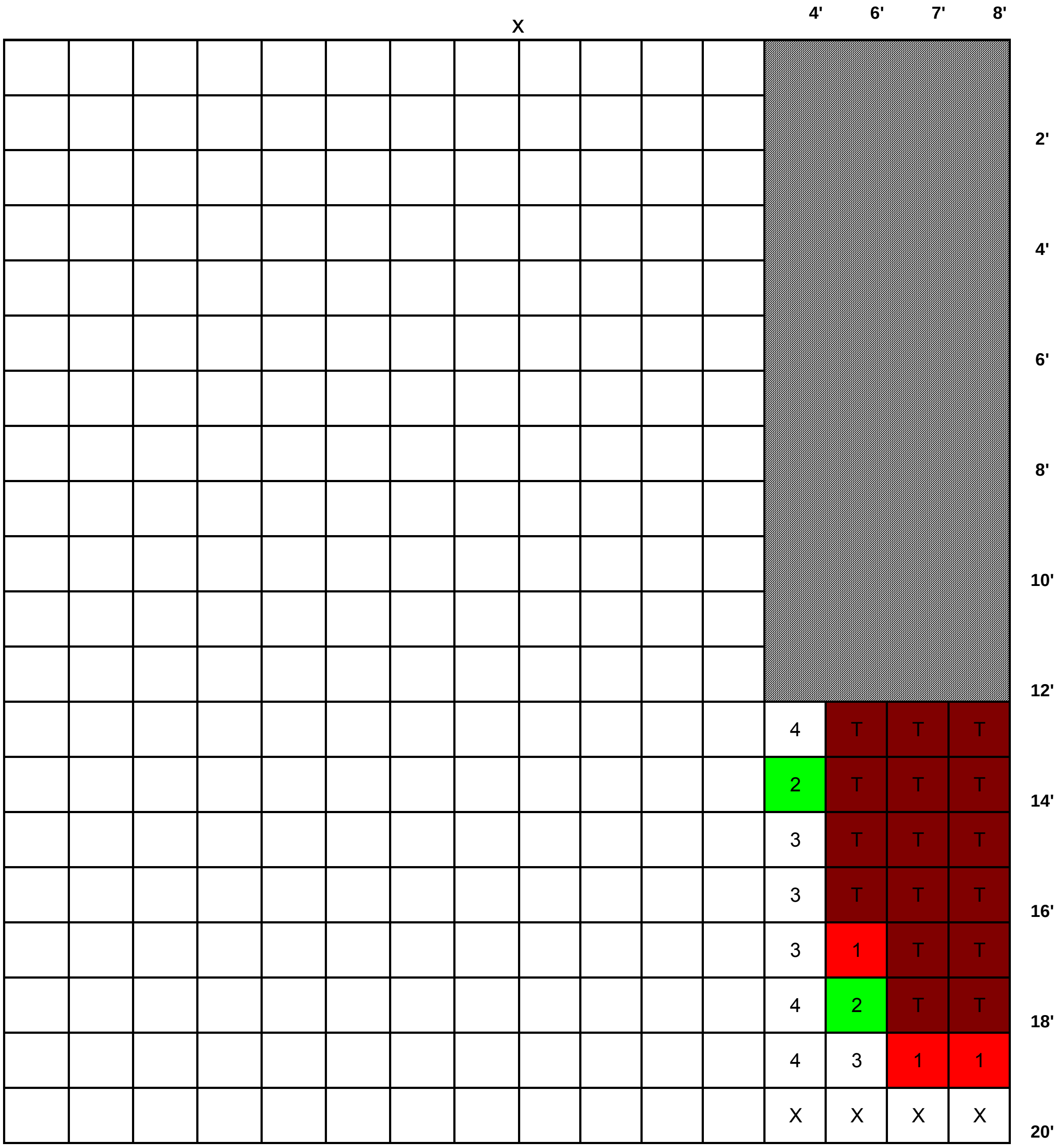
2'wall 6'gap VK630

VK630 32 GPM Sprinkler location



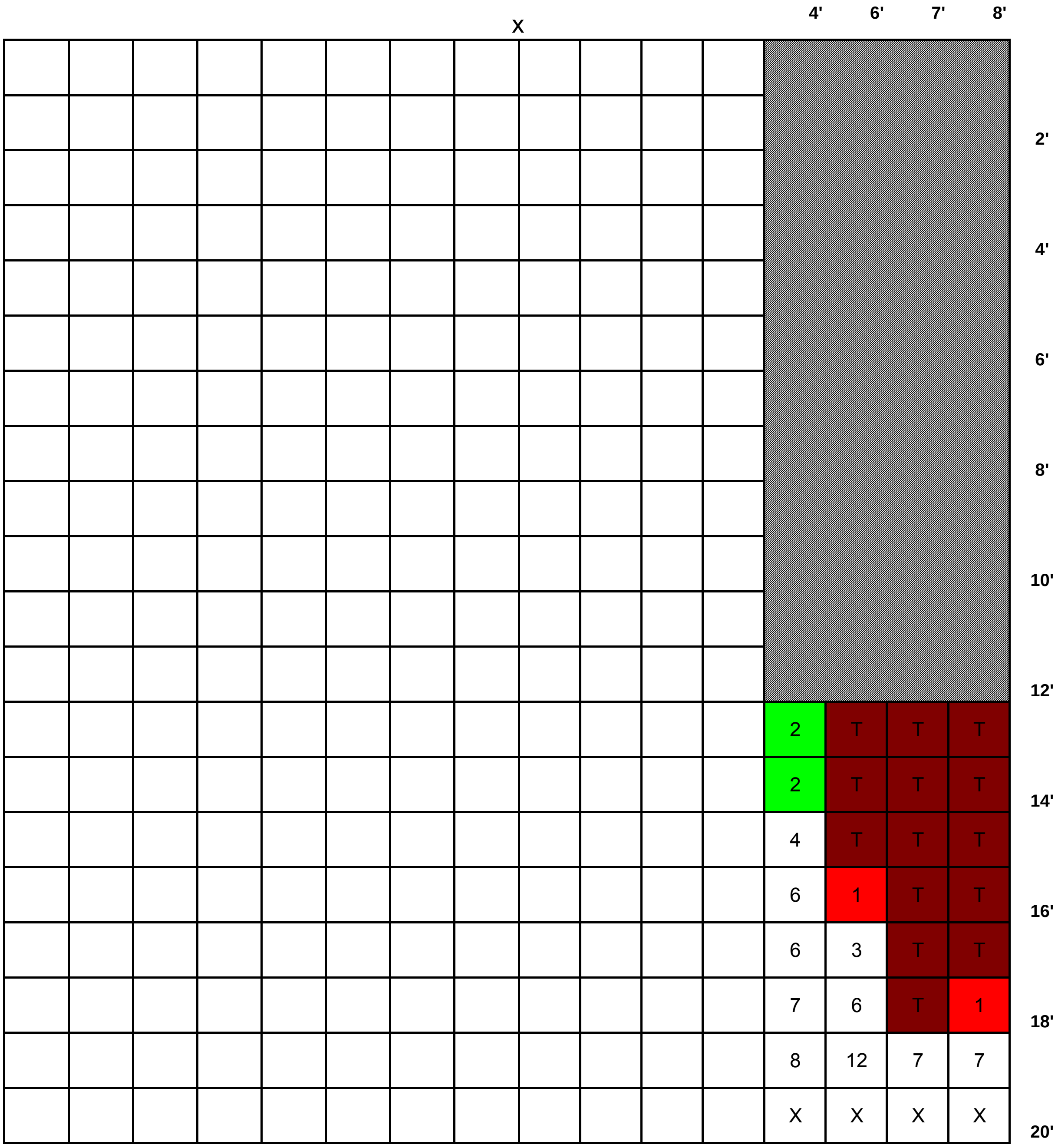
4'wall 8'gap VK486

VK486 22 GPM Sprinkler location



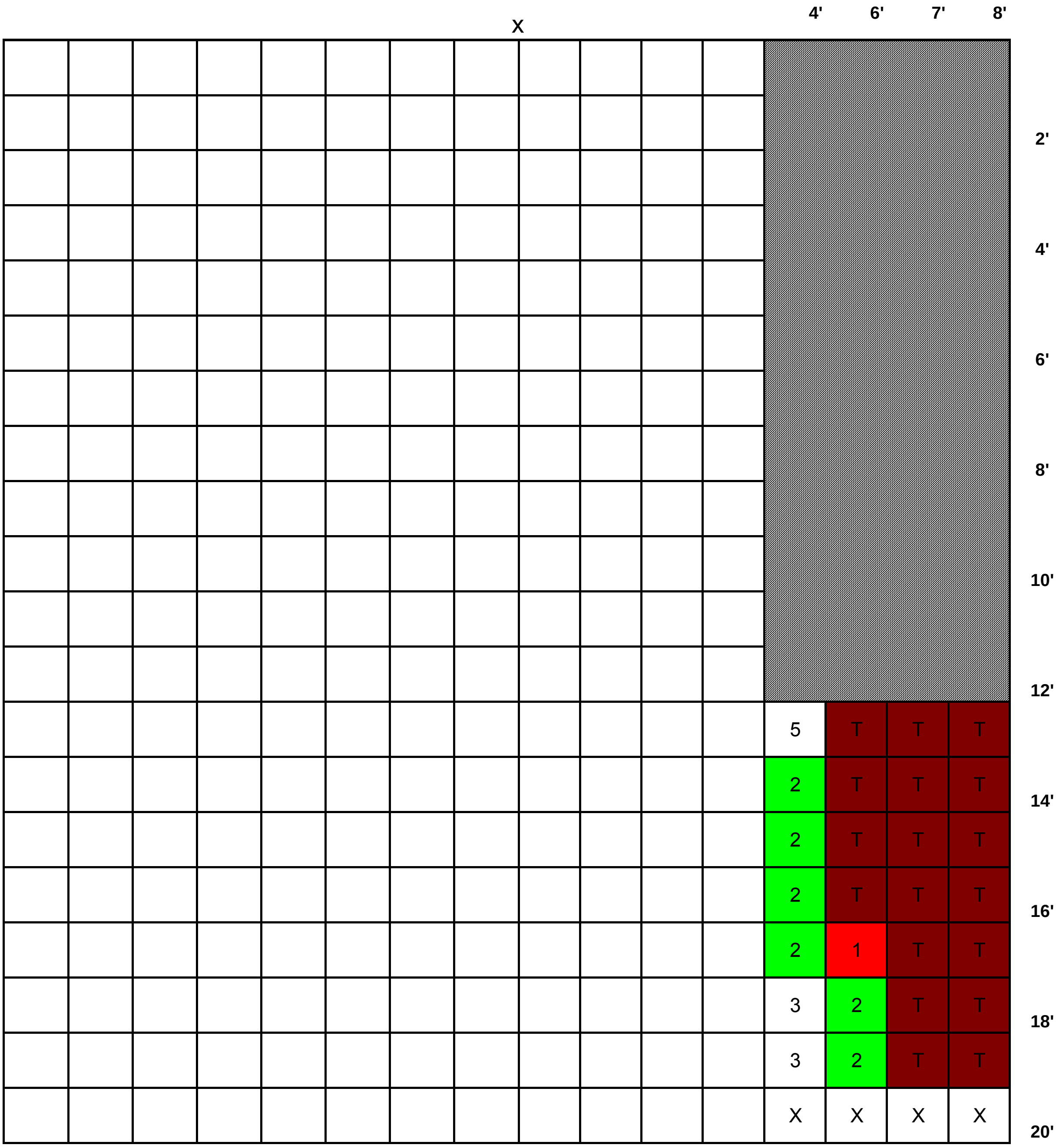
4'wall 8'gap VK460

VK460 26 GPM Sprinkler location



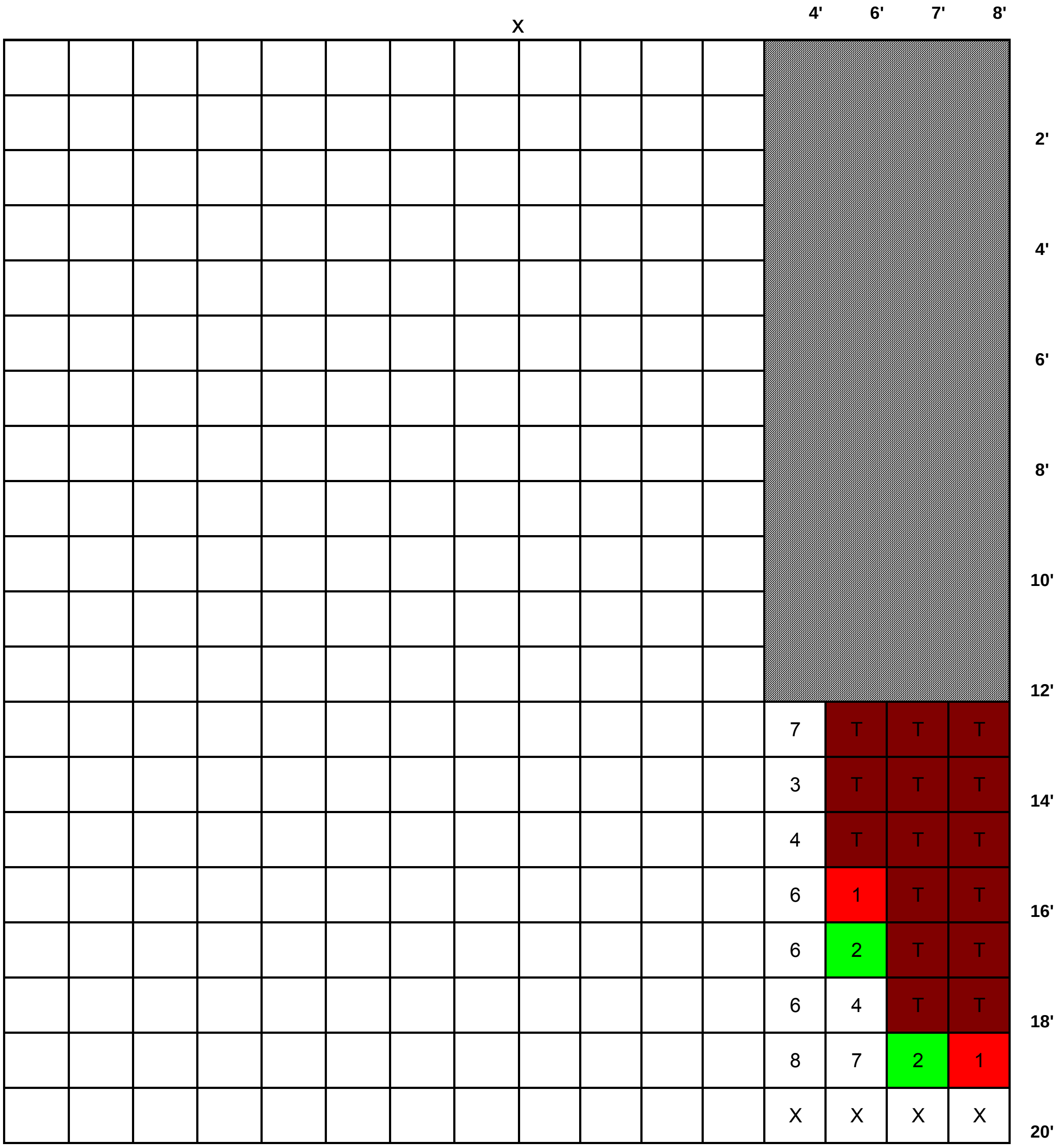
4'wall 8'gap VK605

VK605 32 GPM (12" down) Sprinkler location



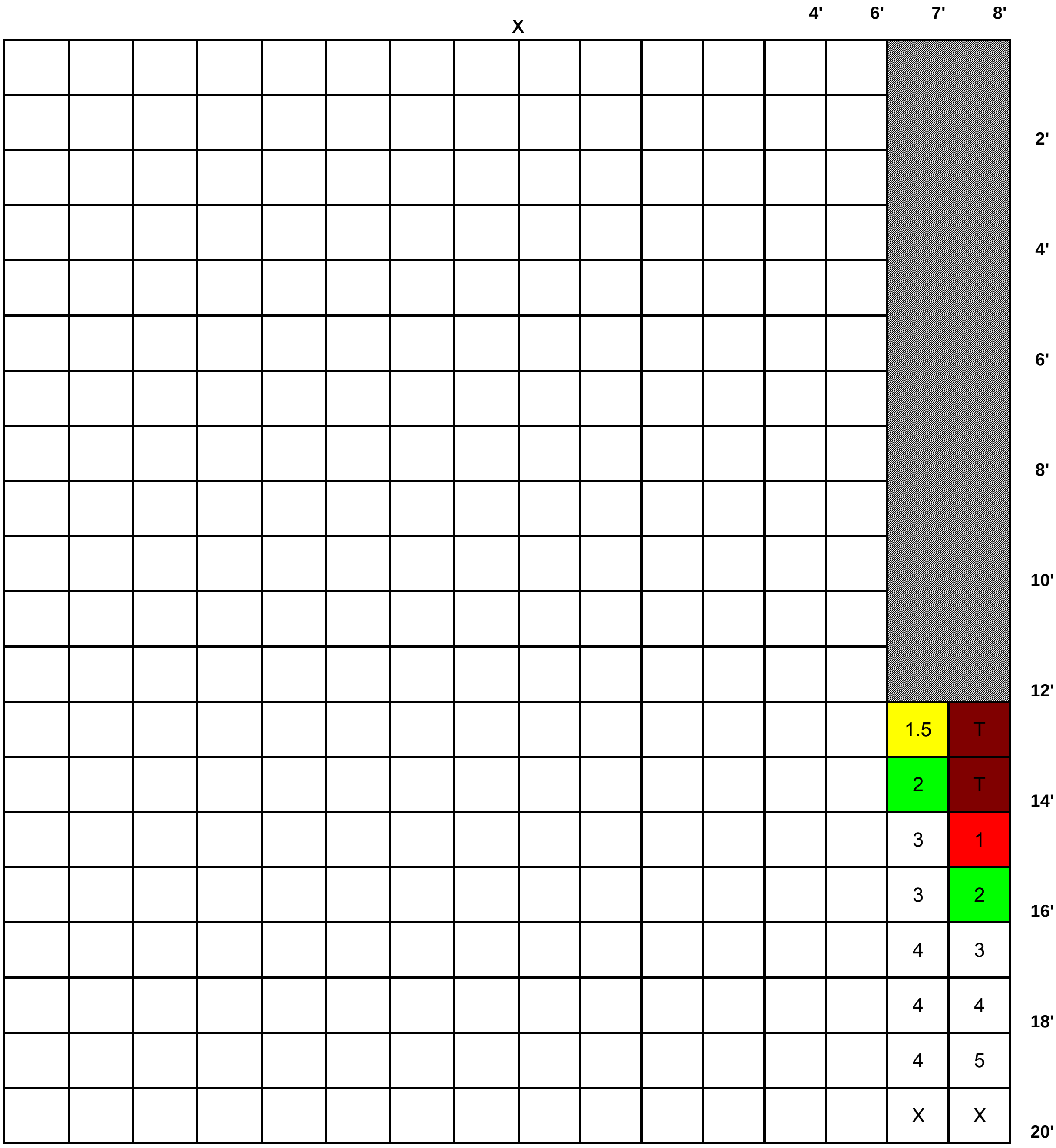
4'wall 8'gap VK630

VK630 32 GPM Sprinkler location



2'wall 8'gap VK486

VK486 22 GPM Sprinkler location



2'wall 8'gap VK460

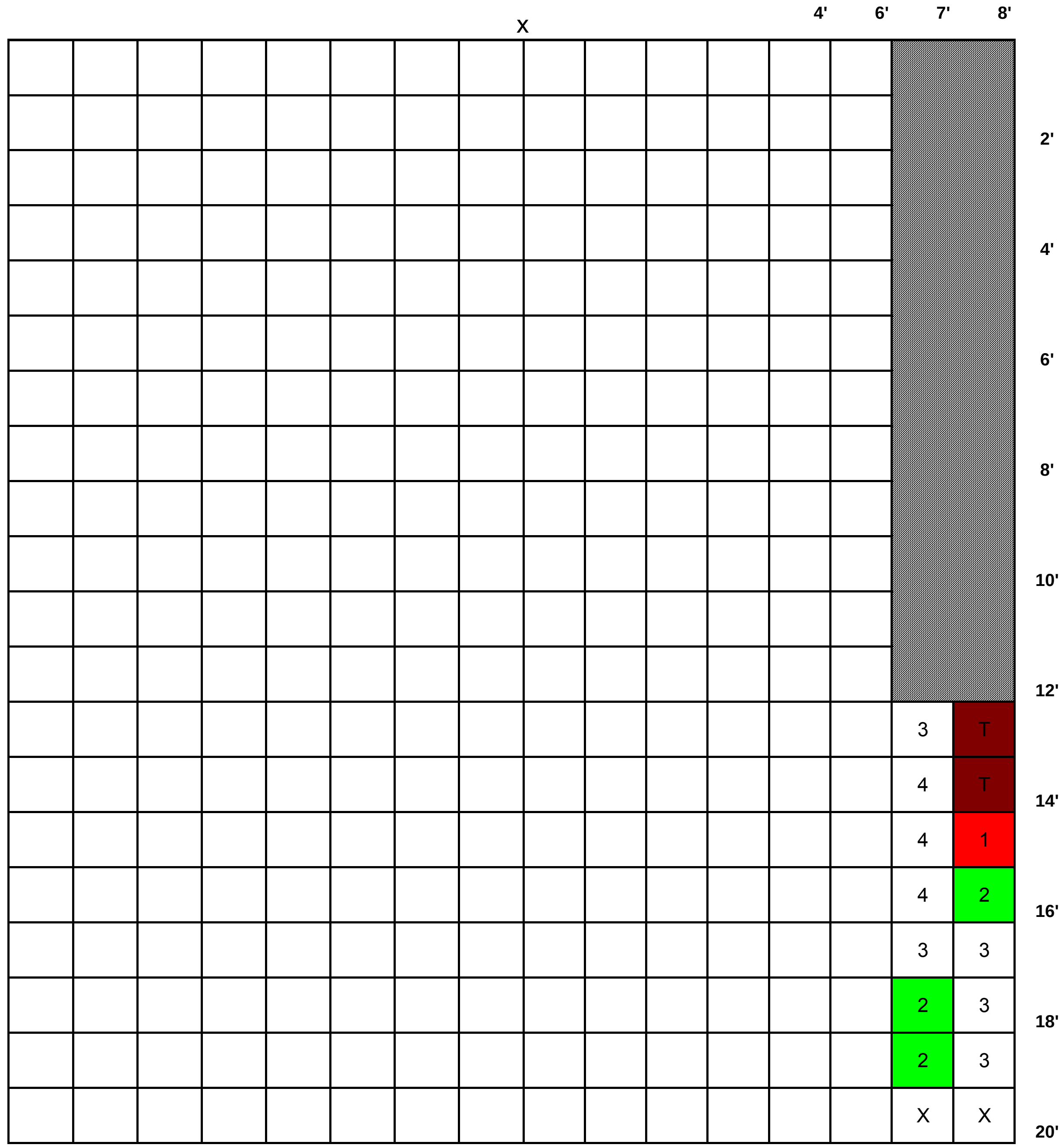
VK460 26 GPM Sprinkler location

X

												4'	6'	7'	8'	
																2'
																4'
																6'
																8'
																10'
																12'
														2	T	
														3	T	14'
														4	1.5	
														5	3	16'
														5	5	
														6	6	18'
														10	10	
														X	X	20'

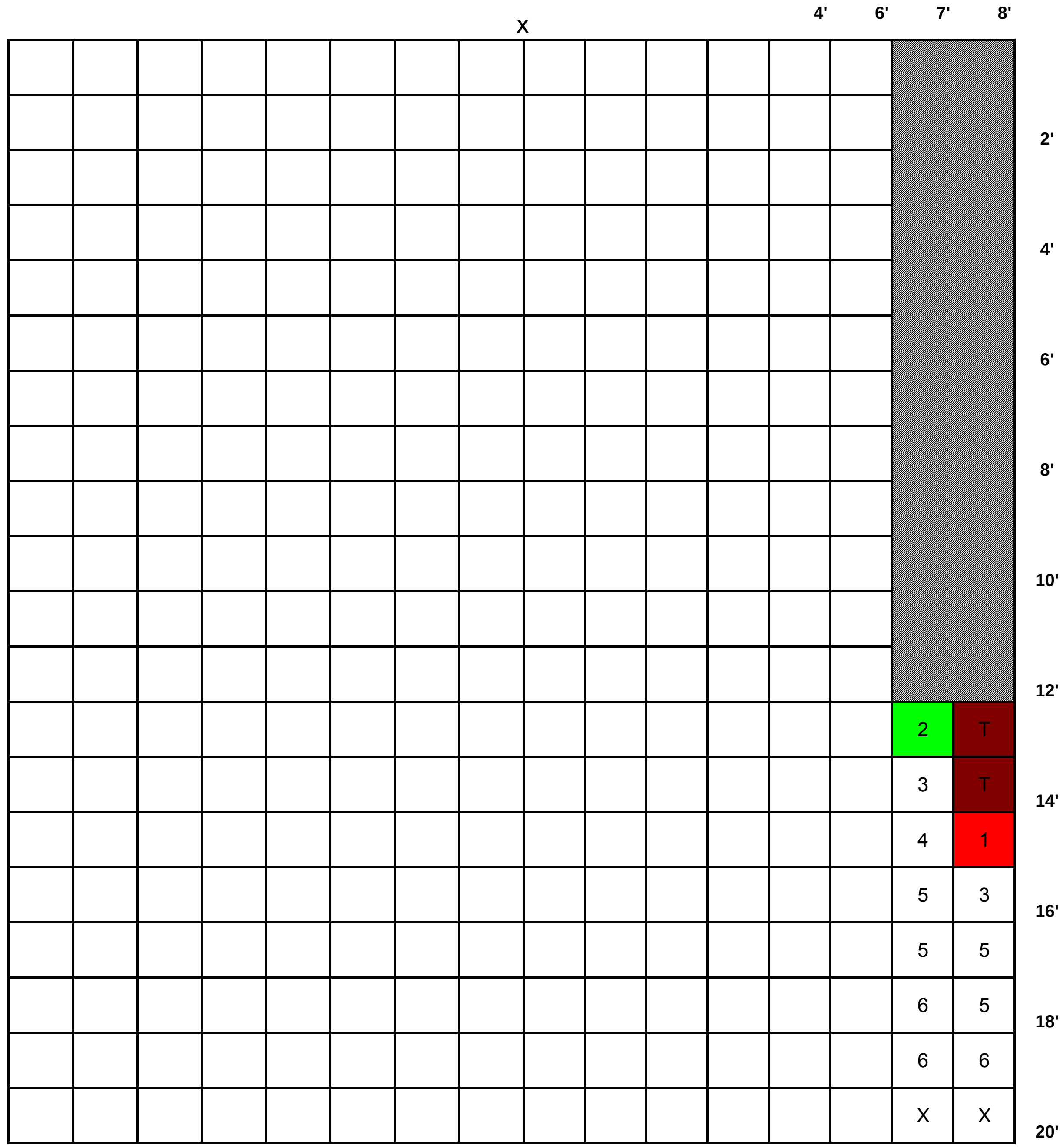
2'wall 8'gap VK605

VK605 32 GPM (12" down) Sprinkler location



2'wall 8'gap VK630

VK630 32 GPM Sprinkler location



4'wall 10'gap VK486

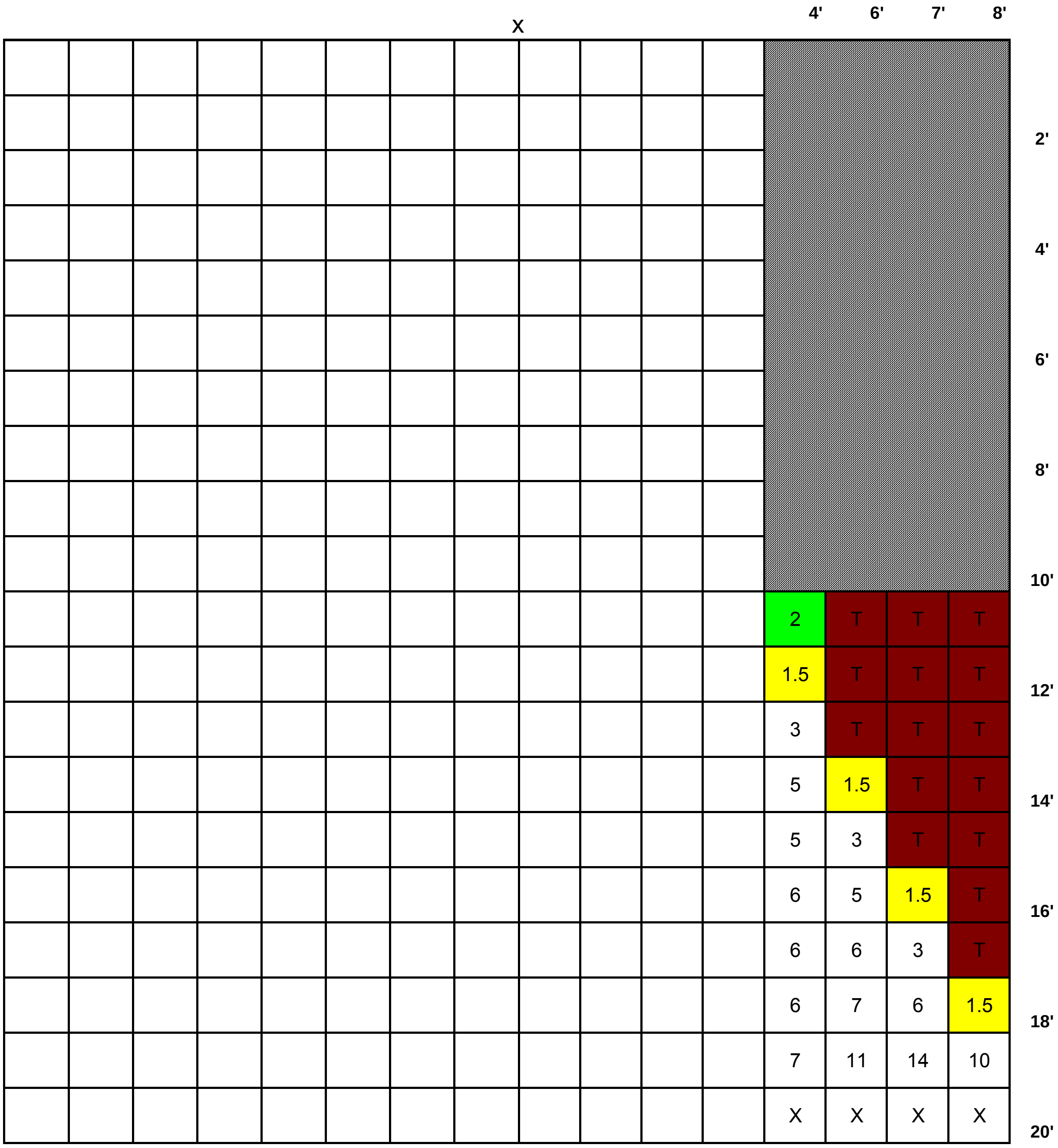
VK486 22 GPM Sprinkler location

X

												4'	6'	7'	8'	
																2'
																4'
																6'
																8'
																10'
												4	T	T	T	
												1	T	T	T	12'
												2	T	T	T	
												3	T	T	T	14'
												3	1.5	T	T	
												4	2	T	T	16'
												4	3	1.5	T	
												4	3	2	T	18'
												5	4	4	3	
												X	X	X	X	20'

4'wall 10'gap VK460

VK460 26 GPM Sprinkler location



4'wall 10'gap VK605

VK605 32 GPM (12" down) Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
				6'
				8'
				10'
8	T	T	T	
3	T	T	T	12'
2	T	T	T	
3	T	T	T	14'
3	1.5	T	T	
3	2	T	T	16'
3	2	1.5	T	
3	2	2	T	18'
3	3	3	1	
X	X	X	X	20'

4'wall 10'gap VK630

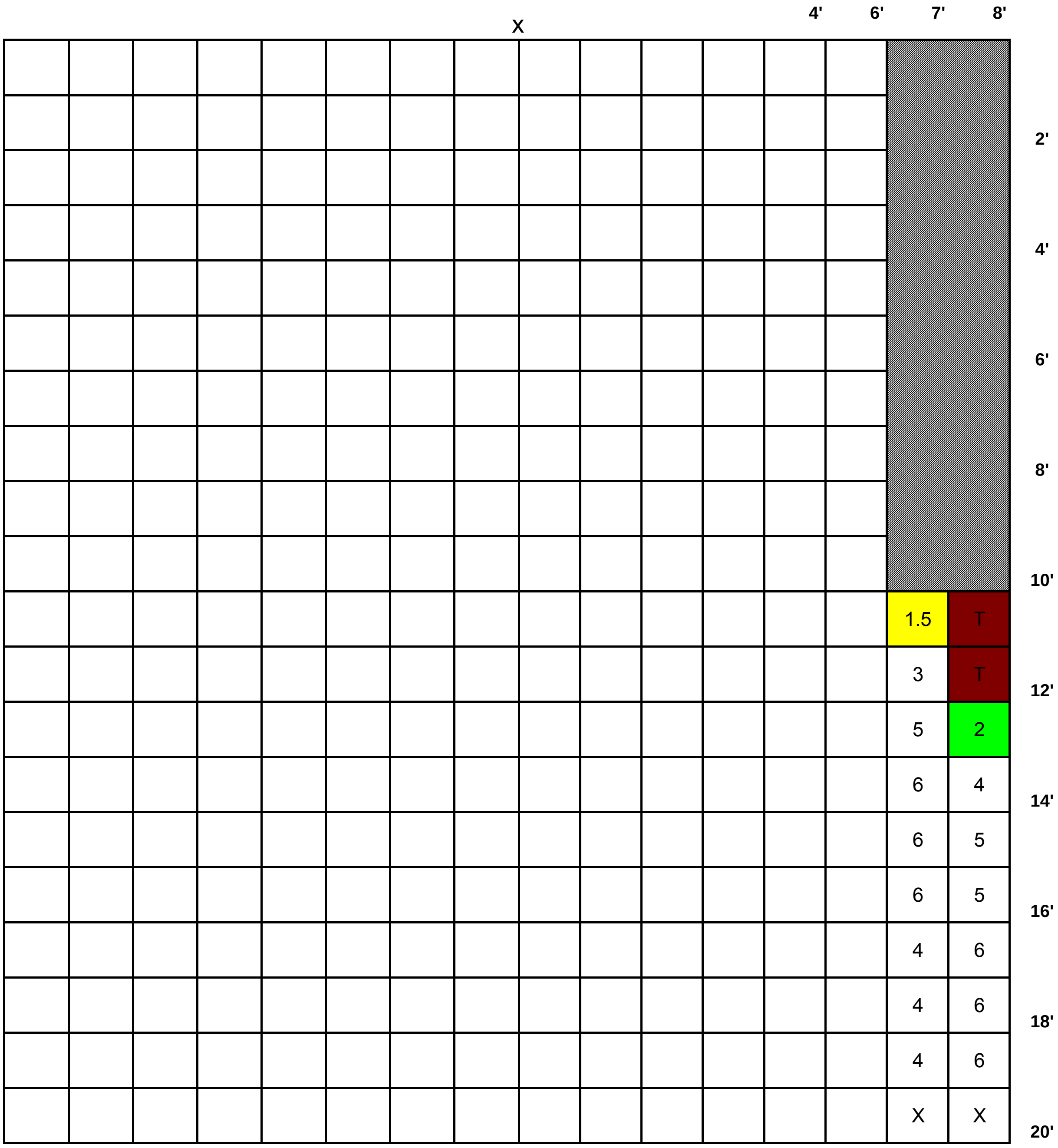
VK630 32 GPM Sprinkler location

X

												4'	6'	7'	8'	
																2'
																4'
																6'
																8'
																10'
												7	T	T	T	
												2	T	T	T	12'
												4	T	T	T	
												5	1	T	T	14'
												5	3	T	T	
												5	5	1	T	16'
												6	5	3	T	
												6	6	5	T	18'
												7	7	7	3	
												X	X	X	X	20'

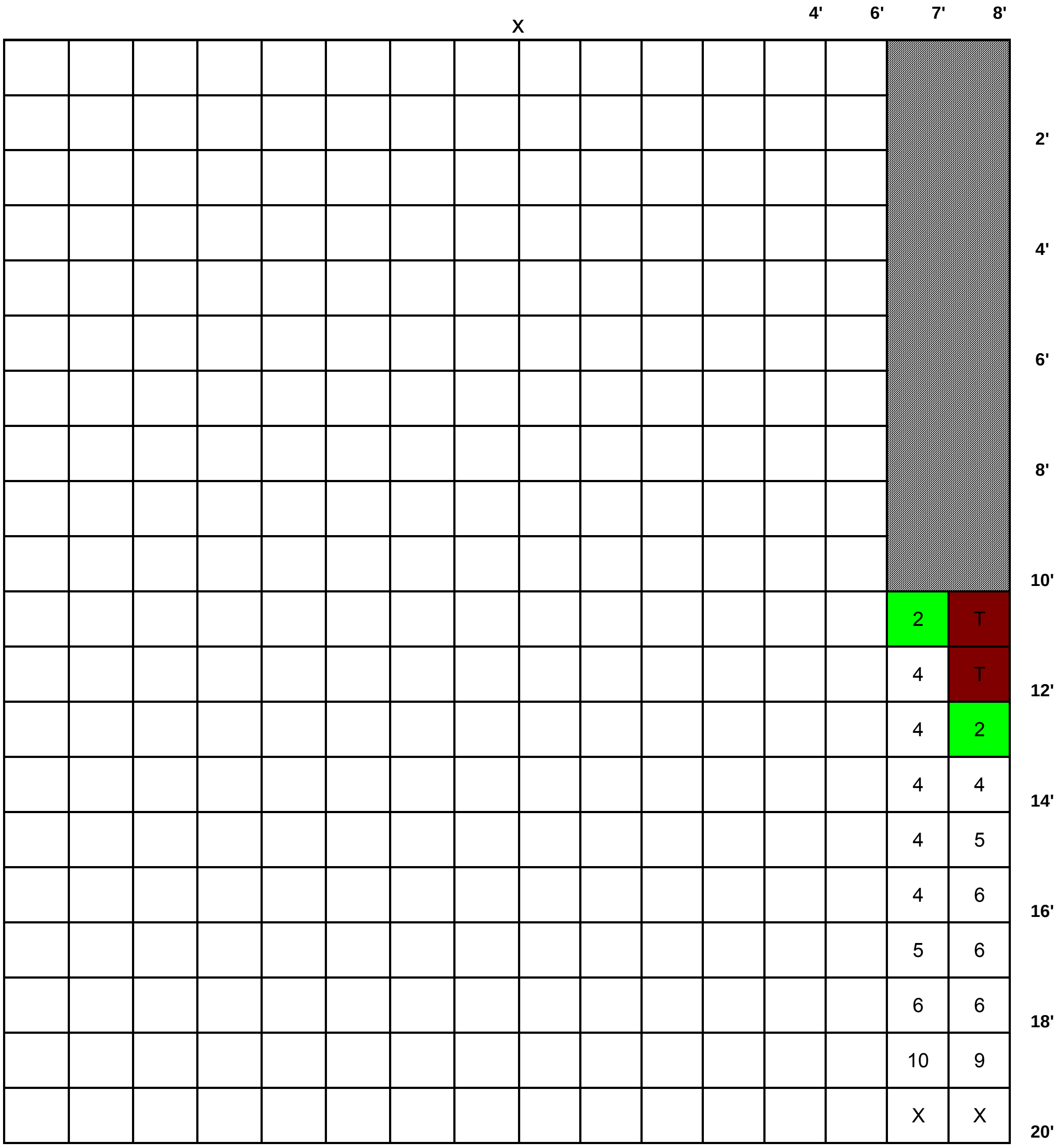
2'wall 10'gap VK486

VK486 22 GPM Sprinkler location



2'wall 10'gap VK460

VK460 26 GPM Sprinkler location



2'wall 10'gap VK605

VK605 32 GPM (12" down) Sprinkler location

							X					4'	6'	7'	8'	
																2'
																4'
																6'
																8'
																10'
														3	T	
														5	T	12'
														8	2	
														11	4	14'
														6	5	
														3	4	16'
														2	3	
														2	3	18'
														2	3	
														X	X	20'

2'wall 10'gap VK630

VK630 32 GPM Sprinkler location

X

												4'	6'	7'	8'	
																2'
																4'
																6'
																8'
																10'
														1.5	T	
														3	T	12'
														4	2	
														4	3	14'
														4	5	
														5	6	16'
														5	6	
														5	5	18'
														6	6	
														X	X	20'

4'wall 12'gap VK486

VK486 22 GPM Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
				6'
				8'
3	T	T	T	
1.5	T	T	T	10'
2	T	T	T	
3	T	T	T	12'
3	2	T	T	
4	3	1.5	T	14'
4	3	2	1	
5	4	3	2	16'
5	4	4	4	
5	4	4	5	18'
5	5	5	7	
X	X	X	X	20'

4'wall 12'gap VK460

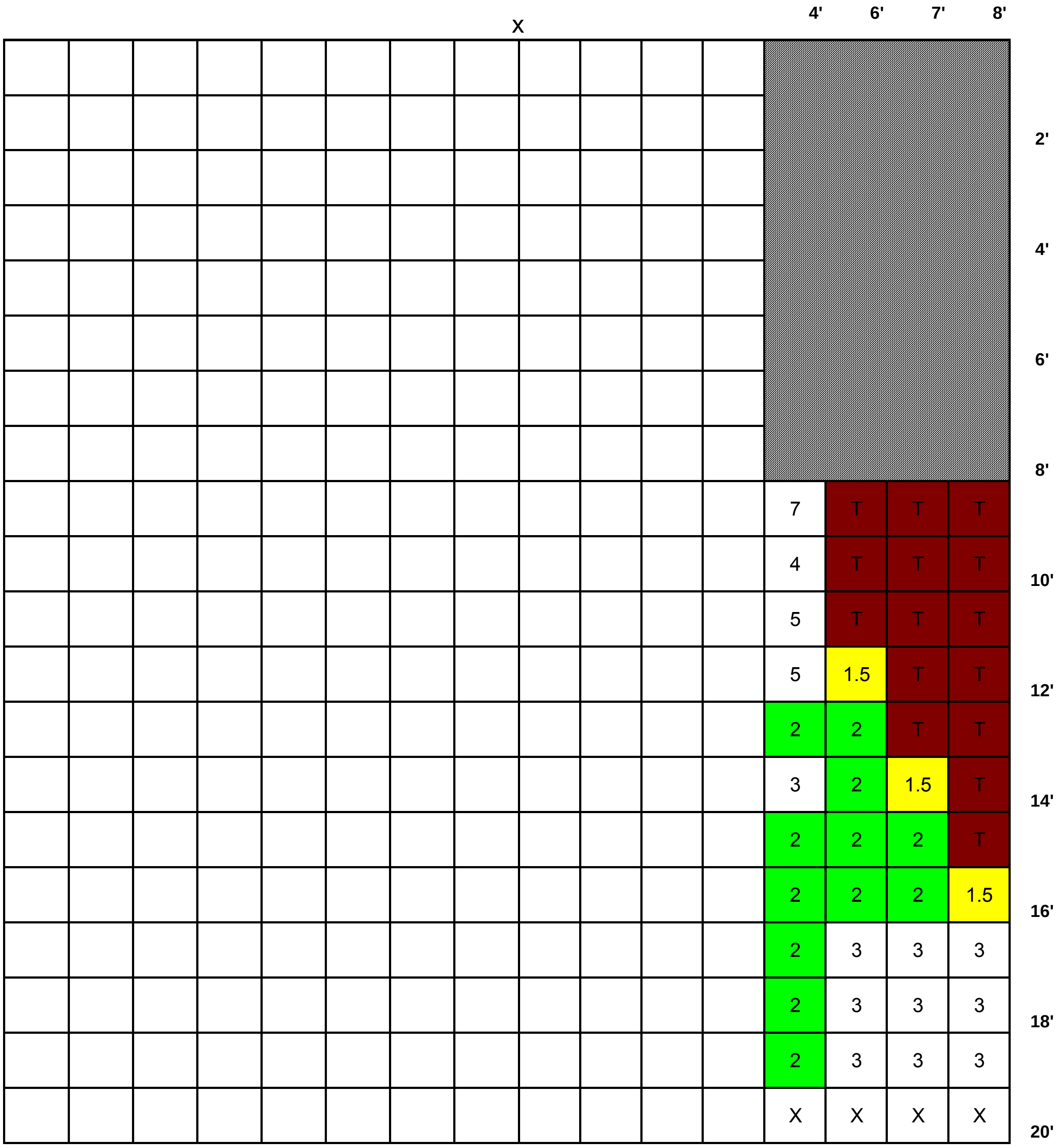
VK460 26 GPM Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
				6'
				8'
1.5	T	T	T	
2	T	T	T	10'
3	T	T	T	
4	T	T	T	12'
4	3	1	T	
4	4	2	T	14'
4	4	4	1.5	
5	5	5	3	16'
5	6	5	5	
6	7	7	7	18'
7	10	14	15	
X	X	X	X	20'

4'wall 12'gap VK605

VK605 32 GPM (12" down) Sprinkler location



4'wall 12'gap VK630

VK630 32 GPM Sprinkler location

X

												4'	6'	7'	8'	
																2'
																4'
																6'
																8'
												24	T	T	T	
												21	T	T	T	10'
												11	2	T	T	
												6	2	T	T	12'
												5	3	1	T	
												5	4	3	T	14'
												5	5	5	1.5	
												5	5	5	3	16'
												6	6	6	5	
												6	6	6	6	18'
												7	7	8	7	
												X	X	X	X	20'

2'wall 12'gap VK486

VK486 22 GPM Sprinkler location

X

												4'	6'	7'	8'	
																2'
																4'
																6'
																8'
														2	T	
														5	1.5	10'
														6	4	
														8	6	12'
														6	8	
														4	9	14'
														3	9	
														3	8	16'
														3	7	
														3	7	18'
														4	6	
														X	X	20'

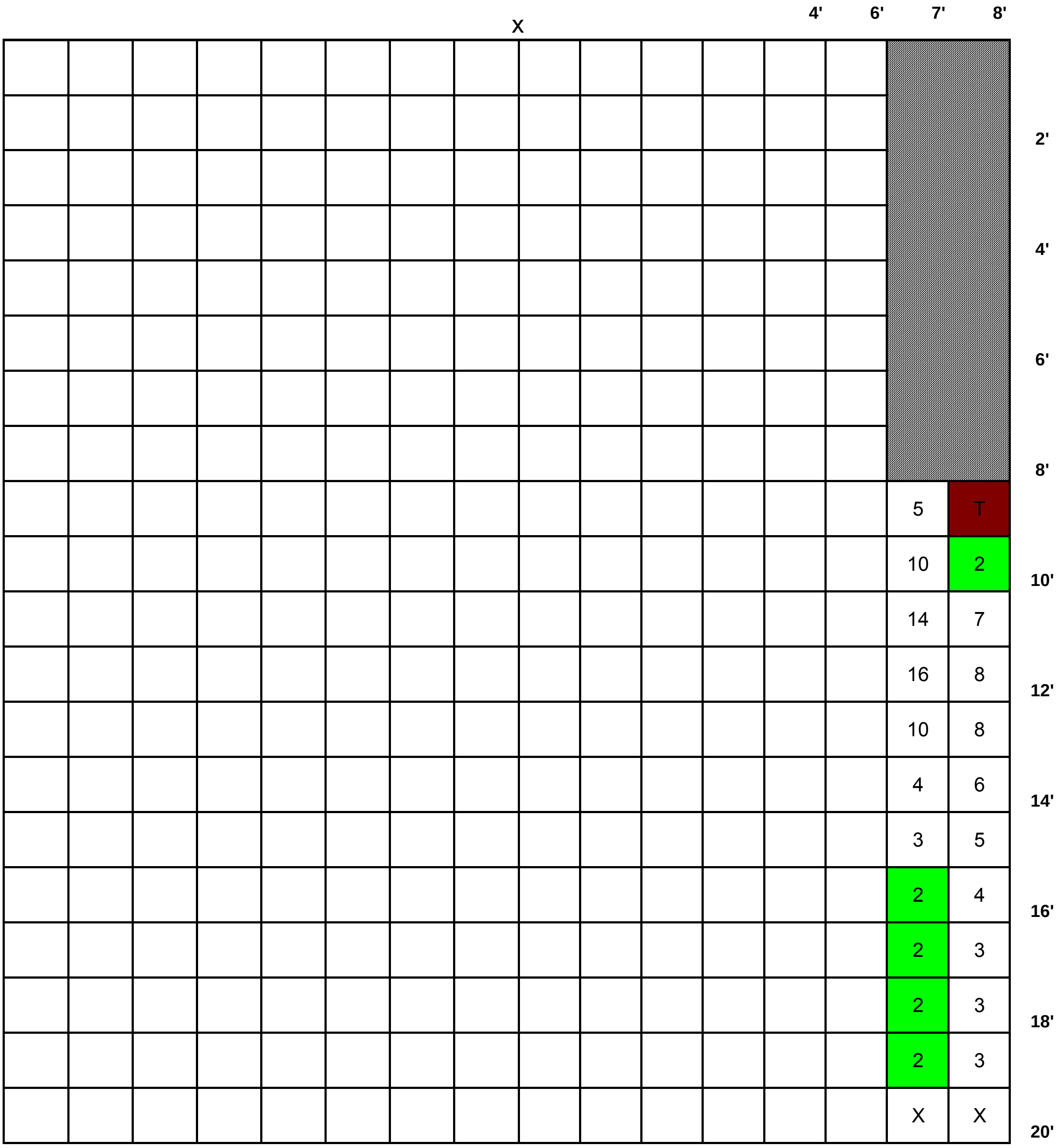
2'wall 12'gap VK460

VK460 26 GPM Sprinkler location

								X				4'	6'	7'	8'	
																2'
																4'
																6'
																8'
														2	T	
														3	1	10'
														3	2	
														3	3	12'
														3	5	
														4	7	14'
														4	8	
														5	7	16'
														5	6	
														6	6	18'
														11	9	
														X	X	20'

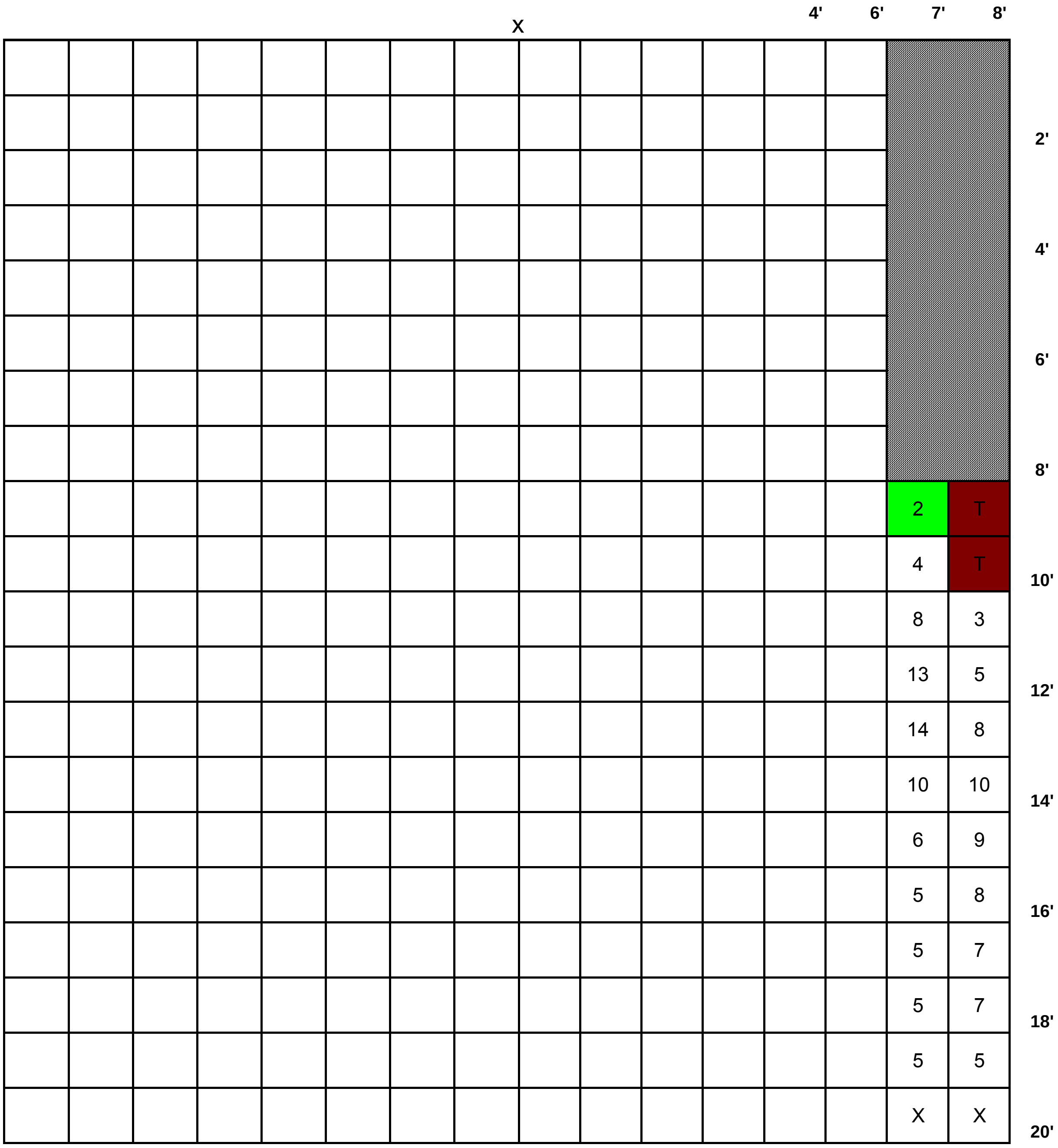
2'wall 12'gap VK605

VK605 32 GPM (12" down) Sprinkler location



2'wall 12'gap VK630

VK630 32 GPM Sprinkler location



4'wall 14'gap VK486

VK486 22 GPM Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
				6'
6	T	T	T	
8	1.5	T	T	8'
8	2	T	T	
7	3	1	T	10'
6	3	2	T	
5	3	2	1.5	12'
5	3	3	3	
4	3	3	4	14'
4	3	3	5	
3	3	4	5	16'
3	3	3	5	
3	3	4	5	18'
3	4	4	6	
X	X	X	X	20'

4'wall 14'gap VK460

VK460 26 GPM Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
				6'
5	T	T	T	
5	1	T	T	8'
4	2	T	T	
4	2	1	T	10'
3	2	2	T	
3	3	3	1.5	12'
4	3	3	3	
4	4	4	5	14'
5	4	4	7	
5	5	5	6	16'
6	6	5	6	
6	7	6	6	18'
8	11	11	12	
X	X	X	X	20'

4'wall 14'gap VK605

VK605 32 GPM (12" down) Sprinkler location

X

	4'	6'	7'	8'
2'				
4'				
6'				
	5	T	T	T
8'	5	T	T	T
	8	3	T	T
10'	8	6	2	T
	7	6	5	1.5
12'	6	5	5	3
	5	4	4	3
14'	3	3	3	3
	2	3	3	3
16'	2	2	3	3
	2	3	3	3
18'	2	3	3	3
	2	2	3	3
20'	X	X	X	X

4'wall 14'gap VK630

VK630 32 GPM Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
				6'
19	T	T	T	
28	2	T	T	8'
28	5	T	T	
25	5	1	T	10'
8	4	2	T	
5	3	3	2	12'
4	4	4	4	
4	4	5	6	14'
5	5	5	7	
5	5	5	6	16'
6	6	6	6	
6	6	6	6	18'
8	8	7	7	
X	X	X	X	20'

2'wall 14'gap VK486

VK486 22 GPM Sprinkler location

X

												4'	6'	7'	8'	
																2'
																4'
																6'
														2	T	
														4	1.5	8'
														5	4	
														5	6	10'
														4	7	
														4	9	12'
														3	10	
														3	11	14'
														3	11	
														3	11	16'
														3	10	
														4	9	18'
														4	8	
														X	X	20'

2'wall 14'gap VK460

VK460 26 GPM Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
				6'
		2	T	
		2	1	8'
		2	2	
		2	2	10'
		2	3	
		3	5	12'
		3	6	
		4	7	14'
		5	8	
		5	8	16'
		6	8	
		6	7	18'
		11	10	
		X	X	20'

2'wall 14'gap VK605

VK605 32 GPM (12" down) Sprinkler location

							X					4'	6'	7'	8'	
																2'
																4'
																6'
														9	T	
														18	8	8'
														19	16	
														12	18	10'
														6	16	
														4	15	12'
														3	14	
														3	12	14'
														2	9	
														2	6	16'
														2	5	
														2	4	18'
														2	3	
														X	X	20'

2'wall 14'gap VK630

VK630 32 GPM Sprinkler location

X

												4'	6'	7'	8'	
																2'
																4'
																6'
														3	T	
														7	2	8'
														10	6	
														10	13	10'
														8	19	
														5	22	12'
														5	22	
														5	20	14'
														5	16	
														5	13	16'
														5	10	
														5	8	18'
														5	6	
														X	X	20'

4'wall 16'gap VK486

VK486 22 GPM Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
11	2	T	T	
12	3	1	T	6'
10	5	2	T	
7	5	3	1.5	8'
5	4	4	3	
3	3	4	5	10'
3	3	4	7	
2	3	3	9	12'
2	2	3	12	
2	3	3	10	14'
2	3	3	10	
3	3	3	10	16'
3	3	3	9	
3	3	4	8	18'
3	3	4	7	
X	X	X	X	20'

4'wall 16'gap VK460

VK460 26 GPM Sprinkler location

X

	4'	6'	7'	8'	
					2'
					4'
	11	1.5	T	T	
	14	4	1	T	6'
	9	5	1.5	T	
	5	3	2	1	8'
	3	3	2	2	
	3	3	2	3	10'
	4	3	3	4	
	4	3	3	5	12'
	4	3	4	7	
	4	4	4	7	14'
	5	5	5	8	
	5	6	5	8	16'
	6	7	6	8	
	6	8	7	7	18'
	8	11	12	11	
	X	X	X	X	20'

4'wall 16'gap VK605

VK605 32 GPM (12" down) Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
12	T	T	T	
20	5	T	T	6'
20	13	6	1.5	
16	18	14	8	8'
9	16	17	14	
4	9	15	18	10'
2	4	8	17	
2	2	4	13	12'
2	2	3	11	
2	2	2	9	14'
2	2	2	7	
2	2	2	6	16'
2	2	2	4	
2	2	2	4	18'
2	2	2	3	
X	X	X	X	20'

4'wall 16'gap VK630

VK630 32 GPM Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
16	1	T	T	
28	8	1	T	6'
28	13	2	T	
28	15	5	2	8'
27	15	6	5	
24	12	7	11	10'
7	7	6	19	
3	3	5	21	12'
3	3	4	19	
4	4	4	15	14'
4	4	5	14	
5	5	5	11	16'
5	5	6	9	
6	6	6	8	18'
7	6	6	6	
X	X	X	X	20'

2'wall 16'gap VK486

VK486 22 GPM Sprinkler location

							X					4'	6'	7'	8'	
																2'
																4'
														4	T	
														4	3	6'
														3	6	
														3	8	8'
														3	9	
														3	9	10'
														4	9	
														4	10	12'
														4	11	
														4	11	14'
														4	12	
														4	11	16'
														4	10	
														4	9	18'
														4	7	
														X	X	20'

2'wall 16'gap VK460

VK460 26 GPM Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
		3	T	
		4	2	6'
		4	4	
		2	5	8'
		2	5	
		2	5	10'
		2	5	
		3	6	12'
		3	7	
		4	8	14'
		5	9	
		6	9	16'
		6	8	
		7	8	18'
		11	11	
		X	X	20'

2'wall 16'gap VK605

VK605 32 GPM (12" down) Sprinkler location

X

4'	6'	7'	8'	
				2'
				4'
		8	2	
		14	12	6'
		16	19	
		13	21	8'
		9	20	
		7	20	10'
		5	19	
		4	18	12'
		3	16	
		2	13	14'
		3	10	
		2	6	16'
		2	4	
		2	3	18'
		2	2	
		X	X	20'

2'wall 16'gap VK630

VK630 32 GPM Sprinkler location

							X					4'	6'	7'	8'	
																2'
																4'
														2	1	
														5	4	6'
														5	9	
														5	12	8'
														4	14	
														4	18	10'
														4	23	
														4	27	12'
														5	28	
														5	24	14'
														6	20	
														6	15	16'
														5	11	
														5	8	18'
														6	6	
														X	X	20'

Public Input No. 476-NFPA 13-2013 [Section No. A.8.5.5.3.1]

Original | Hide Markup

A.8.5.5.3.1
When obstructions are located more than 18 in. (457 mm) below the sprinkler deflector, an adequate spray pattern develops and obstructions up to and including 4 ft (1.2 m) wide do not require additional protection underneath. Examples are ducts, decks, open grate flooring, catwalks, cutting tables, overhead doors, soffits, ceiling panels, and other similar obstructions.

Sprinklers must be installed directly under the obstruction to allow the sprinkler to be exposed to the heat being collected by the obstruction, and to protect the sprinkler from spray from overhead sprinklers.

Statement of Problem and Substantiation for Public Input

This annex text explains the need to have the sprinklers positioned directly under the obstruction as proposed in PI No. 474

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco/SimplexGrinnell
Submittal Date: Thu May 30 15:05:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369940741173.xml

Public Input No. 535-NFPA 13-2013 [Section No. A.8.5.5.3.3]

Original | Hide Markup

~~A.8.5.5.3.3~~
~~Sprinklers under open gratings should be provided with shields. Shields over automatic sprinklers should not be less, in least dimension, than four times the distance between the shield and fusible element, except special sprinklers incorporating a built-in shield need not comply with this recommendation if listed for the particular application.~~

Statement of Problem and Substantiation for Public Input

Delete this annex note. It is not necessary to provide a shield if there is an obstruction on the grated floor. If there is no obstruction on the grated floor the water from the overhead sprinklers will be sufficient for protection.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 534-NFPA 13-2013 [Section No. 8.5.5.3.3]	Annex Note

Submitter Information Verification

Submitter Full Name: Cecil Bilbo
Organization: Academy of Fire Sprinkler Technology
Submittal Date: Fri May 31 15:57:34 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370030254323.xml

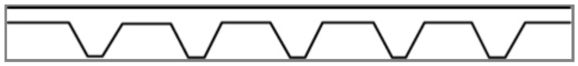
Public Input No. 533-NFPA 13-2013 [Section No. A.8.6.4.1.2(5)]

Original | Hide Markup

A.8.6.4.1.2(5)

For concrete joists spaced less than 3 ft (0.91 m) on center, the rules for obstructed construction shown in 8.6.4.1.2 apply. For concrete tee construction with stems spaced less than 7 ft 6 in. (2.3 m) ~~but more than 3 ft (0.91 m) on~~ on center, the sprinkler deflector can be located at or above a horizontal plane 1 in. (25.4 mm) below the bottom of the stems of the tees. This includes sprinklers located between the stems. [See Figure A.8.6.4.1.2(5) .]

(REPLACE THIS FIGURE WITH AN ACCURATE REPRESENTATION OF CONCRETE TEE CONSTRUCTION) Figure A.8.6.4.1.2(5) Typical Concrete Joist Construction.



Statement of Problem and Substantiation for Public Input

This figure does not supply a true graphic representation of a concrete tee.

Submitter Information Verification

Submitter Full Name: Cecil Bilbo
Organization: Academy of Fire Sprinkler Technology
Submittal Date: Fri May 31 15:40:46 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370029246453.xml

Public Input No. 321-NFPA 13-2013 [New Section after A.8.6.4.1.3.3]

A.8.6.4.2 Sprinkler deflectors do not need to be precisely parallel to the ceiling or roof. A tolerance of 9.5 degrees is acceptable as indicated by the allowance of section 8.6.4.2.3, which permits a deflector parallel with the floor when the roof/ceiling slope is 2 in 12 or less.

Statement of Problem and Substantiation for Public Input

Sprinkler contractors and AHJ's need guidance on acceptable tolerances regarding the pitch of the installed sprinkler deflector in relation to the ceiling. Often, the sprinkler deflector will not be precisely parallel with the ceiling, especially in cases where branch line piping is pitched to a drain. In these cases, AHJ's have tried to force contractors to make small adjustments that are not necessary. The 9.5 degrees of difference between the ceiling slope and the sprinkler deflector has always been allowed by section 8.6.4.2.3, this establishes a reasonable tolerance.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 10:31:48 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369233108657.xml

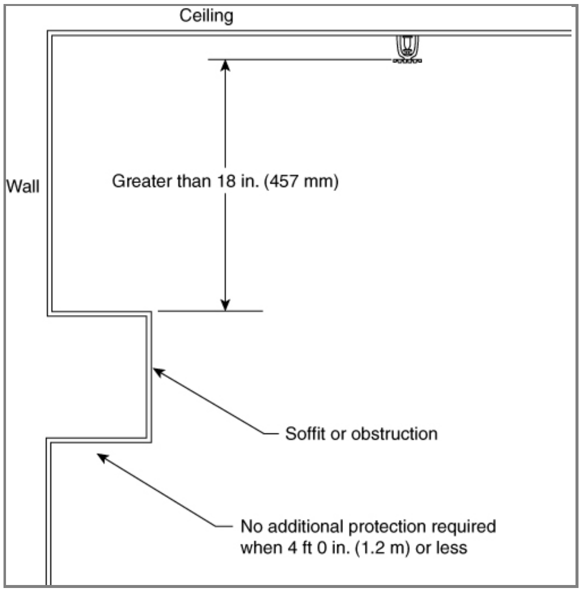
Public Input No. 362-NFPA 13-2013 [Section No. A.8.6.5.1.2]

Original | Hide Markup

A.8.6.5.1.2

The intent of 8.6.5.1.2 (3) is to apply to soffits that are located within the 18 in. (457 mm) plane from the sprinkler deflector. A soffit or other obstruction (i.e., shelf) up to 24 inches wide that is located against a wall that is located entirely below the 18 in. (457 mm) plane from the sprinkler deflector should be in accordance with 8.6.5.3.3 . (See Figure A.8.6.5.1.2 .)

Figure A.8.6.5.1.2 Soffit/Obstruction Against Wall Greater Than 18 in. (457 mm) Below Deflector.



Additional Proposed Changes

	File Name	Description	Approved
Open	Figure_A-8-6-5-1-2.jpg	New figure to replace existing Figure A.8.6.5.1.2	

Statement of Problem and Substantiation for Public Input

The equivalency with a 4 ft wide obstuction at least 18 ft below a sprinkler should be reduced to 2 ft wide along a wall. A 4 ft wide obstruction like a duct in the middle of the room will have water falling off of it on both sides, limiting fire and heat spread. But a soffit against a wall will only have water falling on a single side, so the allowable obstruction should be cut in half.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 10:13:49 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369318429366.xml

Public Input No. 322-NFPA 13-2013 [New Section after A.8.8.4.1.3]

A.8.8.4.2

Sprinkler deflectors do not need to be precisely parallel to the ceiling or roof. A tolerance of 9.5 degrees is acceptable as indicated by the allowance of section 8.8.4.2.3, which permits a deflector parallel with the floor when the roof/ceiling slope is 2 in 12 or less.

Statement of Problem and Substantiation for Public Input

Sprinkler deflectors cannot be installed precisely parallel to roofs and ceilings, especially where branch lines are being pitched towards a drain. Some mention of tolerance is necessary for contractors and AHJ's.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 212-NFPA 13-2013 [New Section after 8.8.4.2]	same issue

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 11:01:13 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369234873045.xml

Public Input No. 325-NFPA 13-2013 [New Section after A.8.10.2]

A.8.10.4.7

Sprinkler deflectors do not need to be precisely parallel to the ceiling or roof. A tolerance of 9.5 degrees is acceptable as indicated by the allowance of section 8.10.4.7.3, which permits a deflector parallel with the floor when the roof/ceiling slope is 2 in 12 or less.

Statement of Problem and Substantiation for Public Input

Contractors and AHJ's need guidance on tolerance for the angle of deflectors as compared to the ceiling or roof. Sprinkler deflectors cannot always be precisely parallel to the ceiling or roof, especially where branch lines are being pitched towards a drain.

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 323-NFPA 13-2013 [New Section after 8.10.4.6.2]	Same issue

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 11:24:54 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369236294350.xml

Public Input No. 391-NFPA 13-2013 [New Section after A.8.12.3.1(3)]

A.8.12.5

The obstruction rules of 8.12.5 have been primarily written to address horizontal obstructions like ducts and lights where the sprinkler needs to spray under the obstruction, or get water both over and under the obstruction. For vertical obstruction situations like columns where the water needs to get to two sides of the obstruction, the guidance in 8.12.5 to keep the sprinklers at least 12 inches from obstructions up to 12 inches wide and to keep the sprinkler 24 inches from obstructions over 12 inches to 24 inches wide can be used. For obstructions like columns that are more than 24 inches wide, a sprinklers should be placed on the opposite side of the obstruction while following the minimum and maximum spacing requirements of 8.12.2.

Statement of Problem and Substantiation for Public Input

Guidance is needed to deal with vertical obstructions like columns. Without fire testing or ADD testing, we have been reluctant to actually propose specific requirements for the body of the standard. But some mention of the situation deserves to be in the annex.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 15:42:40 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369338160324.xml

Public Input No. 451-NFPA 13-2013 [New Section after A.8.12.5.2]

A.8.12.5.3.3 For example, a 1 inch diameter conduit would need to be 6 inches from the nearest pipe or conduit to be considered as an individual obstruction. Otherwise, the pipes and/or conduits would be considered as a group when applying the obstruction criteria in 8.12.5.3.1.

Statement of Problem and Substantiation for Public Input

This is tied to public input for a new Section 8.12.5.3.3. This is the example for the text.

This public input has been developed by the UL/FM/NFSA Standards Review Committee.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 449-NFPA 13-2013 [New Section after 8.12.5.3.2.1]	Annex language for the proposed section

Submitter Information Verification

Submitter Full Name: Victoria Valentine
Organization: National Fire Sprinkler Association
Affilliation: NFSA
Submittal Date: Wed May 29 16:12:30 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369858350558.xml

Public Input No. 154-NFPA 13-2013 [Section No. A.8.15.5.1]

Original | Hide Markup

~~A.8.15.5.1~~

~~The sprinklers in the pit are intended to protect against fires caused by debris, which can accumulate over time. Ideally, the sprinklers should be located near the side of the pit below the elevator doors, where most debris accumulates. However, care should be taken that the sprinkler location does not interfere with the elevator toe guard, which extends below the face of the door opening.~~

Statement of Problem and Substantiation for Public Input

Problem:
See PI # 153-NFPA 13-2013 to Section 8.15.5

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department, P.E., Fire Protection Engineer
Submittal Date: Sun Mar 31 17:01:19 EDT 2013

Copyright Assignment

/TerraView/Content/13-2013.ditamap/2/C1364763679941.xml

Public Input No. 155-NFPA 13-2013 [Section No. A.8.15.5.4]

Original | Hide Markup

A.8.15.5. ~~4~~ 1

ASME A17.1, Safety Code for Elevators and Escalators , requires the shutdown of power to the elevator upon or prior to the application of water in elevator machine rooms ~~or hoistways~~ , macinery spaces, control rooms , control spaces or tops of hoistways . This shutdown can be accomplished by a detection system with sufficient sensitivity that operates prior to the activation of the sprinklers (see also NFPA 72). As an alternative, the system can be arranged using devices or sprinklers capable of effecting power shutdown immediately upon sprinkler activation, such as a waterflow switch without a time delay. This alternative arrangement is intended to interrupt power before significant sprinkler discharge.

Statement of Problem and Substantiation for Public Input

Problem and proposed solution:
Coordination with PI # 153 NFPA 13-2013 Section 8.15.5 and Terms used in ASME A17.1

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department, P.E. Fire Protection Engineer
Submittal Date: Sun Mar 31 18:22:51 EDT 2013

Copyright Assignment

/TerraView/Content/13-2013.ditamap/2/C1364768571882.xml

Public Input No. 156-NFPA 13-2013 [Section No. A.8.15.5.5]

Original Hide Markup

A.8.15.5. ~~5~~ 4

Passenger elevator cars that have been constructed in accordance with ASME A17.1, Safety Code for Elevators and Escalators, Rule 204.2a (under A17.1a-1985 and later editions of the code) have limited combustibility. Materials exposed to the interior of the car and the hoistway, in their end-use composition, are limited to a flame spread index of 0 to 75 and a smoke-developed index of 0 to 450, when tested in accordance with ASTM E 84, Standard Test Method of Surface Burning Characteristics of Building Materials .

Statement of Problem and Substantiation for Public Input

Problem and Solution:
Coordination with PI # 153 NFPA 13-2013

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department, P.E. Fire Protection Engineer
Submittal Date: Sun Mar 31 18:31:47 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364769107991.xml

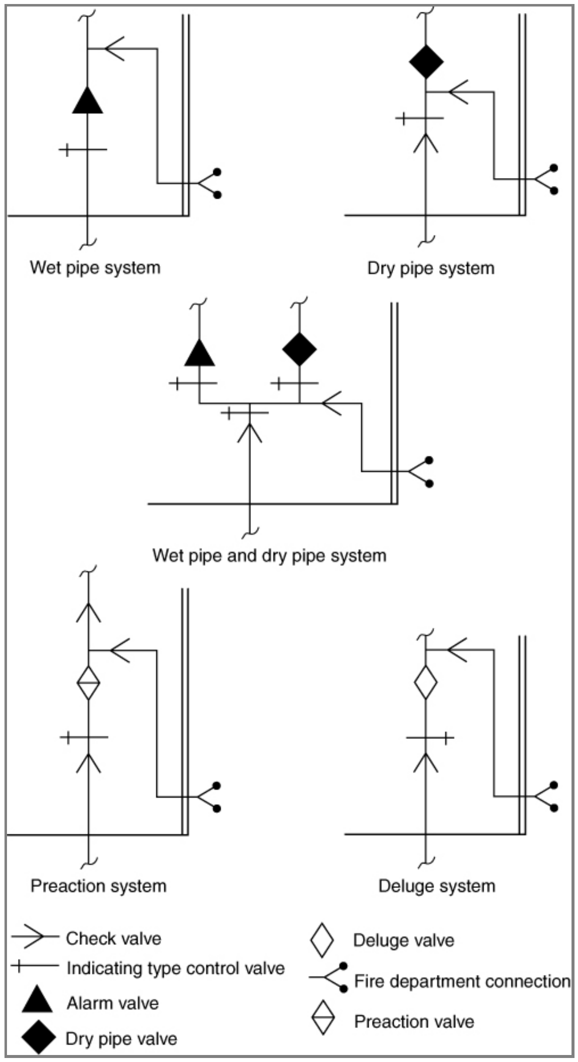
Public Input No. 558-NFPA 13-2013 [Section No. A.8.16.1.1]

Original Hide Markup

A.8. ~~16~~ 17 . ~~1~~ 2 . ~~1~~ 4 -

See Figure A.8. ~~16~~ 17 . ~~1~~ 2 . ~~1~~ 4 .

Figure A.8. ~~16~~ 17 . ~~1~~ 2 . ~~1 Examples~~ 4 Examples of Acceptable Valve Arrangements.



Additional Proposed Changes

File Name	Description Approved
13_Johnston_fdc_and_floor_control.pdf	Cover Sheet

Statement of Problem and Substantiation for Public Input

In my experience as well as discussed with others in the industry Figure A.8.16.1.1 is generally referenced as a schematic for acceptable FDC arrangements with respect to riser styles, i.e., wet, dry, preaction, etc.

Submitter Information Verification

Submitter Full Name: Jim Johnston
Organization: Inland Fire Protection, Inc.
Affilliation: AFSA
Submittal Date: Mon Jun 03 11:08:10 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370272090639.xml

Public Input No. 134-NFPA 13-2013 [Section No. A.8.16.4.2.1]

Original | Hide Markup

A.8.16.4.2.1

Types of locations where corrosive conditions can exist include bleacheries, dye houses, metal plating processes, animal pens, and certain chemical plants. Being eposed to the outside atmosphere is not necessarily a corrosive environment. Proximity to ocean air can be considered a corrosive environment.

If corrosive conditions are not of great intensity and humidity is not abnormally high, good results can be obtained by a protective coating of red lead and varnish or by a good grade of commercial acid-resisting paint. The paint manufacturer's instructions should be followed in the preparation of the surface and in the method of application.

Where moisture conditions are severe but corrosive conditions are not of great intensity, copper tube or galvanized steel pipe, fittings, and hangers might be suitable. The exposed threads of steel pipe should be painted.

In instances where the piping is not accessible and where the exposure to corrosive fumes is severe, either a protective coating of high quality can be employed or some form of corrosion-resistant material used.

Statement of Problem and Substantiation for Public Input

Many AHJ's consder piping installed with exposure to the outside atmosphere to be installed in a corrosive environment. Inland installations should not be considered corrosive environments.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Tue Mar 26 08:37:12 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1364301432062.xml

Public Input No. 573-NFPA 13-2013 [Section No. A.8.17.4.2]

Original | Hide Markup

A.8.17.4.2

The purpose of this alarm test connection is to make sure the alarm device is sensitive enough to determine the flow from a single sprinkler and sound an alarm. The purpose of this test connection is not to ensure that water will flow through the entire system.

When this test connection is installed on the upper story, and at the end of the most remote branch line, the user is able to tell that there is water flowing in one path through the system, but there is no assurance that water will flow to other branch lines. Putting the test connection at the most remote portion of the system causes the introduction of fresh oxygen into a large part of the system each time the alarm is tested and increases the corrosion that will occur in the piping.

The discharge should be at a point where it can be readily observed. In locations where it is not practical to terminate the test connection outside the building, the test connection is permitted to terminate into a drain capable of accepting full flow under system pressure. In this event, the test connection should be made using an approved sight test connection containing a smooth bore corrosion-resistant orifice giving a flow equivalent to one sprinkler simulating the least flow from an individual sprinkler in the system. [See Figure A.8.17.4.2(a) and Figure A.8.17.4.2(b).] The test valve should be located at an accessible point and preferably not over 7 ft (2.1 m) above the floor. The control valve on the test connection should be located at a point not exposed to freezing.

Figure A.8.17.4.2(a) System Test Connection on Wet Pipe System.

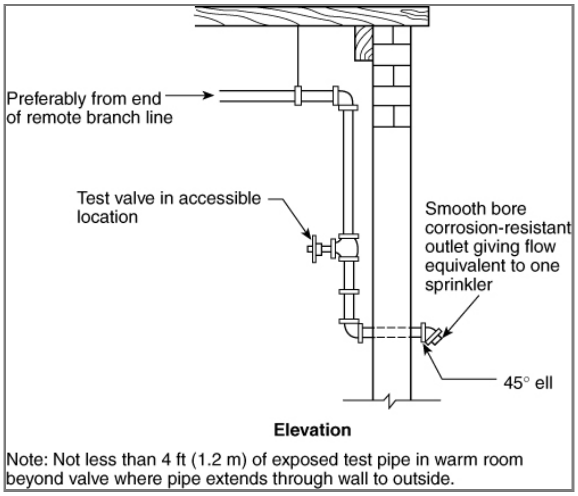
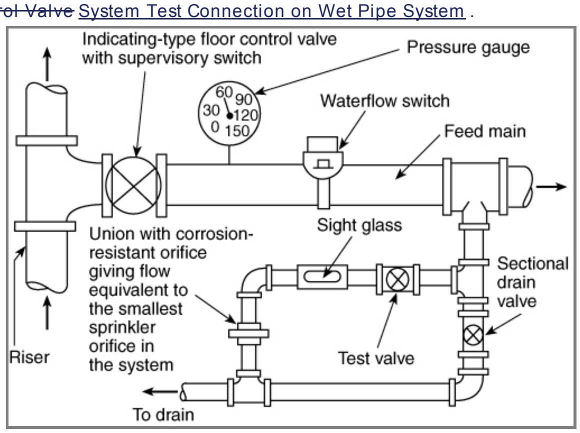


Figure A.8.17.4.2(b) ~~Floor Control Valve~~ System Test Connection on Wet Pipe System .



Additional Proposed Changes

File Name	Description	Approved
Open 13_Johnston_REVISED_floor_control_arrangement1.docx	Revised Cover Sheet	
Open 13_Johnston_fdc_and_floor_control.pdf	Old cover sheet with signature	

Statement of Problem and Substantiation for Public Input

Section 8.17.4.2 is on wet pipe system test connections. Changed Figure title to reflect the subject matter of this section.

Submitter Information Verification

Submitter Full Name: Jim Johnston
Organization: Inland Fire Protection, Inc.
Affilliation: AFSA
Submittal Date: Tue Jun 04 07:57:46 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370347066131.xml

Public Input No. 26-NFPA 13-2013 [New Section after A.9.1.4.1]

A.9.1.5.4 Fasteners having designs other than those covered under Sections 9.1.3, 9.1.4 and 9.1.5 are permitted when listed as part of a hanger assembly. However, this requirement is not intended to permit listing of smaller sized or a reduced number of fasteners described in Sections 9.1.3, 9.1.4 and 9.1.5.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_Laverick_9-1-1-5-4.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The proposal clarifies that common fastener requirements cannot be reduced based on testing a hanger assembly. The current requirements consider fastening into materials having unknown or uncontrolled conditions such as a void or knot area of a wood beam and should not be reduced.

Submitter Information Verification

Submitter Full Name: George Laverick
Organization: UL LLC
Submittal Date: Thu Jan 24 10:53:09 EST 2013

/TerraView/Content/13-2013.ditamap/2/C1359042789367.xml

Public Input No. 357-NFPA 13-2013 [Section No. A.9.3.1]

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A.9.3.1

Sprinkler systems are protected against earthquake damage by means of the following:

(1) Stresses that would develop in the piping due to differential building movement are minimized through the use of flexible joints or clearances.

(2) Bracing is used to keep the piping fairly rigid when supported from a building component expected to move as a unit, such as a ceiling.

Areas known to have a potential for earthquakes have been identified in building code and insurance maps.

Displacement due to story drift is addressed in 9.3.2 through 9.3.4 .

Piping in racks needs to be treated like other sprinkler piping and protected in accordance with the proper rules. Piping to which in-rack sprinklers are directly attached should be treated as branch line piping. Piping that connects branch lines in the racks should be treated as mains. The bracing, restraint, flexibility and requirements for flexible couplings are the same in the rack structures as at the ceiling.

Statement of Problem and Substantiation for Public Input

The standard needs some clarification on how to address piping in the racks. many people believe that they can ignore the protection rules because they are far from the building structure. They do not realize that the rack becomes the structure. This simple annex note should get them pointed in the right direction

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Wed May 22 16:52:52 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369255972021.xml

Public Input No. 429-NFPA 13-2013 [Section No. A.9.3.2.4]

Original | Hide Markup

A.9.3.2.4

See Figure A.9.3.2.4. Drops that extend into freestanding storage racks or other similar structures should be designed to accommodate a horizontal relative displacement between the storage rack and the overhead supply piping. Free standing structures include but are not limited to freezers, coolers, spray booths, and offices.

The horizontal relative displacement should be determined using the least value from one of the following formulas and be taken as the height of the top point of attachment to the storage rack above its base or the highest point of potential contact between the rack structure and the piping above its base, whichever is higher. The design should account for the differential movement value as determined from one of the two formulas, not both, and the lesser of the two values is acceptable. It should be determined how to account for the differential movement using ~~flexible couplings or other~~ approved means.

$$D = H * 0.06 * S_1 * F_v$$
$$\text{or}$$
$$D = H * 0.05$$

where:

D = differential movement between the rack and the roof [ft (m)]

H = height of the top point of attachment to the rack [ft (m)]

S_1 = one second period spectral acceleration per USGS 2010 Seismic Design Maps (see SEI/ASCE 7)

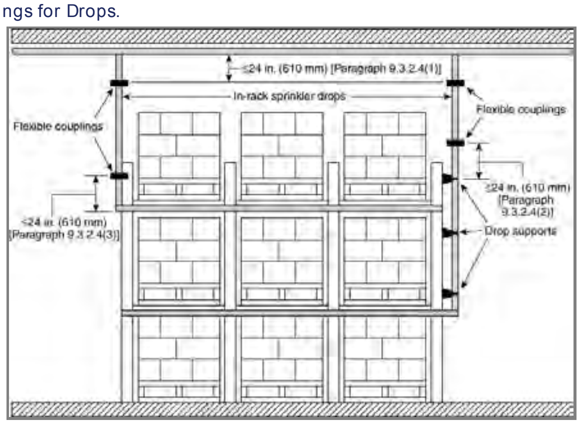
F_v = one second period site coefficient (Site Class D)

F_v is a function of S_1 and is determined as follows:

S_1	F_v
≤0.1	2.4
=0.2	2.0
=0.3	1.8
=0.4	1.6
≥0.5	1.5

Note: Use straight-line interpolation for intermediate values of S_1.

Figure A.9.3.2.4 Flexible Couplings for Drops.



Statement of Problem and Substantiation for Public Input

No currently available flexible couplings can provide the necessary displacement without the use of multiple devices, and the reference to them as a possible means of doing so should be removed from the annex material. As an example, a 20'-0" high rack would require 1'-0" of horizontal displacement. A 2" flexible coupling allows 0.16" of pipe deflection from centerline per foot of pipe when the manufacturer's reduction for design use is considered. The number of flexible couplings required would be both excessive and impractical.

Submitter Information Verification

Submitter Full Name:	Kenneth Wagoner
Organization:	Parsley Consulting Engineers
Affilliation:	American Fire Sprinkler Association
Submittal Date:	Tue May 28 10:57:30 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369753050720.xml

Public Input No. 482-NFPA 13-2013 [Section No. A.9.3.5]

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A.9.3.5

Figure A.9.3.5(a) and Figure A.9.3.5(b) are examples of forms used to aid in the preparation of bracing calculations.

Figure A.9.3.5(a) Seismic Bracing Calculation Form.

Replace these forms with revised forms attached

Seismic Bracing Calculations Sheet ______ of ______

Project: ______ Contractor: ______
Address: ______ Address: ______
Telephone: ______
Fax: ______

Brace Information

Length of brace: ______
Diameter of brace: ______
Type of brace: ______
Angle of brace: ______
Least radius of gyration:* ______
l/r value:* ______
Maximum horizontal load: ______

Seismic Brace Attachments

Structure attachment fitting or tension-only bracing system:
Make: ______ Model: ______
Transition attachment fitting (where applicable):
Make: ______ Model: ______
Listed load rating: ______ Adjusted load rating per 9.3.5.2.4: ______
Sway brace (pipe attachment) fitting:
Make: ______ Model: ______
Listed load rating: ______ Adjusted load rating per 9.3.5.2.4: ______

Fastener Information

Orientation of connecting surface: ______
Fastener:
Type: ______
Diameter: ______
Length (in wood): ______
Maximum load: ______

Seismic Brace Assembly Detail
(Provide detail on plans)

Brace identification no. (to be used on plans) ______

☐ Lateral brace ☐ Longitudinal brace ☐ 4-way brace

Sprinkler System Load Calculation ($F_{pw} = C_p W_p$)
C_p = ______

Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Weight
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				Subtotal weight	lb
				W_p (incl. 15%)	lb
				Total (F_{pw})	lb
				Maximum F_{pw} per 9.3.5.5.2 (if applicable)	

* Excludes tension-only bracing systems
 NFPA 13

Figure A.9.3.5(b) Sample Seismic Bracing Calculation Form.

Seismic Bracing Calculations Sheet ______ of ______

Project: Acme Warehouse Contractor: Smith Sprinkler Company
Address: 321 First Street Address: 123 Main Street
Any City, Any State Any City, Any State
Telephone: (555) 555-1234
Fax: (555) 555-4321

Brace Information

Length of brace: 3 ft 6 in.
Diameter of brace: 1 in.
Type of brace: Schedule 40
Angle of brace: 45° to 59°
Least radius of gyration:* 0.421
l/r value:* 100
Maximum horizontal load: 4455 lb

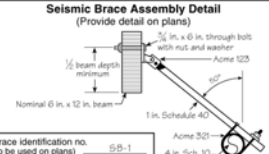
Seismic Brace Attachments

Structure attachment fitting or tension-only bracing system:
Make: Acme Model: 123
Transition attachment fitting (where applicable):
Make: ______ Model: ______
Listed load rating: 1000 Adjusted load rating per 9.3.5.2.4: 707
Sway brace (pipe attachment) fitting:
Make: Acme Model: 321
Listed load rating: 1200 Adjusted load rating per 9.3.5.2.4: 849

Fastener Information

Orientation of connecting surface: "E"
Fastener:
Type: Through bolt
Diameter: ¾ in.
Length (in wood): 5 ½ in.
Maximum load: 620 lb

Seismic Brace Assembly Detail
(Provide detail on plans)



Brace identification no. (to be used on plans) SB-1

☒ Lateral brace ☐ Longitudinal brace ☐ 4-way brace

Sprinkler System Load Calculation ($F_{pw} = C_p W_p$)
C_p = 0.40

Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Weight
1 in.	Sch. 40	15 ft + 25 ft + 8 ft + 22 ft	70 ft	2.05 lb/ft	143.5 lb
1¼ in.	Sch. 40	25 ft + 33 ft + 18 ft	76 ft	2.93 lb/ft	222.7 lb
1½ in.	Sch. 40	8 ft + 8 ft + 10 ft + 10 ft	36 ft	3.61 lb/ft	130.0 lb
2 in.	Sch. 40	20 ft	20 ft	5.13 lb/ft	102.6 lb
4 in.	Sch. 10	20 ft	20 ft	11.78 lb/ft	235.6 lb
				Subtotal weight	834.4 lb
				W_p (incl. 15%)	959.6 lb
				Total (F_{pw})	383.8 lb
				Maximum F_{pw} per 9.3.5.5.2 (if applicable)	1634

* Excludes tension-only bracing systems
 NFPA 13

Additional Proposed Changes

File Name	Description	Approved
Figure_A.9.3.5_a_.pdf	Replacement Figure A.9.3.5(a)	

Open Figure_A.9.3.5_b_.pdf Replacement Figure A.9.3.5(b)

Statement of Problem and Substantiation for Public Input

The Figures in the 2013 edition do not indicate what main size and pipe type is used when applying section 9.3.5.5.2 and they don't have a place for the Structural Attachement Listed Load Rating and Adjusted Load Rating.

Submitter Information Verification

Submitter Full Name: JOHN DEUTSCH

Organization: VFS FIRE AND SECURITY

Submittal Date: Thu May 30 15:56:00 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369943760141.xml

Seismic Bracing Calculations

Sheet ______ of ______

Project: ______________________ Contractor: ______________________

Address: ______________________ Address: ______________________

______________________ ______________________

Telephone: ______________________

Fax: ______________________

Brace Information

Length of Brace: ______________

Diameter of Brace: ______________

Type of Brace: ______________

Angle of Brace: ______________

Least radius of gyration:* ______________

l/r value:* ______________

Maximum horizontal load: ______________

Fastener Information

Orientation of connecting surface: ______________

Fastener:

Type: ______________

Diameter: ______________

Length (in wood): ______________

Maximum load: ______________

Seismic Brace Attachments

Structure attachment fitting or tension-only bracing system:

Make: ______________ Model: ______________

Listed load rating: ______ Adjusted load rating per 9.3.5.2.4: ______

Transition attachment fitting (where applicable):

Make: ______________ Model: ______________

Listed load rating: ______ Adjusted load rating per 9.3.5.2.4: ______

Sway brace (pipe attachment) fitting:

Make: ______________ Model: ______________

Listed load rating: ______ Adjusted load rating per 9.3.5.2.4: ______

Seismic Brace Assembly Detail

(Provide detail on plans)

Brace identification no.
(to be used on plans) ________

☐ Lateral brace ☐ Longitudinal brace ☐ 4 - way brace

Sprinkler System Load Calculation ($F_{pw} = C_p \ W_p$)

C_p = ____________

Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Weight
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				Subtotal weight	lb
				W_p (incl. 15%)	lb
Main Size	Type\Sch.	Spacing (ft)		Total (F_{pw})	lb
				Maximum F_{pw} per 9.3.5.5.2 (if applicable)	

*Excludes tension-only bracing systems

Seismic Bracing Calculations

Sheet______ of ______

Project: Acme Warehouse
Address: 321 First Street
Any City, Any State

Contractor: SMITH SPRINKLER COMPANY
Address: 123 MAIN STREET
ANY CITY, ANY STATE
Telephone: 555-555-1234
Fax: 555-555-4321

Brace Information

Length of Brace: 3 ft 6 in.
Diameter of Brace: 1 in.
Type of Brace: Schedule 40
Angle of Brace: 45° to 59°
Least radius of gyration:* 0.421
l/r value:* 100
Maximum horizontal load: 4455

Fastener Information

Orientation of connecting surface: "E"

Fastener:
Type: Through bolt
Diameter: 3/4 in.
Length (in wood): 5-1/2 in.
Maximum load: 620 lb

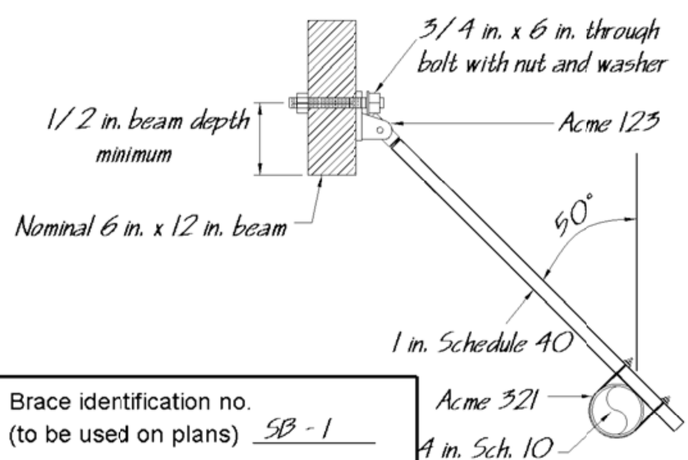
Seismic Brace Attachments

Structure attachment fitting or tension-only bracing system:
Make: BOLT Model: BOLT
Listed load rating: --- Adjusted load rating per 9.3.5.2.4: ---

Transition attachment fitting (where applicable):
Make: ACME Model: 123
Listed load rating: 1000 Adjusted load rating per 9.3.5.2.4: 707

Sway brace (pipe attachment) fitting:
Make: Acme Model: 321
Listed load rating: 1200 Adjusted load rating per 9.3.5.2.4: 849

Seismic Brace Assembly Detail
(Provide detail on plans)



Brace identification no. (to be used on plans) SB - 1

☒ Lateral brace ☐ Longitudinal brace ☐ 4 - way brace

Sprinkler System Load Calculation ($F_{pw} = C_p \; W_p$)

C_p = .40

Diameter	Type	Length (ft)	Total (ft)	Weight per ft	Weight
1 in.	Sch. 40	15 ft + 25 ft + 30 ft	70 ft	2.05 lb/ft	143.5 lb
1¼ in.	Sch. 40	25 ft + 33 ft + 18 ft	76 ft	2.93 lb/ft	222.7 lb
1½ in.	Sch. 40	8 ft + 8 ft + 20 ft	36 ft	3.61 lb/ft	130.0 lb
2 in.	Sch. 40	20 ft	20 ft	5.13 lb/ft	102.6 lb
4 in.	Sch. 10	20 ft	20 ft	11.78 lb/ft	235.6 lb
				Subtotal weight	834.4 lb
				W_p (incl. 15%)	959.6 lb

Main Size	Type\Sch.	Spacing (ft)		
			Total (F_{pw})	383.8 lb
4 in.	Sch. 10	20 ft	Maximum F_{pw} per 9.3.5.5.2 (if applicable)	1634

*Excludes tension-only bracing systems

Public Input No. 268-NFPA 13-2013 [Section No. A.9.3.5.4.2]

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A.9.3.5.4.2

The investigation of tension-only bracing using materials, connection methods, or both, other than those described in Table 9.3.5.11.8(a) , Table 9.3.5.11.8(b) , and Table 9.3.5.11.8(c) , should involve consideration of the following:

(1) Corrosion resistance.

(2) Prestretching to eliminate permanent construction stretch and to obtain a verifiable modulus of elasticity.

(3) Color coding or other verifiable marking of each different size cable for field verification.

(4) The capacity of all components of the brace assemblies, including the field connections, to maintain the manufacturer's minimum certified break strength.

(5) Manufacturer's published design data sheets/manual showing product design guidelines, including connection details, load calculation procedures for sizing of braces, and the maximum recommended horizontal load-carrying capacity of the brace assemblies including the associated fasteners as described in Figure 9.3.5.12.1 . The maximum allowable horizontal loads must not exceed the manufacturer's minimum certified break strength of the brace assemblies, excluding fasteners, after taking a safety factor of 1.5 and then adjusting for the brace angle.

(6) Brace product shipments accompanied by the manufacturer's certification of the minimum break strength and prestretching and installation instructions.

(7) The manufacturer's literature, including any special tools or precautions required to ensure proper installation.

(8) A means to prevent vertical motion due to seismic forces when required.

Table A.9.3.5.4.2 identifies some specially listed tension-only bracing systems.

Table A.9.3.5.4.2 Specially Listed Tension-Only Seismic Bracing

Materials and Dimensions	Standard
Manual for Structural Application of Steel Cables	ASCE 19
~~Wire Rope Users Manual of the Wire Rope Technical Board~~ - ~~ASCE 19~~	
Mechanical Strength Requirements	ASTM A ~~603~~ 1023
Breaking Strength Failure Testing	ASTM E 8

Statement of Problem and Substantiation for Public Input

The reference to ASTM A 603 should be replaced with ASTM A 1023, becasue ASCE 19 now contains a direct reference to ASTM A 1023 Table 9 for the steel cables used for seismic sway bracing of non-structural architecdtural, electrical and mechanical building components, rather than ASTM A 603. The reference to the Wire Rope Users Manual should be deleted, since the need for it is obviated by the direct reference to ASTM A 1023.

Submitter Information Verification

Submitter Full Name: Daniel Duggan
Organization: Fire Sprinkler Design
Affilliation: Loos & Co., Inc.
Submittal Date: Fri May 10 14:43:43 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1368211423085.xml

Public Input No. 397-NFPA 13-2013 [Section No. A.9.3.5.9]

Original | Hide Markup

A.9.3.5.9

Location of Sway Bracing. Two-way braces are either longitudinal or lateral, depending on their orientation with the axis of the piping. [See Figure A.9.3.5.9(a) , Figure A.9.3.5.9(b) , Figure A.9.3.5.9(c) , and Figure A.9.3.5.9(d) .] The simplest form of two-way brace is a piece of steel pipe or angle. Because the brace must act in both compression and tension, it is necessary to size the brace to prevent buckling.

An important aspect of sway bracing is its location. In Building 1 of Figure A.9.3.5.9(a) , the relatively heavy main will pull on the branch lines when shaking occurs. If the branch lines are held rigidly to the roof or floor above, the fittings can fracture due to the induced stresses. In selecting brace locations, one must consider both the design load on the brace, as well as the ability of the pipe to span between brace locations.

Bracing should be on the main as indicated at Location B. With shaking in the direction of the arrows, the light branch lines will be held at the

fittings. Where necessary, a lateral brace or other restraint should be installed to prevent a branch line from striking against building components or equipment.

A four-way brace is indicated at Location A. This keeps the riser and main lined up and also prevents the main from shifting.

In Building 1, the branch lines are flexible in a direction parallel to the main, regardless of building movement. The heavy main cannot shift under the roof or floor, and it also steadies the branch lines. While the main is braced, the flexible couplings on the riser allow the sprinkler system to move with the floor or roof above, relative to the floor below.

Figure A.9.3.5.9(a) Typical Earthquake Protection for Sprinkler Main Piping.

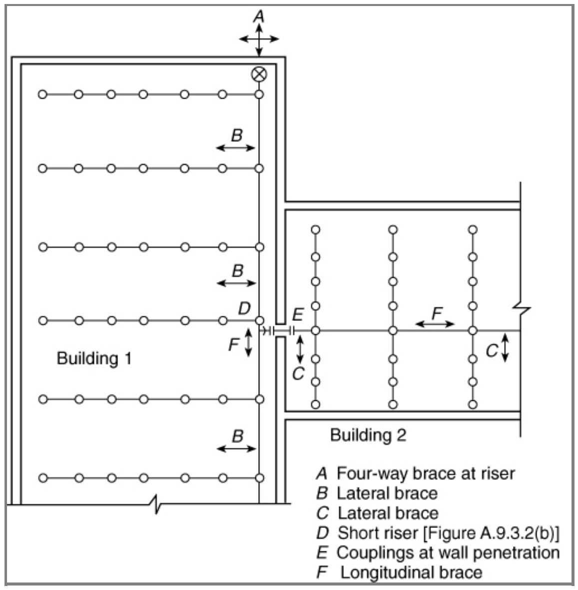


Figure A.9.3.5.9(b) , Figure A.9.3.5.9(c) , and Figure A.9.3.5.9(d) show typical locations of sway bracing.

Figure A.9.3.5.9(b) Typical Location of Bracing on Mains on Tree System.

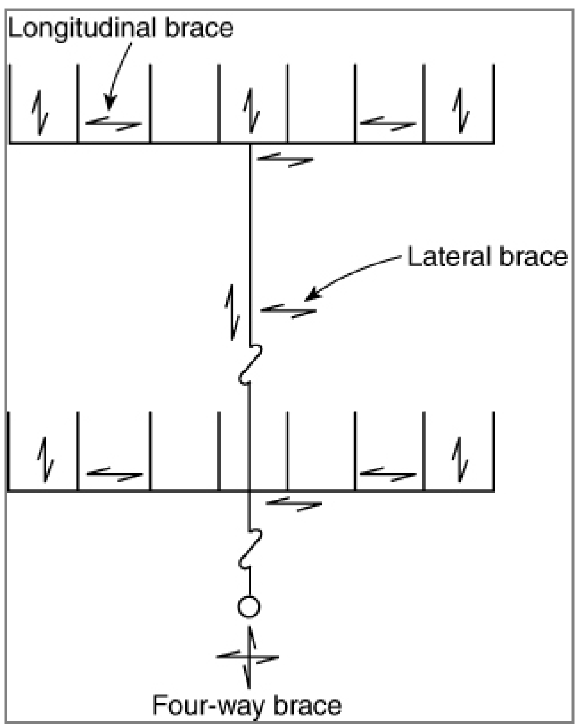


Figure A.9.3.5.9(c) Typical Location of Bracing on Mains on Gridded System.

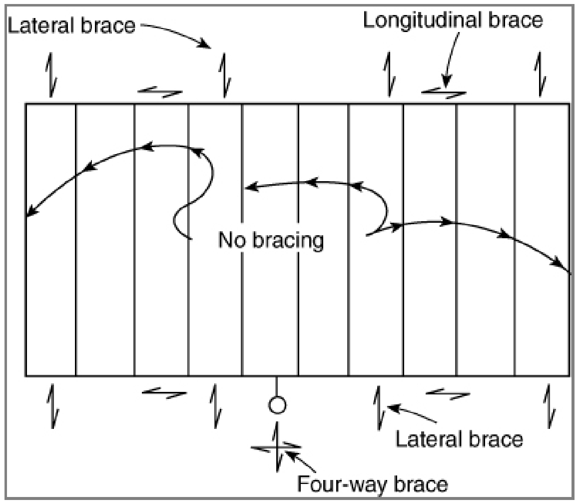
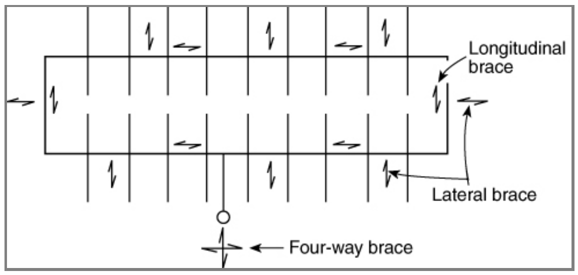


Figure A.9.3.5.9(d) Typical Location of Bracing on Mains on Looped System.



For all threaded connections, sight holes or other means should be provided to permit indication that sufficient thread is engaged.

To properly size and space braces, it is necessary to employ the following steps:

(1) Determine the seismic coefficient, C_p, using the procedures in 9.3.5.9.3 or 9.3.5.9.4. This is needed by the designer to verify that the piping can span between brace points. For the purposes of this example, assume that $C_p = 0.5$.

(2) Based on the distance of mains from the structural members that will support the braces, choose brace shapes and sizes from Table 9.3.5.11.8(a), Table 9.3.5.11.8(b), and Table 9.3.5.11.8(c) such that the maximum slenderness ratios, l/r, do not exceed 300. The angle of the braces from the vertical should be at least 30 degrees and preferably 45 degrees or more.

(3) Tentatively space lateral braces at 40 ft (12 m) maximum distances along mains and tentatively space longitudinal braces at 80 ft (24 m) maximum distances along mains. Lateral braces should meet the piping at right angles, and longitudinal braces should be aligned with the piping.

(4) Determine the total load tentatively applied to each brace in accordance with the examples shown in Figure A.9.3.5.9(e) and the following:

   (a) For the loads on lateral braces on cross mains, add C_p times the weight of the branch to C_p times the weight of the portion of the cross main within the zone of influence of the brace. [See examples 1, 3, 6, and 7 in Figure A.9.3.5.9(e).]

   (b) For the loads on longitudinal braces on cross mains, consider only C_p times the weight of the cross mains and feed mains within the zone of influence. Branch lines need not be included. [See examples 2, 4, 5, 7, and 8 in Figure A.9.3.5.9(e).]

   (c) For the four-way brace at the riser, add the longitudinal and lateral loads within the zone of influence of the brace [see examples 2, 3, and 5 in Figure A.9.3.5.9(e)]. For the four-way bracing at the top of the riser, C_p times the weight of the riser should be assigned to both the lateral and longitudinal loads as they are separately considered.

   (d) When a single brace has a combined load from both lateral and longitudinal forces (such as a lateral brace at the end of a main that turns 90 degrees), only the lateral should be considered for comparison with the load tables in 9.3.5.5.2.

(5) If the total expected loads are less than the maximums permitted in Table 9.3.5.11.8(a), Table 9.3.5.11.8(b), and Table 9.3.5.11.8(c) for the particular brace and orientation, and the maximum loads in the zone of influence of each lateral sway brace are less than the maximum values in Table 9.3.5.5.2(a) or Table 9.3.5.5.2(b), go on to step (6). If not, add additional braces to reduce the zones of influence of overloaded braces.

(6) Check that fasteners connecting the braces to structural supporting members are adequate to support the expected loads on the braces in accordance with Figure 9.3.5.12.1. If not, again add additional braces or additional means of support. Plates using multiple fasteners in seismic assemblies should follow the plate manufacturer guidelines regarding the applied loads.

Use the information on weights of water-filled piping contained within Table A.9.3.5.9. The factor of 1.15 is intended to approximate the additional weight of all the valves, fittings, and other devices attached to the system.

Figure A.9.3.5.9(e) Examples of Load Distribution to Bracing.

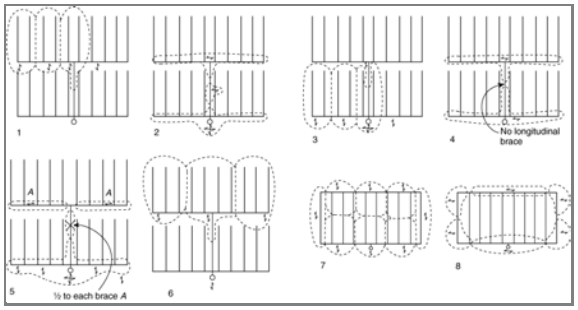


Table A.9.3.5.9 Piping Weights for Determining Horizontal Load

Nominal Dimensions		Weight of Water-Filled Pipe	
in.	mm	lb/ft	kg/m
Schedule 40 Pipe			
1	25	2.05	3.05
1 1/4	32	2.93	4.36
1 1/2	40	3.61	5.37
2	50	5.13	7.63
2 1/2	65	7.89	11.74
3	80	10.82	16.10
3 1/2	90	13.48	20.06
4	100	16.40	24.41
5	125	23.47	34.93
6	150	31.69	47.16
8*	200	47.70	70.99
Schedule 10 Pipe			
1	25	1.81	2.69
1 1/4	32	2.52	3.75
1 1/2	40	3.04	4.52
2	50	4.22	6.28
2 1/2	65	5.89	8.77
3	80	7.94	11.82
3 1/2	90	9.78	14.55
4	100	11.78	17.53
5	125	17.30	25.75
6	150	23.03	34.27
8	200	40.08	59.65

* Schedule 30.

Statement of Problem and Substantiation for Public Input

All we are proposing is adding "or 9.3.5.9.4" to part (1) of the procedure. This is in keeping with the rules of NFPA 13 regarding the determination of Cp.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 16:20:41 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369340441761.xml

Public Input No. 428-NFPA 13-2013 [Section No. A.9.3.5.9.6.1]

Original Hide Markup

A.9.3.5.9.6.1

Where steel Schedule 10 and Schedule 40 pipe are used, the section ~~modules~~ modulus can be found in Table 9.1.1.7.1(b).

Statement of Problem and Substantiation for Public Input

Typographic error.

Submitter Information Verification

Submitter Full Name:	Kenneth Wagoner
Organization:	Parsley Consulting Engineers
Affilliation:	American Fire Sprinkler Association
Submittal Date:	Tue May 28 10:55:00 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369752900667.xml

Public Input No. 553-NFPA 13-2013 [New Section after A.9.3.5.11]

A.9.3.5.11

Sway brace design and installation is critical to performance and requires attention to detail. Sway brace design parameters are dynamic and interdependent. Accordingly, seismic force is influenced by geography, brace location is impacted by system design and brace geometry is relative to the building structure.

To enhance system durability and performance, sway brace installation shall evidence good craftsmanship in conformance to approved drawings, correctly assembled and mounted at proper angles on a plane that corresponds to the parallel and perpendicular axis of the system pipe.

Additional Proposed Changes

	File Name	Description	Approved
Open	NFPAPublicInputForm_A.9.3.5.11.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

AHJ's continue to request an appendix statement regarding sway brace installation Q.C. similar to the hanger installation statement at A.9.2.

Submitter Information Verification

Submitter Full Name:	Kraig Kirschner
Organization:	AFCON
Submittal Date:	Mon Jun 03 10:31:37 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1370269897126.xml

Public Input No. 398-NFPA 13-2013 [New Section after A.9.3.6.6]

A.9.3.7.8

Concrete anchors included in current Evaluation Service Reports conforming to the requirements of acceptance criteria AC193 or AC308 as issued by ICC Evaluation Service, Inc. should be considered to meet ACI 355.2, Qualification of Post-Installed Mechanical Anchors in Concrete & Commentary.

Statement of Problem and Substantiation for Public Input

The statement is taken from A.9.3.5.12.7.1. It is true for both hangers and braces using concrete anchors.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 16:29:04 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369340944144.xml

Public Input No. 3-NFPA 13-2013 [Section No. A.11.3.1.1]

Original Hide Markup

A.11.3.1.1

~~In~~ Figure A.11.3.1.1(a) ~~, calculate the area indicated by the heavy outline and X.~~

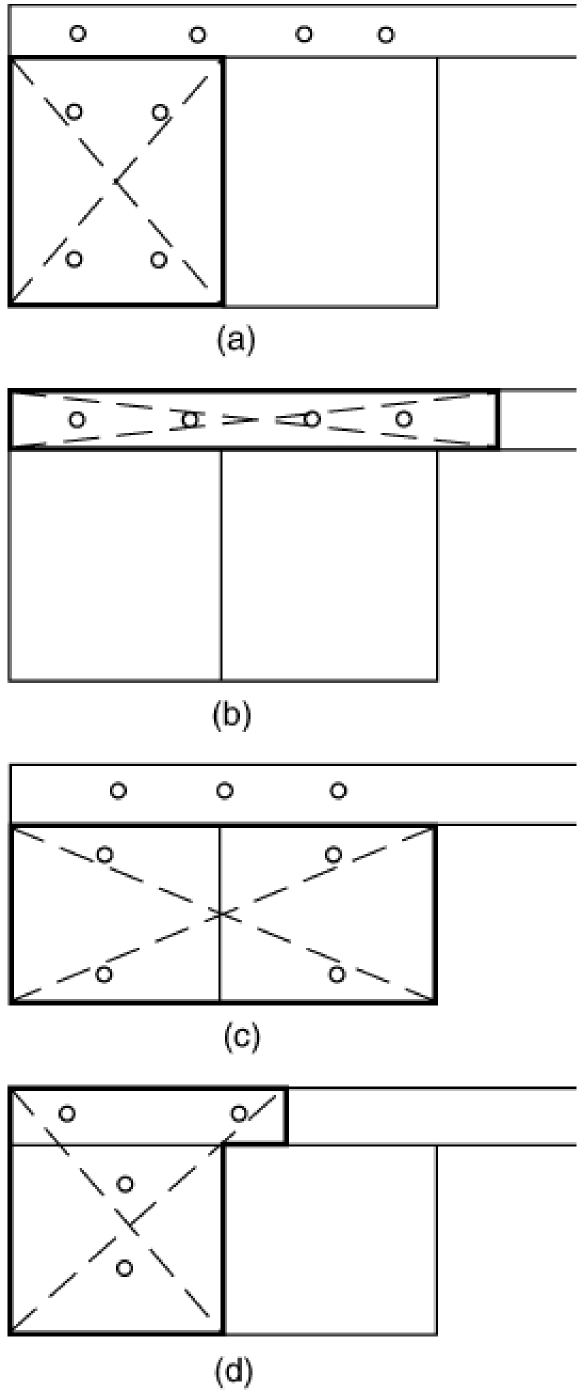
The

~~circle indicates sprinklers.~~

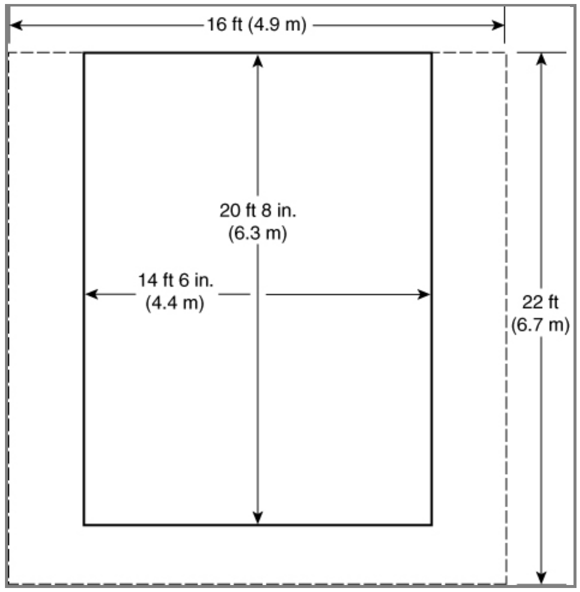
~~The~~ protection area for residential sprinklers with extended coverage areas is defined in the listing of the sprinkler as a maximum square area for pendent sprinklers or a square or rectangular area. Listing information is presented in even 2 ft (0.61 m) increments for residential sprinklers. When a sprinkler is selected for an application, its area of coverage must be equal to or greater than both the length and width of the hazard area. For example, if the hazard to be protected is a room 14 ft 6 in. (4.3 m) wide and 20 ft 8 in. (6.2 m) long, a sprinkler that is listed to protect an area of 16 ft × 22 ft (4.9 m × 6.8 m) must be selected. The flow used in the calculations is then selected as the flow required by the listing for the selected coverage. [See Figure A.11.3.1.1(b).]

Figure A.11.3.1.1(

~~a) Examples of Design Area for Dwelling Units.~~



~~Figure A.11.3.1.1(b) Determination of Protection Area of Coverage for Residential Sprinklers.~~



Statement of Problem and Substantiation for Public Input

Correlates with other PI

Related Public Inputs for This Document

	Related Input	Relationship
Open	Public Input No. 1-NFPA 13-2013 [Section No. 11.3.1.1]	

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Submittal Date: Sat Jan 12 18:32:05 EST 2013

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Public Input No. 348-NFPA 13-2013 [Section No. A.12.1.3]

Original | Hide Markup

A.12.1.3

The fire protection system design should consider the maximum storage height. For new sprinkler installations, maximum storage height is the usable height at which commodities can be stored above the floor while the minimum required unobstructed space below sprinklers is maintained. Where evaluating existing situations, maximum storage height is the maximum existing storage height if space between the sprinklers and storage is equal to or greater than that required.

Building heights where baled cotton is stored should allow for proper clearance between the pile height and sprinkler deflectors. Fire tests of high-piled storage have shown that sprinklers are generally more effective if located 1 ½ ft to 4 ½ ft (0.45 m to 1.4 m) above the storage height.

~~When the small higher hazard area is larger than the required minimum area dictated by the surrounding occupancy, even when separated by partitions capable of stopping heat, the size of the operating area is determined by the higher hazard storage.~~

Statement of Problem and Substantiation for Public Input

The final paragraph of A.12.1.3 was intended to be attached to A.12.3.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
Organization: Telgian Corporation
Submittal Date: Wed May 22 15:55:53 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369252553517.xml

Public Input No. 349-NFPA 13-2013 [Section No. A.12.3]

Original | Hide Markup

A.12.3

The situation frequently arises where a small area of a higher hazard is surrounded by a lesser hazard. For example, consider a 600 ft ^{2} (55.7 m ^{2}) area consisting of 10 ft (3.05 m) high on-floor storage of cartoned unexpanded plastic commodities surrounded by a plastic extruding operation in a 15 ft (4.57 m) high building. In accordance with Chapter 12, the density required for the plastic storage must meet the requirements for extra hazard (Group 1) occupancies. The plastic extruding operation should be considered an ordinary hazard (Group 2) occupancy. In accordance with Chapter 11, the corresponding discharge densities should be 0.3 gpm/ft ^{2} (12.2 mm/min) over 2500 ft ^{2} (232 m ^{2}) for the storage and 0.2 gpm/ft ^{2} (8.1 mm/min) over 1500 ft ^{2} (139 m ^{2}) for the remainder of the area. (Also see Chapter 11 for the required minimum areas of operation.)

If the storage area is not separated from the surrounding area by a wall or partition (see 11.1.2), the size of the operating area is determined by the higher hazard storage.

For example, the operating area is 2500 ft ^{2} (232 m ^{2}). The system must be able to provide the 0.3 gpm/ft ^{2} (12.2 mm/min) density over the storage area and 15 ft (4.57 m) beyond. If part of the remote area is outside the 600 ft ^{2} (55.7 m ^{2}) plus the 15 ft (4.57 m) overlap, only 0.2 gpm/ft ^{2} (8.1 mm/min) is needed for that portion.

If the storage is separated from the surrounding area by a floor-to-ceiling/roof partition that is capable of preventing heat from a fire on one side from fusing sprinklers on the other side, the size of the operating area is determined by the occupancy of the surrounding area. In this example, the design area is 1500 ft ^{2} (139 m ^{2}). A 0.3 gpm/ft ^{2} (12.2 mm/min) density is needed within the separated area with 0.2 gpm/ft ^{2} (8.1 mm/min) in the remainder of the remote area.

Where high temperature–rated sprinklers are installed at the ceiling, high temperature–rated sprinklers also should extend beyond storage in accordance with Table A.12.3.

When the small higher hazard area is larger than the required minimum area dictated by the surrounding occupancy, even when separated by partitions capable of stopping heat, the size of the operating area is determined by the higher hazard storage.

Table A.12.3 Extension of Installation of High-Temperature Sprinklers over Storage

Design Area for High Temperature–Rated Sprinklers		Distance Beyond Perimeter of High Hazard Occupancy for High Temperature–Rated Sprinklers	
ft ^{2}	m ^{2}	ft	m
2000	185.8	30	9.14
3000	278.7	40	12.2
4000	371.6	45	13.72
5000	464.5	50	15.24
6000	557.4	55	16.76

Statement of Problem and Substantiation for Public Input

The final paragraph of A.12.1.3 was intended to be attached to A.12.3.

Related Public Inputs for This Document

Related Input	Relationship
Open Public Input No. 348-NFPA 13-2013 [Section No. A.12.1.3]	Companion Change.

Submitter Information Verification

Submitter Full Name: Tracey Bellamy
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Submittal Date: Wed May 22 15:58:59 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369252739639.xml

Public Input No. 363-NFPA 13-2013 [Section No. A.15.2]

Original Hide Markup

A.15.2

The densities and area of application have been developed from fire test data. Most of these tests were conducted with K-8 orifice sprinklers and 80 ft ^{2} or 100 ft ^{2} (7.4 m ^{2} or 9.3 m ^{2}) sprinkler spacing. These and other tests have indicated that, with densities of 0.4 gpm/ft ^{2} (16.3 mm/min) and higher, better results are obtained with K-8 orifice and 70 ft ^{2} to 100 ft ^{2} (7.4 m ^{2} to 9.3 m ^{2}) sprinkler spacing than where using K-5.6 orifice sprinklers at 50 ft ^{2} (4.6 m ^{2}) spacing. A discharge pressure of 100 psi (6.9 bar) was used as a starting point on one of the fire tests. It was successful, but has a 1 $^1/_2$ ft (0.5 m) clearance between the top of storage and ceiling sprinklers. A clearance to ceiling of 10 ft (3 m) could have produced a different result due to the tendency of the higher pressure to atomize the water and the greater distance that the fine water droplets had to travel to the burning fuel.

~~Table A.~~ The following are some examples for using the decision tree and density/area tables of section 15.2 ~~explains and provides an example~~ of ~~the method and procedure to follow in using~~ this standard to determine proper protection for Group A plastics ~~.~~

~~Table A.15.2 Metric Conversion Factors for Examples~~

~~To Convert from to Multiply by feet (ft) meters (m) 0.3048 square feet (ft ^{2}) square meters (m ^{2}) 0.0929 gallons/minute (gpm) liters/second (L/sec) 0.0631 gallons per minute per square foot (gpm/ft ^{2}) millimeters per minute (same as liters per minute per square meter) (mm/min) 40.746~~

stored in solid pile, palletized, bin-box or shelf storage arrays.

Example 1 . Storage is expanded, cartoned, stable, 15 ft (4.6 m) high in a 20 ft (6.1 m) building.

Answer 1 . Column E of Table 15.2.6(a) ~~—~~ or Table 15.2.6(b) — Design density is 0.45 gpm/ft ^{2} (18.3 mm/min).

Example 2 . Storage is nonexpanded, unstable, 15 ft (4.6 m) high in a 20 ft (6.1 m) building.

Answer 2 . Column A of Table 15.2.6(a) ~~— Design density is listed as 0.25 gpm/ft ^{2} (10.2 mm/min); however, it is also possible that the storage can be 12 ft (3.66 m) in this 20 ft (6.1 m) building, which would require a design density of 0.3 gpm/ft ^{2} (12.2 mm/min). Unless the owner can guarantee that the storage will always be 15 ft (4.6 m), the design density =~~ or Table 15.2.6(b) — Design density is listed as 0.3 gpm/ft ^{2} (12.2 mm/min).

Example 3 . Storage is a nonexpanded, stable ~~15~~ 13 ft (4. ~~6~~ 0 m) fixed-height solid unit load, one high, in an ~~18~~ 15 ft (~~5~~ 4 . ~~5~~ 6 m) building.

Answer 3 . Column A of Table 15.2.6(a) — or Table 15.2.6(b) — - Design density ~~is 0.25~~ for almost 15 ft (4.6m) storage in the building would be 0.3 gpm/ft ^{2} (~~10~~ 12 .2 mm/min). ~~Note that this design density does not increase to 0.3 gpm/ft ^{2} (12.2 mm/min) as in the previous example because of the use of a fixed-height unit load. The storage height will never be 12 ft (3.66 m). It will always be 15 ft (4.6 m).~~ Design density for 12 ft (3.6m) storage in a 15 ft (4.6m) building would be 0.2 gpm/sq ft (8.2mm/min). Section 15.2.9 allows interpolation of the storage height between 12 (3.6m) and 15 ft (4.6m). So a final density of 0.233 gpm/sq ft (9.53mm/min) is appropriate for 13 ft (4.0m) storage in a 15 ft (4.6m) high building.

Example 4 . Storage is expanded, exposed, unstable, 20 ft (6.1 m) high in a 27 ft (8.2 m) building.

Answer 4 . Column C of Table 15.2.6(a) ~~— Design density is 0.7 gpm/ft ^{2} (28.5 mm/min). Note that other lower storage heights should also be checked, but they reveal the same, or lower, densities [0.7 gpm/ft ^{2} and 0.6 gpm/ft ^{2} (28.5 mm/min and 24.5 mm/min)], so the design density remains at~~ or Table 15.2.6(b) — Design density is 0.7 gpm/ft ^{2} (28.5 mm/min).

Example 5 . Storage is expanded, cartoned, unstable, 17 ft (5.2 m) high in 32 ft (9.75 m) building.

Answer 5 . Column D of Table 15.2.6(a) ~~— 15~~ or Table 15.2.6(b) — 15 ft (4.6 m) storage in a 32 ft (9.75 m) building would be 0.55 gpm/ft ^{2} (22.4 mm/min); 20 ft (6.1 m) storage in a 32 ft (9.75 m) building would be 0.7 gpm/ft ^{2} (28.5 mm/min). Interpolation for 17 ft (5.2 m) storage is as follows:

$$0.7 - 0.55 = 0.15$$
$$\frac{0.15}{(20-15)} = 0.03$$
$$0.03 \times (17-15) = 0.06$$
$$0.55 + 0.06 = 0.61$$

Design density = 0.61 gpm/ft ^{2} (24.9 mm/min)

Example 6 . ~~Storage is expanded, exposed, stable, 22 ft (6.71 m) high in a 23 ½ ft (7.16 m) building.~~

~~Answer 6 . Column B of Table 15.2.6(a) — Could interpolate between 0.6 gpm/ft ^{2} and 0.75 gpm/ft ^{2} (24.5 mm/min and 30.6 mm/min); however, this would be a moot point since the density for 15 ft (4.6 m) storage in this 23 ½ ft (7.16 m) building would be 0.8 gpm/ft ^{2} (32.6 mm/min). Unless the owner can guarantee 22 ft (6.71 m) storage, the design density is 0.8 gpm/ft ^{2} (32.6 mm/min). If the owner can, in a manner acceptable to the authority having jurisdiction, guarantee 22 ft (6.71 m) storage, the interpolation would yield a design density of 0.66 gpm/ft ^{2} (26.9 mm/min).~~

~~Example 7 . Storage is~~

Storage is nonexpanded, stable, exposed, 13 ½ ft (4.1 m) high in a 15 ft (4.6 m) building.

Answer ~~7~~ 6 . Column E of Table 15.2.6(a) or Table 15.2.6(b) — 12 ft (3.66 m) storage in a 15 ft (4.6 m) building would be extra hazard, Group 2 [0.4 gpm/ft ^{2} over 2500 ft ^{2} (16.3 mm/min over 230 m ^{2})].

Storage 15 ft (4.6 m) high in a 15 ft (4.6 m) building would be 0.45 gpm/ft ^{2} (18.3 mm/min). Interpolation for 13 ½ ft (4.1 m) storage is as follows:

$$0.45 - 0.4 = 0.05$$
$$\frac{0.05}{(15-12)} = 0.017$$
$$0.017 \times (13.5-12) = 0.026$$
$$0.4 + 0.026 = 0.426$$

Design density = 0.426 gpm/ft ^{2} (17.4 mm/min)

Statement of Problem and Substantiation for Public Input

This change cleans up a number of problems with the examples. First, the reference to the metric conversion table was incorrect and misleading as well as unnecessary. The examples can be done in both traditional ft-pound units and metric units without the need of a conversion table, so it has been eliminated.

The exaples themselves have been fixed to match the values in Tables 15.2.6(a) and 15.2.6(b). These tables were modified a few years ago and the examples did not catch up with the modifications.

Example 6 was eliminated because there were already sufficient interpolation examples and the issue it was highlighting is no longer relevent given the changes to the tables.

Submitter Information Verification

Submitter Full Name: Roland Asp
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Affilliation: NFSA E&S Committee
Submittal Date: Thu May 23 10:39:28 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369319968929.xml

Public Input No. 303-NFPA 13-2013 [Section No. A.15.2.2]

Original Hide Markup

Revise A.15.2.2

–

by deleting the initial information concerning direct comparisons between ordinary temperature- and high temperature rated sprinklers and create a new A.15.2.8 using that same text:

A.15.2.8

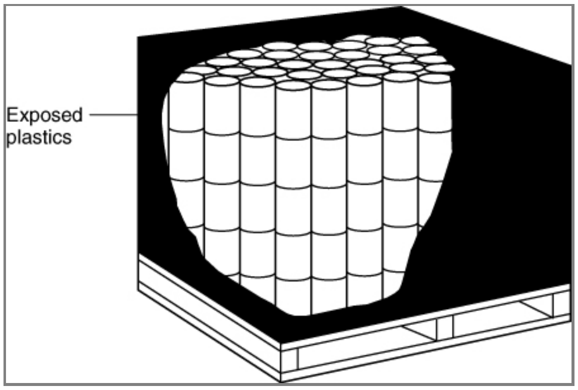
Two direct comparisons between ordinary temperature– and high temperature–rated sprinklers are possible, as follows:

(1) With nonexpanded polyethylene 1 gal (3.8 L) bottles in corrugated cartons, a 3 ft (0.9 m) clearance, and the same density, approximately the same number of sprinklers operated (nine at high temperature versus seven at ordinary temperature)

(2) With exposed, expanded polystyrene meat trays, a 9.5 ft (1.9 m) clearance, and the same density, three times as many ordinary temperature–rated sprinklers operated as did high temperature–rated sprinklers (11 at high temperature versus 33 at ordinary temperature)

A.15.2.2 The cartoned plastics requirements of this standard are based to a great extent on test work that used a specific commodity — 16 oz (0.473 L) polystyrene plastic jars individually separated by thin carton stock within a large corrugated carton [3 ½ ft^2 (0.32 m^2)]. [See Figure A.15.2.2(a).]

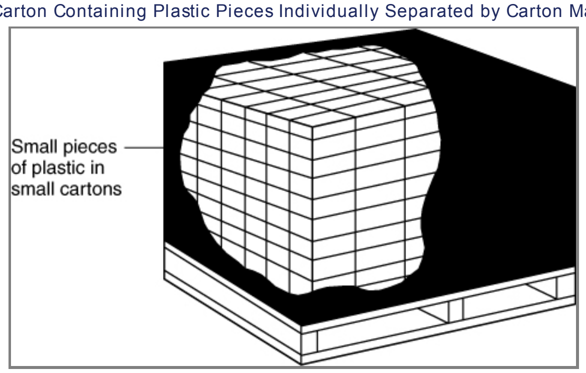
Figure A.15.2.2(a) Corrugated Carton Containing Individually Separated Plastic Jars.



Other Group A plastic commodities can be arranged in cartons so that they are separated by multiple thicknesses of carton material. In such arrangements, less plastic becomes involved in the fire at any one time. This could result in a less vigorous fire that can be controlled by Class IV commodity protection.

Other situations exist in which the plastics component is surrounded by several layers of less hazardous material and is therefore temporarily protected or insulated from a fire involving adjacent plastic products. Such conditions also could produce a less vigorous fire and be successfully handled by Class IV protection. [See Figure A.15.2.2(b).]

Figure A.15.2.2(b) Corrugated Carton Containing Plastic Pieces Individually Separated by Carton Material.



The decision to protect as a Class IV commodity, however, should be made only based on experienced judgment and only with an understanding of the consequences of underprotecting the storage segment.

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_15_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

The first portion of A.15.2.2 compares protection with ordinary temperature- and high temperature rated sprinklers, but Section 15.2.2 does not touch on this subject. Therefore, that text should be moved to provide guidance to Section 15.2.8, which contains the requirements as to which temperature rated sprinklers are to be used.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:48:35 EDT 2013

Origin (from sources other than the submitter)

NFPA 13-2013, Section 15.2.2 and 15.2.8 plus A.15.2.2

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Public Input No. 282-NFPA 13-2013 [Section No. A.20.2]

Original | Hide Markup

A.20.2

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.

Additional Proposed Changes

	File Name	Description	Approved
Open	LK_NFPA_13-2013_Proposal_2_of_15.docx	Cover Sheet	

Statement of Problem and Substantiation for Public Input

This proposal is offered to correct a typographical error in 3.9.3.2, and for clarity. As per 5.6.4.4, it is only Group A plastics that are subdivided into expanded or nonexpanded categories, but as written, the text of 3.9.3.2, 20.2 and A.20.2 appears to be referring to all plastic classes.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: Professional Loss Control
Submittal Date: Tue May 14 13:14:31 EDT 2013

Copyright Assignment

/TerraView/Content/13-2013.ditamap/2/C1368551671204.xml

Public Input No. 390-NFPA 13-2013 [Section No. A.21.2]

Original | Hide Markup

A.21.2

The protection options offered in Section 21.2 are intended to be based on the results of full-scale fire tests conducted at a recognized testing laboratory using the standardized testing methods established by the testing laboratory and supplemented within this chapter.

Protection options for this chapter can be based on storage arrangements other than palletized, solid piled, bin box, shelf storage, or back-to-back shelf storage, provided that the tested storage arrangement (such as rack storage) is deemed more hazardous than the storage arrangements outlined for this chapter.

Ceiling-level sprinkler system designs for this chapter should include a series of tests to evaluate the ability of the sprinkler to control or suppress a fire under a range of test variables for the commodity to be protected when maintained in a storage arrangement applicable to Section 21.2. The sprinkler standards referenced in Table A.6.1.1 provide detailed information regarding representative test commodities, measurement of steel temperatures, and the construction of igniters used to initiate the fire.

Test parameters to be held constant during the test series should include at least the following:

(1) Minimum operating pressure of the sprinklers
(2) Highest commodity hazard that will apply to the protection option
(3) Storage arrangement type

Test parameters that can vary during the test series should include at least the following:

(1) Ignition locations relative to the overhead sprinklers including the following:
 (a) Under one sprinkler
 (b) Between two sprinklers on the same branch line

(c) Between four sprinklers

(d) ADD analysis can be used to choose either option (b) or (c)

(2) Maximum ceiling height (see Table A.21.2 for ceiling height variance); representative tests at each ceiling height limitation that has a discrete minimum operating pressure or number of sprinklers required to be included in the hydraulic calculation

(3) Storage heights that are based on the following clearances between the deflector of the ceiling-level sprinkler and the top of storage:

(a) Minimum clearance, which is typically 3 ft (0.9 m)

(b) Nominal 10 ft (3.1 m) clearance

(c) Nominal 20 ft (6.1 m) clearance for maximum ceiling heights of 40 ft (12.2 m) or higher

(4) Minimum and maximum temperature ratings

(5) Minimum and maximum sprinkler spacing

(6) Maximum sprinkler distance below the ceiling when greater than 12 in. (305 mm).

See Figure A.21.2 for an example of a nominal 25 ft (7.6 m) high palletized storage fire test arrangement. See Table A.21.2 for a typical large-scale fire test series to investigate the performance of a sprinkler covered by this chapter having a standard coverage area and a discrete minimum operating pressure for a 30 ft (9.1 m) ceiling height.

In addition to determining the number of operated sprinklers, the maximum 1 minute average steel temperature measured above the fire should not exceed 1000°F (538°C), and there should be no sustained combustion at the far end of the main test array and at the outer edges of the target arrays during each test. In addition, no sprinklers should operate at the outer edges of the installed sprinkler system.

The number of sprinklers to be used in the sprinkler system design will be based on the worst-case result obtained from the full-scale fire test series increased by a minimum 50 percent. Regardless of the number of sprinklers that operated during the worst-case full-scale fire test, the number in the sprinkler system demand will be no less than 12 sprinklers for standard coverage sprinklers or 6 sprinklers for extended coverage sprinklers.

Figure A.21.2 Typical Example of 15 ft (4.6 m) Palletized Storage Full-Scale Fire Test Arrangement.

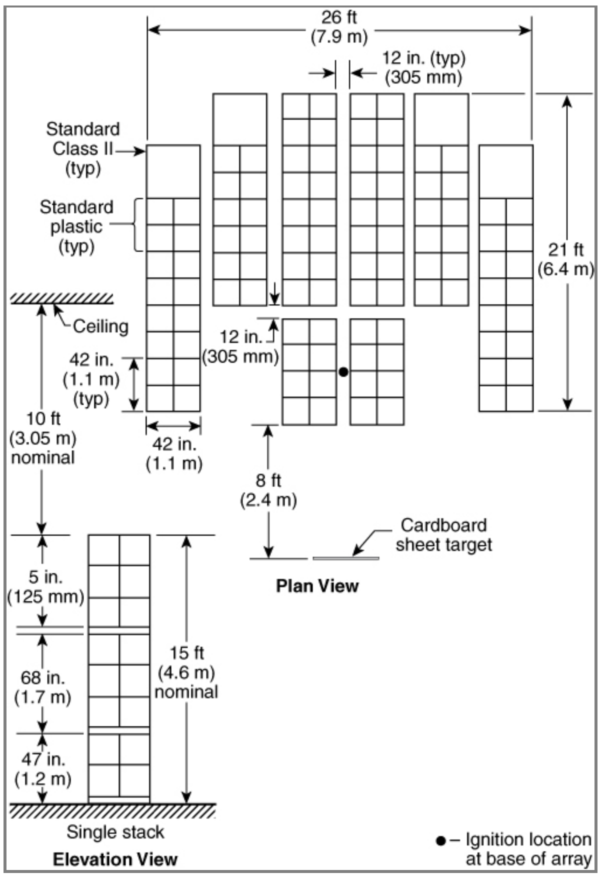

Table A.21.2 Typical Example of 25 ft (7.6 m) Palletized Storage Under 30 ft (9.1 m) Ceiling Full-Scale Fire Test Series on Simulated Wet-Type Sprinkler System (considers ADD results)

Parameter	Test 1	Test 2	Test 3	Test 4
Storage type	Palletized	Palletized	Palletized	Palletized
Nominal storage height, ft (m)	20 (6.1)	25 (7.6)	20 (6.1)	20 (6.1)
Nominal ceiling height, ft (m)	30 (9.1)	Adjusted to achieve minimum sprinkler deflector to commodity clearance	30 (9.1)	30 (9.1)
Sprinkler temperature rating	Minimum temperature rating	Maximum temperature rating	Minimum temperature rating	Minimum temperature rating
Nominal deflector to ceiling distance, in (cm)	Maximum specified by manufacturer	Maximum specified by manufacturer	Maximum specified by manufacturer	Maximum specified by manufacturer
Sprinkler spacing, 20 ft (6.1 m)	Maximum permitted by NFPA 13	Maximum permitted by NFPA 13	Minimum permitted by NFPA 13	Maximum permitted by NFPA 13
Nominal discharge pressure, psig (kPa)	Minimum operating	Minimum operating	Minimum operating	Minimum operating
Ignition location	Under one	Between two on same branch line or between four	Under one	Between two on same branch line or Between four

Test duration, minutes	30	30	30	30

Additional Proposed Changes

	File Name	Description	Approved
Open	Proposed_Revisions_to_Table_A-21-2_20130523.docx	Revision to Table A.21.2	

Statement of Problem and Substantiation for Public Input

Test 3 appears to be redundant to Test 1.

Submitter Information Verification

Submitter Full Name: Kerry Bell
Organization: UL LLC
Submittal Date: Thu May 23 15:38:45 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369337925762.xml

Public Input No. 366-NFPA 13-2013 [New Section after A.23.2.1.1]

NOTE: This proposal appeared as Comment 13-320 (Log #58) which was held from the A12 ROC on Proposal 13-501.

A.23.2.2.3 Flow tests that are run during the middle of a business day often do not account for peak water demands at other times of the day or water use during other times of year. Under ideal circumstances, NFPA 24 would have a specific value to apply to all situations, but that is not practical given the wide variations of water supplies in use and the variations of when waterflow tests are conducted. Waterflow tests conducted close to peak water usage times would need less of an adjustment than waterflow tests conducted during low water usage times. Consultation with the water authority may be necessary to determine an appropriate adjustment factor. Use of 24 hour gages at a hydrant can be helpful in determining day to day fluctuations. In addition, the user should also consider other water usage factors such as simultaneous industrial use, the potential for future demand on the system in the area of the test (depending on how well developed the area already is) and other conditions that would affect the water supply.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_PI_365_366_Held_Comment_13-320_Brooks_.pdf	Held Comment 13-230	

Statement of Problem and Substantiation for Public Input

This comment is being made to NFPA 13 to correlate with a change proposed to NFPA 24 on section 5.1.3. The basic concept of requiring some adjustment to the waterflow test data needs to be in the body of the standard. It is completely irresponsible to conduct a waterflow test at a hydrant at a time of very low water demand and believe that you are going to have all of that flow and pressure available when a fire occurs a few hours later during a regular and known peak demand time.

As proposed, the rule would only apply in those situations where the waterflow test is being performed and would not apply to the development of water supply data from other sources.

The concept of evaluating the water supply for possible interruptions from flood or ice conditions has been intentionally dropped from the language because this does not have to do with the flow or pressure available. This concept should be a part of the determination as to whether the water supply is "reliable" enough to use at all, which is a completely different concept and should not be tied to evaluating data from a flow test.

Submitter Information Verification

Submitter Full Name: William Brooks
Organization: Brooks Fire Protection
Submittal Date: Thu May 23 11:13:06 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1369321986160.xml

Public Input No. 589-NFPA 13-2013 [New Section after A.23.2.1.1]

NOTE: This proposal appeared as Comment 13-320 (Log #58) which was held from the A12 ROC on Proposal 13-501.

A.23.2.2.3

Flow tests that are run during the middle of a business day often do not account for peak water demands at other times of the day or water use during other times of year. Under ideal circumstances, NFPA 24 would have a specific value to apply to all situations, but that is not practical given the wide variations of water supplies in use and the variations of when waterflow tests are conducted. Waterflow tests conducted close to peak water usage times would need less of an adjustment than waterflow tests conducted during low water usage times. Consultation with the water authority may be necessary to determine an appropriate adjustment factor. Use of 24 hour gages at a hydrant can be helpful in determining day to day fluctuations. In addition, the user should also consider other water usage factors such as simultaneous industrial use, the potential for future demand on the system in the area of the test (depending on how well developed the area already is) and other conditions that would affect the water supply.

Additional Proposed Changes

	File Name	Description	Approved
Open	13_PI_588_589_Held_Comment_13-320_Kelly_.pdf	Held Comment 13-320	

Statement of Problem and Substantiation for Public Input

This comment is being made to NFPA 13 to correlate with a change proposed to NFPA 24 on section 5.1.3. The basic concept of requiring some adjustment to the waterflow test data needs to be in the body of the standard. It is completely irresponsible to conduct a waterflow test at a hydrant at a time of very low water demand and believe that you are going to have all of that flow and pressure available when a fire occurs a few hours later during a regular and known peak demand time.

As proposed, the rule would only apply in those situations where the waterflow test is being performed and would not apply to the development of water supply data from other sources.

The concept of evaluating the water supply for possible interruptions from flood or ice conditions has been intentionally dropped from the language because this does not have to do with the flow or pressure available. This concept should be a part of the determination as to whether the water supply is “reliable” enough to use at all, which is a completely different concept and should not be tied to evaluating data from a flow test.

Submitter Information Verification

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Organization: [Not Specified]
Submittal Date: Mon Jun 17 12:26:57 EDT 2013

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Public Input No. 56-NFPA 13-2013 [Section No. A.23.3.2]

Original Hide Markup

A.23.3.2

See Figure A.23.3.2(a) through Figure A.23.3.2(d).

Figure A.23.3.2(a) Summary Sheet.

Hydraulic Calculations

for

ABC Company, employee garage

7499 Franklin Road

Charleston, SC

Contract No. 4001

Date 1 – 7 – 08

Design data:

Occupancy classification ORD. GR. 1

Density 0.15 gpm/ft^2

Area of application 1500 ft^2

Coverage per sprinkler 130 ft^2

Special sprinklers ______

No. of sprinklers calculated 12

In-rack demand ______

Hose streams 250 gpm

Total water required 510.4 gpm including hose streams

Name of contractor ______

Name of designer ______

Address ______

Authority having jurisdiction ______

Figure A.23.3.2(b) Hydraulic Calculation Example (Plan View and Elevation View).

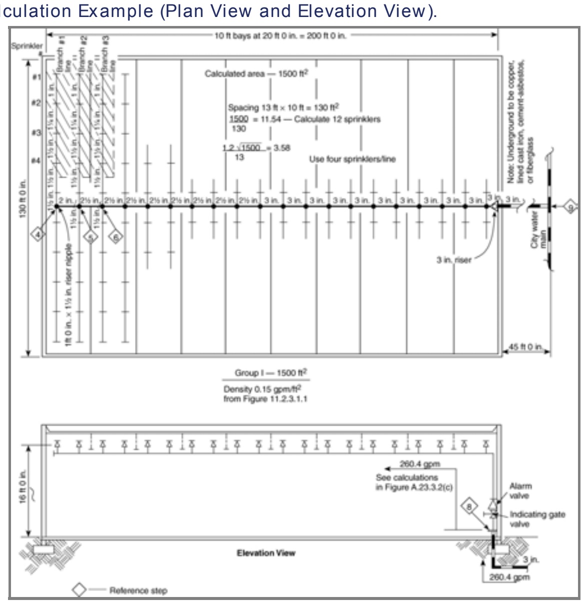
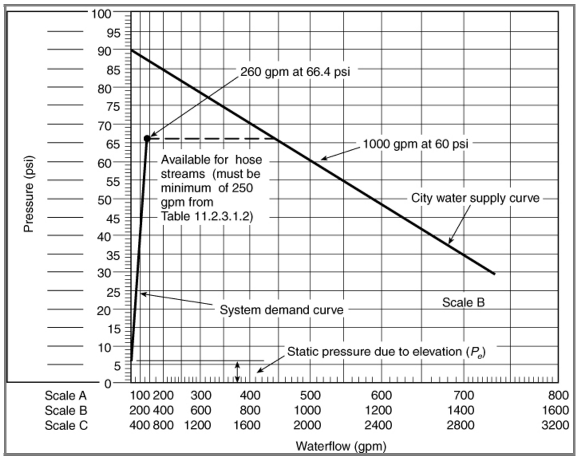


Figure A.23.3.2(c) Hydraulic Calculations.

Contract Name GROUP I 1500 ft^2 Sheet 2 Of 3

Step No.	Nozzle Ident. and Location		Flow in gpm	Pipe Size	Pipe Fittings and Devices	Equiv. Pipe Length	Friction Loss psi Foot	Pressure Summary	Normal Pressure	Notes: D = 0.15 gpm/ft^2, K = 5.6	Ref. Step
1	1	BL-1	q	1		L 13.0	C=120	P_t 12.1	P_t		
						F		P_e	P_v	Q = 130 x 0.15 = 19.5	
			Q 19.5			T 13.0	0.124	P_f 1.6	P_n	P = $(19.5/5.6)^2$ = 12.1 psi	
2	2		q 20.7	$1\frac{1}{4}$		L 13.0		P_t 13.7	P_t		
						F		P_e	P_v	$q = 5.6\sqrt{13.7}$	
			Q 40.2			T 13.0	0.125	P_f 1.6	P_n		
3	3		q 21.9	$1\frac{1}{2}$		L 13.0		P_t 15.3	P_t		4
						F		P_e	P_v	$q = 5.6\sqrt{15.3}$	
			Q 62.1			T 13.0	0.131	P_f 1.7	P_n		
4	4	DN RN	q 23.1	$1\frac{1}{2}$	2T-16	L 20.5		P_t 17.0	P_t		5
						F 16.0		P_e 0.4	P_v	$q = 5.6\sqrt{17}$	
			Q 85.2			T 36.5	0.236	P_f 8.6	P_n	P_e = 1 x 0.433	
5		CM TO BL-2	q	2		L 10.0		P_t 26.0	P_t	$K = \frac{85.2}{\sqrt{26}}$	
						F		P_e	P_v		
			Q 85.2			T 10.0	0.07	P_f 0.7	P_n	K = 16.71	
6		BL-2 CM TO BL-3	q 86.3	$2\frac{1}{2}$		L 10.0		P_t 26.7	P_t		6
						F		P_e	P_v	$q = 16.71\sqrt{26.7}$	
			Q 171.5			T 10.0	0.107	P_f 1.1	P_n		
7		BL-3 CM	q 88.1	$2\frac{1}{2}$		L 70.0		P_t 27.8	P_t		
						F		P_e	P_v	$q = 16.7\sqrt{27.8}$	
			Q 259.6			T 70.0	0.231	P_f 16.2	P_n		
8		CM TO FIS	q	3	E5	L 119.0		P_t 44.0	P_t		8
					AV15	F 21		P_e 6.5	P_v	P_e = 15 x 0.433	
			Q 259.6		GV1	T 140.0	0.081	P_f 11.2	P_n		
9		THROUGH UNDER-GROUND TO CITY MAIN	q	3	E5	L 50.0	C=150	P_t 61.7	P_t	$F = F_{40} \times 1.51 \times F_c$	9
					GV1	F 27.6	TYPE'M'	P_e	P_v	$F_c = [2.981/3.068]^{4.87} = 0.869$; F = 21 x 1.51 x 0.869	
			Q 259.6		T15	T 77.6	0.061	P_f 4.7	P_n	F = 27.6	
			q			L		P_t 66.4	P_t		
						F		P_e	P_v		
			Q			T		P_f	P_n		
			q			L		P_t	P_t		
						F		P_e	P_v		
			Q			T		P_f	P_n		
								P_t			

Figure A.23.3.2(d) Hydraulic Graph.



Statement of Problem and Substantiation for Public Input

In Step 4 Figure A.23.3.2(c), the tee at the top of the riser nipple and the tee at the bottom of riser nipple are both included in the branch line calculation. However, Paragraph 23.4.4.7.1(4) states that the tee at the bottom of the riser nipple shall be included in the riser nipple. In this instance, the calculation will remain the same but I the example should be consistent with the Standard. I have seen people base a calculation on this example and do it incorrectly. A new line should be added to calculate the riser nipple. If desired, a note could also be added to indicate that in this instance, the riser nipple calculation can be combined with the branch line for various reasons which should then be stated, that is fine.

Submitter Information Verification

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Public Input No. 197-NFPA 13-2013 [Section No. A.23.4.4.6.2]

Original Hide Markup

A.23.4.4.6.2

The intent of this section is not to allow the omission of discharge from sprinklers in small ~~rooms~~ compartments where the design area has been reduced below the values in Table 23.4.4.6.2 for situations such as quick-response sprinklers. Where quick-response sprinklers are used, the discharge from sprinklers in small ~~rooms~~ compartments in the design area can be omitted as long as the design area meets the size required by Table 23.4.4.6.2.

Statement of Problem and Substantiation for Public Input

To remove the confusion between small rooms and small compartments.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Associ
Submittal Date: Fri Apr 19 13:45:26 EDT 2013

/TerraView/Content/13-2013.ditamap/2/C1366393526672.xml