Technical Committee on Sprinkler System Installation Criteria

First Draft Meeting
August 9-12, 2016

San Diego Marriott Gaslamp Quarter
660 K Street
San Diego, CA 92101

AGENDA

Tuesday August 9, 2016

1. Call to Order – 8:00 AM

2. Introductions of Members and Staff

3. Review and Approval of A2018 pre-First Draft Meeting Minutes

4. Review of A2018 Revision Cycle and Meeting Schedule

5. Review of Distributed Material and Workload
- a. Act on Public Inputs
- b. Act on Committee First Revisions

6. Task Group Reports
- a. Chapters 1-3, 7-8 – Dave Burkhart
- b. Chapters 9-12 – Cecil Bilbo
- c. Chapters 13-15 – Will Smith
- d. Chapters 16/28 – Bob Caputo
- e. Chapters 27, 29 & 30 – Joe Noble
- f. Cloud Ceilings – Steve Scandaliato
- g. Overhang – Bob Caputo

Friday August 12, 2016

7. New business/Old business

8. Adjourn

Address List No Phone

07/22/2016
David R. Hague

Sprinkler System Installation Criteria

AUT-SSI

Automatic Sprinkler Systems

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Sprinkler System Installation Criteria

Automatic Sprinkler Systems

David R. Hague 3/18/2016

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2018 ANNUAL REVISION CYCLE

* Public Input Closing 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 Next Edition tab.

Process Stage	Process Step	Dates for TC	Dates for TC with CC
Public Input Stage (First Draft)	**Public Input Closing Date**	6/29/2016	6/29/2016
	Final date for TC First Draft Meeting	12/7/2016	9/7/2016
	Posting of First Draft and TC Ballot	1/25/2017	10/19/2016
	Final date for Receipt of TC First Draft ballot	2/15/2017	11/9/2016
	Final date for Receipt of TC First Draft ballot - recirc	2/22/2017	11/16/2016
	Posting of First Draft for CC Meeting		11/23/2016
	Final date for CC First Draft Meeting		1/4/2017
	Posting of First Draft and CC Ballot		1/25/2017
	Final date for Receipt of CC First Draft ballot		2/15/2017
	Final date for Receipt of CC First Draft ballot - recirc		2/22/2017
	Post First Draft Report for Public Comment	3/1/2017	3/1/2017

Comment Stage (Second Draft)	**Public Comment closing date**	5/10/2017	5/10/2017
	Notice published on Consent Standards (Standards that receive No Comments). Note: Date varies and determined via TC ballot.	–	–
	Appeal Closing Date for Consent Standards (15 Days) (Standards That Received No Comments)	–	–
	Final date for TC Second Draft Meeting	11/8/2017	8/2/2017
	Posting of Second Draft and TC Ballot	12/20/2017	9/13/2017
	Final date for Receipt of TC Second Draft Ballot	1/10/2018	10/4/2017
	Final date for receipt of TC Second Draft ballot - recirc	1/17/2018	10/11/2017
	Posting of Second Draft for CC Mtg		10/18/2017
	Final date for CC Second Draft Meeting		11/29/2017
	Posting of Second Draft for CC Ballot		12/20/2017
	Final date for Receipt of CC Second Draft ballot		1/10/2018
	Final date for Receipt of CC Second Draft ballot - recirc		1/17/2018
	Post Second Draft Report for NITMAM Review	1/24/2018	1/24/2018

Tech Session Preparation (& Issuance)	**Notice of Intent to Make a Motion (NITMAM) Closing Date**	2/21/2018	2/21/2018
	Posting of Certified Amending Motions (CAMs) and Consent Standards	4/4/2018	4/4/2018
	Appeal Closing Date for Consent Standards (15 Days after posting)	4/19/2018	4/19/2018
	SC Issuance Date for Consent Standards (10 Days)	4/29/2018	4/29/2018

Tech Session	Association Meeting for Standards with CAMs	6/4-7/2018	6/4-7/2018

Appeals and Issuance	Appeal Closing Date for Standards with CAMs (20 Days after ATM)	6/27/2018	6/27/2018
	Council Issuance Date for Standards with CAMs*	8/14/2018	8/14/2018

Public Input No. 137-NFPA 13-2016 [Global Input]

1. Revise the reference in 2.3.1 to read as follows:

2.3.1 ACI Publications.

American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333.

ACI 318-14, *Building Code Requirements for Structural Concrete and Commentary*, 2014. ACI 355.2, *Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary*,

2007.

2. Add a new definition on Prying Factor and corresponding annex to read as follows:

3.11.9* Prying Factor. A factor based on fitting geometry and brace angle from vertical that results in an increase in tension load due to the effects of prying between the upper seismic brace attachment fitting and the structure.

A. 3.11.9 Prying factors in NFPA 13 are utilized to determine the design loads for attachments to concrete. Prying is a particular concern for anchorage to concrete because the anchor may fail in

a brittle fashion.

3. Revise section 9.3.5.12 as follows:

9.3.5.12* **Fasteners.**

9.3.5.12.1 The designated angle category for the fastener(s) used in the sway brace installation shall be determined in accordance with Figure 9.3.5.12.1.

Figure 9.3.5.12.1 Designation of Angle Category Based on Angle of Sway Brace and

Fastener Orientation.

9.3.5.12.~~1~~2 * For individual fasteners, unless alternate allowable loads are determined and certified by a registered professional engineer, the loads determined in 9.3.5.9 shall not exceed the allowable loads provided in Tables 9.3.5.12.2(a) through 9.3.5.12.2(i).

Table 9.3.5.12.2 (a) Maximum Load for Wedge Anchors in 3000 psi (207 bar) Lightweight Cracked Concrete on Metal Deck.

Wedge Anchors in 3000 psi Lightweight Cracked Concrete on Metal Deck (lbs.)

Diameter (in.)	Embedment (in.)	A *Pr* < 2.0	B *Pr* < 1.1	C *Pr* < 0.7	D *Pr* < 1.2	E *Pr* < 1.1	F *Pr* < 1.1	G *Pr* < 1.4	H *Pr* < 0.9	I *Pr* < 0.8
3/8	2	117	184	246	-	-	-	-	-	-
1/2	2 3/8	164	257	344	-	-	-	-	-	-
5/8	3 1/8	214	326	424	-	-	-	-	-	-
Diameter (in.)	**Embedment (in.)**	**A** *Pr* 2.1 - 3.5	**B** *Pr* 1.2 - 1.8	**C** *Pr* 0.8 - 1.0	**D** *Pr* 1.3 - 1.7	**E** *Pr* 1.2 - 1.8	**F** *Pr* 1.2 - 2.0	**G** *Pr* 1.5 - 1.9	**H** *Pr* 1.0 - 1.3	**I** *Pr* 0.9 - 1.1
3/8	2	69	127	196	-	-	-	-	-	-
1/2	2 3/8	97	178	274	-	-	-	-	-	-
5/8	3 1/8	133	232	346	-	-	-	-	-	-
Diameter (in.)	**Embedment (in.)**	**A** *Pr* 3.6 - 5.0	**B** *Pr* 1.9 - 2.5	**C** *Pr* 1.1 - 1.3	**D** *Pr* 1.8 - 2.2	**E** *Pr* 1.9 - 2.5	**F** *Pr* 2.1 - 2.9	**G** *Pr* 2.0 - 2.4	**H** *Pr* 1.4 - 1.7	**I** *Pr* 1.2 - 1.4
3/8	2	48	97	163	-	-	-	-	-	-
1/2	2 3/8	67	136	228	-	-	-	-	-	-
5/8	3 1/8	93	179	292	-	-	-	-	-	-
Diameter (in.)	**Embedment (in.)**	**A** *Pr* 5.1 - 6.5	**B** *Pr* 2.6 - 3.2	**C** *Pr* 1.4 - 1.6	**D** *Pr* 2.3 - 2.7	**E** *Pr* 2.6 - 3.2	**F** *Pr* 3.0 - 3.8	**G** *Pr* 2.5 - 2.9	**H** *Pr* 1.8 - 2.1	**I** *Pr* 1.5 - 1.7
3/8	2	36	75	139	-	-	-	-	-	-
1/2	2 3/8	51	106	196	-	-	-	-	-	-
5/8	3 1/8	71	146	252	-	-	-	-	-	-

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2 (b) Maximum Load for Wedge Anchors in 3000 psi (207 bar) Lightweight Cracked Concrete

Wedge Anchors in 3000 psi Lightweight Cracked Concrete (lbs.)

Diameter (in.)	Embedment (in.)	A Pr < 2.0	B Pr < 1.1	C Pr < 0.7	D Pr < 1.2	E Pr < 1.1	F Pr < 1.1	G Pr < 1.4	H Pr < 0.9	I Pr < 0.8
3/8	2	102	144	175	101	144	184	87	128	152
1/2	2 3/8	140	196	238	137	196	251	118	174	207
5/8	3 1/4	222	308	372	215	308	397	220	272	323
3/4	4 1/8	327	469	580	336	469	586	289	426	504

Diameter (in.)	Embedment (in.)	A Pr 2.1 - 3.5	B Pr 1.2 - 1.8	C Pr 0.8 - 1.0	D Pr 1.3 - 1.7	E Pr 1.2 - 1.8	F Pr 1.2 - 2.0	G Pr 1.5 - 1.9	H Pr 1.0 - 1.3	I Pr 0.9 - 1.1
3/8	2	69	109	150	87	109	121	76	110	133
1/2	2 3/8	94	149	205	119	149	166	104	150	181
5/8	3 1/4	151	237	322	187	237	265	201	236	285
3/4	4 1/8	217	351	492	286	351	380	252	362	436

Diameter (in.)	Embedment (in.)	A Pr 3.6 - 5.0	B Pr 1.9 - 2.5	C Pr 1.1 - 1.3	D Pr 1.8 - 2.2	E Pr 1.9 - 2.5	F Pr 2.1 - 2.9	G Pr 2.0 - 2.4	H Pr 1.4 - 1.7	I Pr 1.2 - 1.4
3/8	2	52	88	132	76	88	90	68	97	118
1/2	2 3/8	71	121	180	104	121	124	93	132	161
5/8	3 1/4	114	192	284	165	192	198	185	208	254
3/4	4 1/8	162	280	427	249	280	281	223	315	385

Diameter (in.)	Embedment (in.)	A Pr 5.1 - 6.5	B Pr 2.6 - 3.2	C Pr 1.4 - 1.6	D Pr 2.3 - 2.7	E Pr 2.6 - 3.2	F Pr 3.0 - 3.8	G Pr 2.5 - 2.9	H Pr 1.8 - 2.1	I Pr 1.5 - 1.7
3/8	2	41	74	117	68	74	70	61	86	106
1/2	2 3/8	56	101	160	93	101	97	84	118	145
5/8	3 1/4	91	161	253	148	161	157	172	186	230
3/4	4 1/8	124	233	378	221	233	214	200	279	344

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2 (c) Maximum Load for Wedge Anchors in 3000 psi (207 bar) Normal Weight Cracked Concrete

Wedge Anchors in 3000 psi Normal Weight Cracked Concrete (lbs.)

Diameter	Embedment	A	B	C	D	E	F	G	H	I

(in.)	(in.)	*Pr* < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2	171	240	292	169	240	307	145	214	254
1/2	3 5/8	412	567	682	394	567	735	340	498	592
5/8	3 7/8	480	668	809	468	668	859	479	591	703
3/4	4 1/8	545	780	965	559	780	976	482	709	839
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2	116	183	252	146	183	203	128	184	223
1/2	3 5/8	282	438	592	344	438	493	302	434	523
5/8	3 7/8	327	512	699	406	512	571	438	512	618
3/4	4 1/8	363	584	819	477	584	634	420	604	727
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2	87	148	221	128	148	152	114	162	198
1/2	3 5/8	214	357	523	305	357	371	271	384	469
5/8	3 7/8	247	415	615	359	415	428	404	452	551
3/4	4 1/8	271	467	712	416	467	468	371	526	641
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2	69	124	197	115	124	118	103	145	178
1/2	3 5/8	173	301	469	274	301	296	247	345	425
5/8	3 7/8	197	349	549	321	349	337	374	404	498
3/4	4 1/8	208	389	629	369	389	357	333	465	573

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2 (d) Maximum Load for Wedge Anchors in 4000 psi (276 bar) Normal Weight Cracked Concrete

		Wedge Anchors in 4000 psi Normal Weight Cracked Concrete (lbs.)								
Diameter	**Embedment**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

(in.)	(in.)	*Pr* < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2	200	282	344	199	282	359	171	251	299
1/2	3 5/8	430	607	742	430	607	770	370	544	645
5/8	3 7/8	532	729	872	505	729	950	511	636	758
3/4	4 1/8	630	903	1117	647	903	1129	558	821	971
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2	135	214	295	171	214	236	150	216	261
1/2	3 5/8	289	460	636	370	460	506	325	467	563
5/8	3 7/8	367	566	760	442	566	642	470	557	672
3/4	4 1/8	419	676	948	552	676	733	486	699	841
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2	101	172	258	150	172	176	134	190	232
1/2	3 5/8	218	370	556	325	370	377	290	410	500
5/8	3 7/8	280	463	674	393	463	484	435	494	603
3/4	4 1/8	313	540	824	481	540	541	430	608	741
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2	79	144	230	134	144	137	121	169	209
1/2	3 5/8	170	310	494	289	310	292	261	365	449
5/8	3 7/8	226	391	605	354	391	389	406	445	547
3/4	4 1/8	241	449	728	427	449	413	386	538	663

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2(e) Maximum Load for Wedge Anchors in 6000 psi (414 bar) Normal Weight Cracked Concrete

		Wedge Anchors in 6000 psi Normal Weight Cracked Concrete (lbs.)								
Diameter	**Embedment**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

(in.)	(in.)	Pr < 2.0	Pr < 1.1	Pr < 0.7	Pr < 1.2	Pr < 1.1	Pr < 1.1	Pr < 1.4	Pr < 0.9	Pr < 0.8
3/8	2 1/4	254	354	428	199	354	585	213	313	372
1/2	3 5/8	527	744	910	418	744	1227	454	667	791
5/8	3 7/8	652	893	1069	504	893	1481	626	780	928
3/4	4 1/8	772	1106	1369	622	1106	1819	684	1005	1190
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	Pr 2.1 - 3.5	Pr 1.2 - 1.8	Pr 0.8 - 1.0	Pr 1.3 - 1.7	Pr 1.2 - 1.8	Pr 1.2 - 2.0	Pr 1.5 - 1.9	Pr 1.0 - 1.3	Pr 0.9 - 1.1
3/8	2 1/4	172	271	370	215	271	302	188	271	327
1/2	3 5/8	355	564	780	453	564	621	399	573	690
5/8	3 7/8	450	694	932	542	694	786	576	682	823
3/4	4 1/8	514	828	1162	676	828	898	595	856	1030
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	Pr 3.6 - 5.0	Pr 1.9 - 2.5	Pr 1.1 - 1.3	Pr 1.8 - 2.2	Pr 1.9 - 2.5	Pr 2.1 - 2.9	Pr 2.0 - 2.4	Pr 1.4 - 1.7	Pr 1.2 - 1.4
3/8	2 1/4	130	219	325	189	219	226	169	239	292
1/2	3 5/8	267	454	682	398	454	462	355	502	613
5/8	3 7/8	343	567	826	481	567	593	534	606	739
3/4	4 1/8	384	662	1009	590	662	663	527	745	909
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	Pr 5.1 - 6.5	Pr 2.6 - 3.2	Pr 1.4 - 1.6	Pr 2.3 - 2.7	Pr 2.6 - 3.2	Pr 3.0 - 3.8	Pr 2.5 - 2.9	Pr 1.8 - 2.1	Pr 1.5 - 1.7
3/8	2 1/4	103	184	290	170	184	178	153	214	263
1/2	3 5/8	209	380	606	355	380	358	320	447	551
5/8	3 7/8	277	480	741	433	480	476	497	545	671
3/4	4 1/8	295	551	892	523	551	506	473	660	813

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2(f) Maximum Load for Undercut Anchors in 3000 psi (207 bar) Normal Weight Cracked Concrete

		Undercut Anchors in 3000 psi Normal Weight Cracked Concrete (lbs.)								
Diameter	**Embedment**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

(in.)	(in.)	Pr < 2.0	Pr < 1.1	Pr < 0.7	Pr < 1.2	Pr < 1.1	Pr < 1.1	Pr < 1.4	Pr < 0.9	Pr < 0.8
3/8	4 3/8	501	638	726	420	638	889	362	525	630
1/2	7	700	911	1051	608	911	1245	525	761	912
5/8	9 1/2	1106	1535	1855	1074	1535	1975	1098	1356	1612
3/4	12	1701	2404	2946	1707	2404	3041	1472	2161	2561

		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	4 3/8	368	526	658	381	526	643	333	477	578
1/2	7	505	738	942	547	738	882	479	685	829
5/8	9 1/2	754	1179	1604	933	1179	1318	1005	1177	1419
3/4	12	1143	1819	2520	1468	1819	1996	1291	1854	2233

		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	4 3/8	291	447	601	350	447	504	309	437	534
1/2	7	395	620	854	497	620	683	440	622	760
5/8	9 1/2	572	957	1413	825	957	989	927	1039	1268
3/4	12	860	1463	2202	1287	1463	1486	1149	1624	1980

		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	4 3/8	241	389	554	323	389	414	287	403	496
1/2	7	324	535	780	455	535	557	407	570	701
5/8	9 1/2	456	806	1263	739	806	781	859	931	1145
3/4	12	670	1223	1955	1146	1223	1147	1035	1444	1778

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2(g) Maximum Load for Connections to Steel Using Unfinished Steel Bolts

Table 9.3.5.12.2(h) Maximum Load for Through-Bolts in Sawn Lumber or Glue- Laminated Timbers

Note: Wood fastener maximum capacity values are based on the 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 factors in Table 9.3.5.12.2(j).

Table 9.3.5.12.2(i) Maximum Load for Lag Screws and Lag Bolts in Wood

Note: Wood fastener maximum capacity values are based on the 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 factors in Table 9.3.5.12.2(i).

Table 9.3.5.12.2(j) Factors for Wood Based on Specific Gravity

9.3.5.12.3* The type of fasteners used to secure the bracing assembly to the structure shall be limited to those shown in Tables 9.3.5.12.2(a) through 9.3.5.12.2(i) or to listed devices.

A.9.3.5.12.3 Listed devices may have accompanying software that performs the calculations to determine the allowable load.

9.3.5.12.4* For connections to wood, through-bolts with washers on each end shall be used, unless the requirements of 9.3.5.12.5 are met.

9.3.5.12.5 Where it is not practical to install through-bolts due to the thickness of the wood member in excess of 12 in. (305 mm) or inaccessibility, lag screws shall be permitted and holes shall be pre-drilled 1⁄8 in. (3.2 mm) smaller than the maximum root diameter of the lag screw.

9.3.5.12.6 Holes for through-bolts and similar listed attachments shall be 1⁄16 in. (1.6 mm)

greater than the diameter of the bolt.

9.3.5.12.7 The requirements of 9.3.5.12 shall not apply to other fastening methods, which shall be acceptable for use if certified by a registered professional engineer to support the loads determined in accordance with the criteria in 9.3.5.9.

9.3.5.12.7.1 Calculations shall be submitted where required by the authority having jurisdiction.

9.3.5.12.8 Concrete Anchors.

9.3.5.12.~~7~~8.1* Concrete anchors shall be prequalified for seismic applications in accordance with ACI 355.2, *Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary*, and installed in accordance with the manufacturer's instructions.

A.9.3.5.12.8.1 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*.

9.3.5.12.8.2

Unless the requirements of 9.3.5.12.8.3 are met, concrete anchors shall be selected from Table

9.3.5.12.2(a) through Table 9.3.5.12.2(f) based on concrete strength, anchor type, designated angle category A through I, prying factor (*Pr*) range, and allowable maximum load.

9.3.5.12.8.2.1 Sway brace manufacturers shall provide prying factors (*Pr)* based on geometry of the structure attachment fitting and the designated angle category A through I as shown in Figure

9.3.5.12.1.

9.3.5.12.8.2.2 Where the prying factor for the fitting is unknown, the largest prying factor range in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) for the concrete strength and designated angle category A through I shall be used.

9.3.5.12.8.3 In lieu of using the concrete anchor loads in Tables 9.3.5.12.2(a) through

9.3.5.12.2(f)**,** the allowable maximum load may be calculated.

(A) Allowable concrete anchor loads shall be permitted to be determined using approved software that considers the effects of prying for concrete anchors.

(B) Anchors shall be seismically prequalified per 9.3.5.12.8.1.

(C)Allowable maximum loads shall be based on the anchor capacities given in approved evaluation service reports, where the calculation of ASD allowable shear and tension values are determined in accordance with ACI 318, Chapter 17 and include the effects of prying, brace angle, and the over strength factor (?=2.0).

(D)* The shear and tension values determined in 9.3.5.12.8.3(C) using ACI 318, Chapter

17 shall be multiplied by 0.43.

A.9.3.5.12.8.3(D) The values from ACI 318, Chapter 17 are strength (LRFD) values that must be divided by 1.4 in order to convert them to ASD values. The factor of 0.43 was created to simplify the steps needed to account for the strength capacities and the ASD method of calculation. The 0.43 is a rounded value determined by 1.2 (allowable stress increase) divided by the quantity of 2.0 times 1.4 (i.e. 0.4286=1.2/(2.0*1.4)).

9.3.5.12.8.4 Concrete anchors other than those shown in Tables 9.3.5.12.2(a) through

9.3.5.12.2(f) shall be acceptable for use where designed in accordance with the requirements of the building code and certified by a registered professional engineer.

4. Revise A.9.3.5.12 to read as follows:

A.9.3.5.12

Current fasteners for anchoring to concrete are referred to as post-installed anchors. There are several types of post-installed anchors, including expansion anchors, chemical or adhesive anchors, and undercut anchors. The criteria in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) are based on the use of wedge expansion anchors and undercut anchors. Use of other anchors in concrete should be in accordance with the listing provisions of the anchor. Anchorage designs are usable under allowable stress design (ASD) methods.

Values in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) are based on ultimate strength design values obtained using the procedures in ACI 318-11, Appendix D, which are then adjusted for ASD. Wedge anchors are torque-controlled expansion anchors that are set by applying a torque to the anchor's nut, which causes the anchor to rise while the wedge stays in place. This causes the wedge to be pulled onto a coned section of the anchor and presses the wedge against the wall of the hole. Undercut anchors might or might not be torque-controlled. Typically, the main hole is drilled, a special second drill bit is inserted into the hole, and flare is drilled at the base of the main hole. Some anchors are self-drilling and do not require a second drill bit. The anchor is then inserted into the hole and, when torque is applied, the bottom of the anchor flares out into the flared hole, and a mechanical lock is obtained. Consideration should be given with respect to the position near the edge of a slab and the spacing of anchors. For full capacity in Tables

9.3.5.12.2(a) through 9.3.5.12.2(f)**,** the edge distance spacing between anchors and thickness of concrete should conform to the anchor manufacturer's recommendations.

Calculation of ASD Shear and Tension Values to be used in A.9.3.5.12.1 calculations should be performed in accordance with ACI 318, Chapter 17 formulas using the variables and recommendations obtained from the approved evaluation service reports (such as ICC-ES Reports) for a particular anchor, which should then be adjusted to ASD values. All post-installed concrete anchors must be prequalified in accordance with ACI 355.2 or other approved qualification procedures. This information is usually available from the anchor manufacturer.

The variables below are among those contained in the approved evaluation reports for use in ACI

318, Chapter 17 calculations. These variables do not include the allowable tension and shear capacities, but provide the information needed to calculate them. The strength design capacities must be calculated using the appropriate procedures in ACI 318 Chapter 17, and then converted to allowable stress design capacities.

D a = Anchor diameter

h no m = Nominal Embedment

h ef = Effective Embedment

h min = Min. Concrete Thickness

C a c = Critical Edge Distance *N sa* = Steel Strength in Tension le = Length of Anchor in Shear

N p,cr = Pull-Out Strength Cracked Concrete

K cp = Coefficient for Pryout Strength

V sa,eq = Shear Strength Single Anchor Seismic Loads

V st.deck,eq = Shear Strength Single Anchor Seismic Loads installed through the soffit of the metal deck

5. Replace A.9.3.5.12.1 with the following (retain and renumber all figures):

A.9.3.5.12.~~1~~2 The values for the wedge anchor tables and the undercut anchor tables have been developed using the following formula:

_______ _______? ?

where:

???????? ? ???????? ? 1.2

T = applied service tension load including the effect of prying (*F p w* x *Pr*)

F p w = Horizontal Earthquake Load

Pr = prying factor based on fitting geometry and brace angle from vertical

T allow = allowable service tension load

V = applied service shear load

V allow = allowable service shear load

T/ *T allow* shall not be greater than 1.0.

V/ *V allow* shall not be greater than 1.0.

The allowable tension and shear loads come from the anchor manufacturer's published data. The design loads have been amplified by an over-strength factor of 2.0, and the allowable strength of the anchors has been increased by a factor of 1.2. The effect of prying on the tension applied to the anchor is considered when developing appropriate capacity values. The applied tension equation includes the prying effect which varies with the orientation of the fastener in relationship to the brace necessary at various brace angles. The letters A through D in the following equations are dimensions of the attachment geometry as indicated in Figures A.9.3.5.12.2(a) through A.9.3.5.12.2(c).

where:

Cr = critical angle at which prying flips to the toe or the heel of the structure attachment fitting.

Pr = Prying factor for service tension load effect of prying

Tan? = Tangent of Brace Angle from vertical

Sin? = Sine of Brace Angle from vertical

The greater *Pr* value calculated in Tension or Compression applies

The *Pr* value cannot be less than 1.000/*Tan?* for designated angle category A, B and C, 1.000 for designated angle category D, E and F or 0.000 for designated angle category G, H, and I.

For designated angle category A, B and C, the Applied Tension including the effect of prying

(*Pr*) is as follows:

For braces acting in **TENSION**: If *Cr* >Brace angle from vertical

? ?? ? ?????? ?

?

C ? A

If *Cr* < Brace angle from vertical

?? ? ??????? ? D? /A

? ? ?

?? ? ?? ? ????? ??/?

For braces acting in **COMPRESSION**:

If *Cr* > Brace angle from vertical

If *Cr* < Brace angle from vertical

?? ? ??

? ? ?

????

? ? ??/?

? ? ?

?? ? ?? ? ???????/?

For designated angle category D, E and F, the Applied Tension including the effect of prying

(*Pr*) is as follows:

For braces acting in **TENSION**:

? ?? ? ?????? ?

?

If *Cr* >Brace angle from vertical

?? ? ??

D

????

? ? ?? ? ??? /B

If *Cr* < Brace angle from vertical

?? ? ??C ? A? ? ?

D

????

??/A

For braces acting in **COMPRESSION**:

If *Cr* > Brace angle from vertical

D

?? ? ??????? ? ?? ? ??? /A

If *Cr* < Brace angle from vertical

?? ? ??C ? ?? ? ?

D

????

??/B

For designated angle category G, H and I the Applied Tension including the effect of prying (*Pr*) is as follows:

For braces acting in **TENSION**:

For braces acting in **COMPRESSION**:

?? ? ?

D

?/???? B

? Pr ? ?

?

?/??? ?

The lightweight concrete anchor tables 9.3.5.12.2(a) and (b) were based on sand lightweight concrete which represents a conservative assumption for the strength of the material. For seismic applications cracked concrete was assumed.

6. Add a new Annex E.7 to read as follows:

E.7 Allowable Loads for Concrete Anchors. The following sections provide step-by-step examples of the procedures for determining the allowable loads for concrete anchors as they are found in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f). Tables 9.3.5.12.2(a) through (f) were developed using the prying factors found in Table E.7(a) and the representative strength design seismic shear and tension values for concrete anchors found in Table E.7(b).

Table E.7(a) Prying Factors for Table 9.3.5.12.2(a) through Table 9.3.5.12.2(f) Concrete Anchors

Pr Range	**Fig. 9.3.5.12.1** Designated Angle Category								
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Lowest	2.0	1.1	0.7	1.2	1.1	1.1	1.4	0.9	0.8
Low	3.5	1.8	1.0	1.7	1.8	2.0	1.9	1.3	1.1
High	5.0	2.5	1.3	2.2	2.5	2.9	2.4	1.7	1.4
Highest	6.5	3.2	1.6	2.7	3.2	3.8	2.9	2.1	1.7

Table E.7(b)Representative Strength Design Seismic Shear and Tension Values Used for Concrete Anchors

Wedge Anchors in 3000 psi LW Sand Concrete on Metal Deck

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	573	1172
1/2	2.375	804	1616
5/8	3.125	1102	1744

Wedge Anchors in 3000 psi LW Sand Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	637	550
1/2	3.625	871	745
5/8	3.875	1403	1140
3/4	4.125	1908	1932

Wedge Anchors in 3000 psi NW Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	1063	917
1/2	3.625	2639	2052
5/8	3.875	3004	2489
3/4	4.125	3179	3206

Wedge Anchors in 4000 psi NW Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	1226	1088
1/2	3.625	2601	2369
5/8	3.875	3469	2586
3/4	4.125	3671	3717

Wedge Anchors in 6000 psi NW Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2.25	1592	1322
1/2	3.625	3186	2902
5/8	3.875	4249	3167
3/4	4.125	4497	4553

Undercut Anchors in 3000 psi NW Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	5	4096	1867
1/2	7	5322	2800
5/8	9.5	6942	5675
3/4	12	10182	9460

E.7.1 Procedure for Selecting a Wedge Anchor Using Tables 9.3.5.12.2(a) through 9.3.5.12.2(f).

Step 1. Determine the ASD Horizontal Earthquake Load *F p w*.

Step 1a. Calculate the weight of the water-filled pipe within the Zone of Influence of the brace.

Step 1b. Find the applicable Seismic Coefficient *C p* in Table 9.3.5.9.3

Step 1c. Multiply the Zone of Influence weight by *C p* to determine the ASD Horizontal Earthquake Load *F p w*.

Step 2. Select a concrete anchor from Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) with a maximum load capacity that is greater than the calculated horizontal earthquake load *F p w* from Step 1.

Step 2a. Locate the table for the applicable concrete strength.

Step 2b. Find the column in the selected table for the applicable designated angle category (A thru I) and the appropriate prying factor *Pr* range.

Step 2c. Scan down the category column to find a concrete anchor diameter, embedment depth, and maximum load capacity that is greater than the calculated horizontal earthquake load *F p w* from Step 1.

(ALTERNATIVE) Step 2. As an alternative to using the maximum load values in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f), select an AC355.2 seismically pre-qualified concrete anchor with a load-carrying capacity that exceeds the calculated *F p w*, with calculations, including the effects of prying, based on seismic shear and tension values taken from an ICC-ES Report and calculated in accordance with ACI 318, Chapter 17 and adjusted to ASD values by multiplying by 0.43 per 9.3.5.12.8.3(D).

EXAMPLE

Step 1. Zone of Influence *F p w*.

Step 1a.

40 ft. of 2½" Sch. 10 pipe plus 15% Fitting Allowance

40 x 5.89 lbs/ft x 1.15 = 270.94 lbs

Step 1b. Seismic Coefficient *Cp* from Table 9.3.5.9.3

C p = 0.35

Step 1c. *F p w* = 0.35 x 270.94 = 94.8 lbs.

Step 2. Select a concrete anchor from Tables 9.3.5.12.2(a) through 9.3.5.12.2(f).

Step 2a. Using the table for 4000 psi Normal Weight Concrete.

Step 2b. Fastener Orientation "A" – assume the manufacturers prying factor is 3.0 for the fitting. Use the *Pr* range of 2.1 – 3.5.

Step 2c. Allowable *F p w* on 3/8" dia. with 2" embedment = 135 lbs and is greater than the Calculated *F p w* of 94.8 lbs.

E.7.2 Calculation Procedure for Maximum Load Capacity of Concrete Anchors. This example shows how the effects of prying and brace angle are calculated.

Step 1. Determine the Allowable Seismic Tension Value (*T allow*) and the Allowable Seismic Shear Value (*V allow*) for the anchor, based on data found in the in the anchor manufacturer's approved evaluation report. Note that, in this example, it is assumed the evaluation report provides the allowable tension and shear capacities. If this is not the case, then the strength design anchor capacities must be determined using the procedures in ACI 318, Chapter 17, which are then converted to ASD values by dividing by a factor of 1.4. As an alternative to calculating the Allowable Seismic Tension Value (*T allow*) and the Allowable Seismic Shear Value (*V allow*) for the anchor, the seismic tension and shear values that were used to calculate the Figure 9.3.5.12.1 for anchor allowable load tables may be used.

Step 1a. Find the ASD Seismic Tension capacity (*T allow*) for the anchor according to the strength of concrete, diameter of the anchor, and embedment depth of the anchor. Divide the ASD tension value by 2.0 and then multiply by 1.2.

Step 1b. Find the ASD Seismic Shear capacity (*V allow*) for the anchor according to the strength of concrete, diameter of the anchor, and embedment depth of the anchor. Divide the ASD shear value by 2.0 and then multiply by 1.2.

Step 2. Calculate the Applied Seismic Tension (*T*) and the Applied Seismic Shear (*V*) based on the

Calculated Horizontal Earthquake Load *F p w*.

Step 2a. Calculate the designated angle category Applied Tension Factor Including the

Effects of Prying (*Pr*) using the following formulas: Category "A", "B" and "C"

C ? A

?? ? ??????? ? D? /A

Category "D", "E" and "F"

D

?? ? ??C ? A? ? ?

????

??/A

Category "G", "H" and "I"

?

?? ? ?

?

?/ ????

Step 2b. Calculate the ASD Applied Seismic Tension (*T*) on the anchor, including the effects of prying, and when applied at the applicable brace angle from vertical and the designated angle category (A thru I) using the following formula:

T = F p w x *Pr*

Step 2c. Calculate the ASD Applied Seismic Shear (*V*) on the anchor, when applied at the applicable brace angle from vertical and the designated angle category (A thru I) using the following formulas:

Category "A", "B" and "C"

V = F pw

Category "D", "E" and "F"

? ? ???/????

Category "G", "H" and "I"

V = F p w /Sin θ

Step 3. Check the anchor for combined tension and shear loads using the formula:

? ?

???????? ? ???????? ? 1.2

Confirm T/T allow & V/V allow <= 1.0

EXAMPLE

Sample Calculation, Maximum Load Capacity of

Concrete Anchors as Shown in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f)

In this example, a sample calculation is provided showing how the values in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) were calculated.

Step 1. Determine the Allowable Seismic Tension Value (*T allow*) and the Allowable Seismic

Shear Value (*V allow*) for a concrete anchor in Figure 9.3.5.12.1.

Step 1a. The Table E.7(b) Strength Design Seismic Tension Value (*T allow*) for a 1/2” Carbon Steel Anchor with 3 5/8” Embedment Depth in 4,000 psi Normal Weight Concrete is 2601 lbs. Therefore, the Allowable Stress Design Seismic Tension Value (*T allow*) is 2601 / 1.4 / 2.0 x 1.2 = 1115 lbs.

Step 1b. The Table E.7(b) Strength Design Seismic Shear Value (*V allow*) for a 1/2” Carbon Steel Anchor with 3 5/8” embedment is 2369 lbs. Therefore, the Allowable Stress Design Seismic Shear Value (*V allow*) is 2369 / 1.4 / 2.0 x 1.2 = 1015 lbs.

Step 2. Using the Applied Seismic Tension Value (*T*) and the Applied Seismic Shear Value (*V*) based on an ASD Horizontal Earthquake Load (*F p w*) of 170 lbs, a 30o brace angle from vertical and designated angle category “A”.

Step 2a. Calculate the ASD Applied Seismic Tension Value (*T*) on the anchor, including the effects of prying, using the formula:

C ? A

? ? ???? ??????? ? D??/A

where:

T = applied service tension load including the effect of prying

F p w = Horizontal Earthquake Load (*F p w* = 170)

Tan = Tangent of Brace Angle from vertical (*Tan*? 30o = 0.5774) A = 0.7500

B = 1.5000

C = 2.6250

D = 1.0000

T = *F p w* x *Pr*

? ? ???? ??

2.625 ? 0.75

0.5774 ? ? 1.0??/0.75

? ? ???? ?5.8452 ? 1.0??/0.75

? ? ???? ??5.8452? ? 1.0??/0.75

4.8451

? ? ??? ?

?

0.75

? ? ??? x 6.46

? ? 170 lbs x 6.46 ? 1098.2 lbs

Step 2b. The ASD Applied Seismic Shear Value (*V*) on the anchor for anchor orientations “A”, “B” & “C” is equal to the ASD Horizontal Earthquake Load (*Fpw*) =

170 lbs.

Step 3 Calculate the maximum Allowable Horizontal Earthquake Load *Fpw* using the formula:

? ?

________ ________???????? ? ???????? ? 1.2

1098.2

170

? ? .9849 ? .1675 ? 1.1524 ?? ?. ??

________ ______? 1115 ? ? ?1015

Issue Date: August 18, 2015

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NATIONAL FIRE PROTECTION ASSOCIATION

Tentative Interim Amendment

NFPA 13

Standard for the Installation of Sprinkler Systems

2016 Edition

Reference: 2.3.1, 3.11.9, A.3.11.9, 9.3.5.12, A.9.3.5.12, A.9.3.5.12.1 and E.7

TIA 16-2

(SC 15-8-15 / TIA Log #1180)

Note: Text of the TIA was issued and incorporated into the document prior to printing, therefore no separate publication is necessary.

1. Revise the reference in 2.3.1 to read as follows:

2.3.1 ACI Publications.

American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333.

ACI 318-14, *Building Code Requirements for Structural Concrete and Commentary*, 2014. ACI 355.2, *Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary*,

2007.

2. Add a new definition on Prying Factor and corresponding annex to read as follows:

3.11.9* Prying Factor. A factor based on fitting geometry and brace angle from vertical that results in an increase in tension load due to the effects of prying between the upper seismic brace attachment fitting and the structure.

A. 3.11.9 Prying factors in NFPA 13 are utilized to determine the design loads for attachments to concrete. Prying is a particular concern for anchorage to concrete because the anchor may fail in a brittle fashion.

3. Revise section 9.3.5.12 as follows:

9.3.5.12* **Fasteners.**

9.3.5.12.1 The designated angle category for the fastener(s) used in the sway brace installation shall be determined in accordance with Figure 9.3.5.12.1.

Figure 9.3.5.12.1 Designation of Angle Category Based on Angle of Sway Brace and Fastener Orientation.

9.3.5.12.~~1~~2 * For individual fasteners, unless alternate allowable loads are determined and certified by a registered professional engineer, the loads determined in 9.3.5.9 shall not exceed the allowable loads provided in Tables 9.3.5.12.2(a) through 9.3.5.12.2(i).

Table 9.3.5.12.2 (a) Maximum Load for Wedge Anchors in 3000 psi (207 bar) Lightweight Cracked Concrete on Metal Deck.

		Wedge Anchors in 3000 psi Lightweight Cracked Concrete on Metal Deck (lbs.)								
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2	117	184	246	-	-	-	-	-	-
1/2	2 3/8	164	257	344	-	-	-	-	-	-
5/8	3 1/8	214	326	424	-	-	-	-	-	-
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1

3/8	2	69	127	196	-	-	-	-	-	-
1/2	2 3/8	97	178	274	-	-	-	-	-	-
5/8	3 1/8	133	232	346	-	-	-	-	-	-
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2	48	97	163	-	-	-	-	-	-
1/2	2 3/8	67	136	228	-	-	-	-	-	-
5/8	3 1/8	93	179	292	-	-	-	-	-	-
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2	36	75	139	-	-	-	-	-	-
1/2	2 3/8	51	106	196	-	-	-	-	-	-
5/8	3 1/8	71	146	252	-	-	-	-	-	-

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2 (b) Maximum Load for Wedge Anchors in 3000 psi (207 bar) Lightweight Cracked Concrete

		Wedge Anchors in 3000 psi Lightweight Cracked Concrete (lbs.)								
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2	102	144	175	101	144	184	87	128	152
1/2	2 3/8	140	196	238	137	196	251	118	174	207
5/8	3 1/4	222	308	372	215	308	397	220	272	323
3/4	4 1/8	327	469	580	336	469	586	289	426	504
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2	69	109	150	87	109	121	76	110	133
1/2	2 3/8	94	149	205	119	149	166	104	150	181
5/8	3 1/4	151	237	322	187	237	265	201	236	285
3/4	4 1/8	217	351	492	286	351	380	252	362	436

Diameter (in.)	Embedment (in.)	A *Pr* 3.6 - 5.0	B *Pr* 1.9 - 2.5	C *Pr* 1.1 - 1.3	D *Pr* 1.8 - 2.2	E *Pr* 1.9 - 2.5	F *Pr* 2.1 - 2.9	G *Pr* 2.0 - 2.4	H *Pr* 1.4 - 1.7	I *Pr* 1.2 - 1.4
3/8	2	52	88	132	76	88	90	68	97	118
1/2	2 3/8	71	121	180	104	121	124	93	132	161
5/8	3 1/4	114	192	284	165	192	198	185	208	254
3/4	4 1/8	162	280	427	249	280	281	223	315	385
Diameter (in.)	**Embedment (in.)**	**A** *Pr* 5.1 - 6.5	**B** *Pr* 2.6 - 3.2	**C** *Pr* 1.4 - 1.6	**D** *Pr* 2.3 - 2.7	**E** *Pr* 2.6 - 3.2	**F** *Pr* 3.0 - 3.8	**G** *Pr* 2.5 - 2.9	**H** *Pr* 1.8 - 2.1	**I** *Pr* 1.5 - 1.7
3/8	2	41	74	117	68	74	70	61	86	106
1/2	2 3/8	56	101	160	93	101	97	84	118	145
5/8	3 1/4	91	161	253	148	161	157	172	186	230
3/4	4 1/8	124	233	378	221	233	214	200	279	344

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2 (c) Maximum Load for Wedge Anchors in 3000 psi (207 bar) Normal Weight Cracked Concrete

Wedge Anchors in 3000 psi Normal Weight Cracked Concrete (lbs.)

Diameter (in.)	Embedment (in.)	A *Pr* < 2.0	B *Pr* < 1.1	C *Pr* < 0.7	D *Pr* < 1.2	E *Pr* < 1.1	F *Pr* < 1.1	G *Pr* < 1.4	H *Pr* < 0.9	I *Pr* < 0.8
3/8	2	171	240	292	169	240	307	145	214	254
1/2	3 5/8	412	567	682	394	567	735	340	498	592
5/8	3 7/8	480	668	809	468	668	859	479	591	703
3/4	4 1/8	545	780	965	559	780	976	482	709	839
Diameter (in.)	**Embedment (in.)**	**A** *Pr* 2.1 - 3.5	**B** *Pr* 1.2 - 1.8	**C** *Pr* 0.8 - 1.0	**D** *Pr* 1.3 - 1.7	**E** *Pr* 1.2 - 1.8	**F** *Pr* 1.2 - 2.0	**G** *Pr* 1.5 - 1.9	**H** *Pr* 1.0 - 1.3	**I** *Pr* 0.9 - 1.1
3/8	2	116	183	252	146	183	203	128	184	223
1/2	3 5/8	282	438	592	344	438	493	302	434	523
5/8	3 7/8	327	512	699	406	512	571	438	512	618
3/4	4 1/8	363	584	819	477	584	634	420	604	727
Diameter	**Embedment**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

(in.)	(in.)	*Pr* 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2	87	148	221	128	148	152	114	162	198
1/2	3 5/8	214	357	523	305	357	371	271	384	469
5/8	3 7/8	247	415	615	359	415	428	404	452	551
3/4	4 1/8	271	467	712	416	467	468	371	526	641
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2	69	124	197	115	124	118	103	145	178
1/2	3 5/8	173	301	469	274	301	296	247	345	425
5/8	3 7/8	197	349	549	321	349	337	374	404	498
3/4	4 1/8	208	389	629	369	389	357	333	465	573

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2 (d) Maximum Load for Wedge Anchors in 4000 psi (276 bar) Normal Weight Cracked Concrete

		Wedge Anchors in 4000 psi Normal Weight Cracked Concrete (lbs.)								
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2	200	282	344	199	282	359	171	251	299
1/2	3 5/8	430	607	742	430	607	770	370	544	645
5/8	3 7/8	532	729	872	505	729	950	511	636	758
3/4	4 1/8	630	903	1117	647	903	1129	558	821	971
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2	135	214	295	171	214	236	150	216	261
1/2	3 5/8	289	460	636	370	460	506	325	467	563
5/8	3 7/8	367	566	760	442	566	642	470	557	672
3/4	4 1/8	419	676	948	552	676	733	486	699	841
Diameter	**Embedment**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

(in.)	(in.)	*Pr* 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2	101	172	258	150	172	176	134	190	232
1/2	3 5/8	218	370	556	325	370	377	290	410	500
5/8	3 7/8	280	463	674	393	463	484	435	494	603
3/4	4 1/8	313	540	824	481	540	541	430	608	741
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2	79	144	230	134	144	137	121	169	209
1/2	3 5/8	170	310	494	289	310	292	261	365	449
5/8	3 7/8	226	391	605	354	391	389	406	445	547
3/4	4 1/8	241	449	728	427	449	413	386	538	663

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2(e) Maximum Load for Wedge Anchors in 6000 psi (414 bar) Normal Weight Cracked Concrete

		Wedge Anchors in 6000 psi Normal Weight Cracked Concrete (lbs.)								
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2 1/4	254	354	428	199	354	585	213	313	372
1/2	3 5/8	527	744	910	418	744	1227	454	667	791
5/8	3 7/8	652	893	1069	504	893	1481	626	780	928
3/4	4 1/8	772	1106	1369	622	1106	1819	684	1005	1190
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter (in.)	**Embedment (in.)**	*Pr* 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2 1/4	172	271	370	215	271	302	188	271	327
1/2	3 5/8	355	564	780	453	564	621	399	573	690
5/8	3 7/8	450	694	932	542	694	786	576	682	823
3/4	4 1/8	514	828	1162	676	828	898	595	856	1030
Diameter	**Embedment**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

		Pr	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*
(in.)	(in.)	3.6 - 5.0	1.9 - 2.5	1.1 - 1.3	1.8 - 2.2	1.9 - 2.5	2.1 - 2.9	2.0 - 2.4	1.4 - 1.7	1.2 - 1.4
3/8	2 1/4	130	219	325	189	219	226	169	239	292
1/2	3 5/8	267	454	682	398	454	462	355	502	613
5/8	3 7/8	343	567	826	481	567	593	534	606	739
3/4	4 1/8	384	662	1009	590	662	663	527	745	909
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter	**Embedment**	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*
(in.)	**(in.)**	5.1 - 6.5	2.6 - 3.2	1.4 - 1.6	2.3 - 2.7	2.6 - 3.2	3.0 - 3.8	2.5 - 2.9	1.8 - 2.1	1.5 - 1.7
3/8	2 1/4	103	184	290	170	184	178	153	214	263
1/2	3 5/8	209	380	606	355	380	358	320	447	551
5/8	3 7/8	277	480	741	433	480	476	497	545	671
3/4	4 1/8	295	551	892	523	551	506	473	660	813

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2(f) Maximum Load for Undercut Anchors in 3000 psi (207 bar) Normal Weight Cracked Concrete

		Undercut Anchors in 3000 psi Normal Weight Cracked Concrete (lbs.)								
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter	**Embedment**	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*
(in.)	**(in.)**	< 2.0	< 1.1	< 0.7	< 1.2	< 1.1	< 1.1	< 1.4	< 0.9	< 0.8
3/8	4 3/8	501	638	726	420	638	889	362	525	630
1/2	7	700	911	1051	608	911	1245	525	761	912
5/8	9 1/2	1106	1535	1855	1074	1535	1975	1098	1356	1612
3/4	12	1701	2404	2946	1707	2404	3041	1472	2161	2561
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter	**Embedment**	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*
(in.)	**(in.)**	2.1 - 3.5	1.2 - 1.8	0.8 - 1.0	1.3 - 1.7	1.2 - 1.8	1.2 - 2.0	1.5 - 1.9	1.0 - 1.3	0.9 - 1.1
3/8	4 3/8	368	526	658	381	526	643	333	477	578
1/2	7	505	738	942	547	738	882	479	685	829
5/8	9 1/2	754	1179	1604	933	1179	1318	1005	1177	1419
3/4	12	1143	1819	2520	1468	1819	1996	1291	1854	2233
Diameter	**Embedment**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

		Pr	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*
(in.)	**(in.)**	3.6 - 5.0	1.9 - 2.5	1.1 - 1.3	1.8 - 2.2	1.9 - 2.5	2.1 - 2.9	2.0 - 2.4	1.4 - 1.7	1.2 - 1.4
3/8	4 3/8	291	447	601	350	447	504	309	437	534
1/2	7	395	620	854	497	620	683	440	622	760
5/8	9 1/2	572	957	1413	825	957	989	927	1039	1268
3/4	12	860	1463	2202	1287	1463	1486	1149	1624	1980
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Diameter	**Embedment**	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*	*Pr*
(in.)	**(in.)**	5.1 - 6.5	2.6 - 3.2	1.4 - 1.6	2.3 - 2.7	2.6 - 3.2	3.0 - 3.8	2.5 - 2.9	1.8 - 2.1	1.5 - 1.7
3/8	4 3/8	241	389	554	323	389	414	287	403	496
1/2	7	324	535	780	455	535	557	407	570	701
5/8	9 1/2	456	806	1263	739	806	781	859	931	1145
3/4	12	670	1223	1955	1146	1223	1147	1035	1444	1778

* Pr = Prying Factor Range. (Refer to Annex for additional information.)

1 lb = 0.45 kg

Table 9.3.5.12.2(g) Maximum Load for Connections to Steel Using Unfinished Steel Bolts

Table 9.3.5.12.2(h) Maximum Load for Through-Bolts in Sawn Lumber or Glue- Laminated Timbers

Note: Wood fastener maximum capacity values are based on the 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 factors in Table 9.3.5.12.2(j).

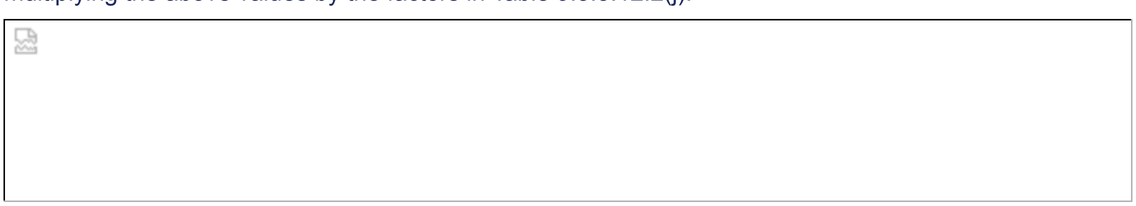


Table 9.3.5.12.2(i) Maximum Load for Lag Screws and Lag Bolts in Wood

Note: Wood fastener maximum capacity values are based on the 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 factors in Table 9.3.5.12.2(i).

Table 9.3.5.12.2(j) Factors for Wood Based on Specific Gravity

9.3.5.12.3* The type of fasteners used to secure the bracing assembly to the structure shall be limited to those shown in Tables 9.3.5.12.2(a) through 9.3.5.12.2(i) or to listed devices.

A.9.3.5.12.3 Listed devices may have accompanying software that performs the calculations to determine the allowable load.

9.3.5.12.4* For connections to wood, through-bolts with washers on each end shall be used, unless the requirements of 9.3.5.12.5 are met.

9.3.5.12.5 Where it is not practical to install through-bolts due to the thickness of the wood member in excess of 12 in. (305 mm) or inaccessibility, lag screws shall be permitted and holes shall be pre-drilled 1⁄8 in. (3.2 mm) smaller than the maximum root diameter of the lag screw.

9.3.5.12.6 Holes for through-bolts and similar listed attachments shall be 1⁄16 in. (1.6 mm)

greater than the diameter of the bolt.

9.3.5.12.7 The requirements of 9.3.5.12 shall not apply to other fastening methods, which shall be acceptable for use if certified by a registered professional engineer to support the loads determined in accordance with the criteria in 9.3.5.9.

9.3.5.12.7.1 Calculations shall be submitted where required by the authority having jurisdiction.

9.3.5.12.8 Concrete Anchors.

9.3.5.12.~~7~~8.1* Concrete anchors shall be prequalified for seismic applications in accordance with ACI 355.2, *Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary*, and installed in accordance with the manufacturer's instructions.

A.9.3.5.12.8.1 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*.

9.3.5.12.8.2

Unless the requirements of 9.3.5.12.8.3 are met, concrete anchors shall be selected from Table

9.3.5.12.2(a) through Table 9.3.5.12.2(f) based on concrete strength, anchor type, designated angle category A through I, prying factor (*Pr*) range, and allowable maximum load.

9.3.5.12.8.2.1 Sway brace manufacturers shall provide prying factors (*Pr)* based on geometry of the structure attachment fitting and the designated angle category A through I as shown in Figure

9.3.5.12.1.

9.3.5.12.8.2.2 Where the prying factor for the fitting is unknown, the largest prying factor range in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) for the concrete strength and designated angle category A through I shall be used.

9.3.5.12.8.3 In lieu of using the concrete anchor loads in Tables 9.3.5.12.2(a) through

9.3.5.12.2(f)**,** the allowable maximum load may be calculated.

(A) Allowable concrete anchor loads shall be permitted to be determined using approved software that considers the effects of prying for concrete anchors.

(B) Anchors shall be seismically prequalified per 9.3.5.12.8.1.

(C)Allowable maximum loads shall be based on the anchor capacities given in approved evaluation service reports, where the calculation of ASD allowable shear and tension values are determined in accordance with ACI 318, Chapter 17 and include the effects of prying, brace angle, and the over strength factor (?=2.0).

(D)* The shear and tension values determined in 9.3.5.12.8.3(C) using ACI 318, Chapter 17 shall be multiplied by 0.43.

A.9.3.5.12.8.3(D) The values from ACI 318, Chapter 17 are strength (LRFD) values that must be divided by 1.4 in order to convert them to ASD values. The factor of 0.43 was created to simplify the steps needed to account for the strength capacities and the ASD method of calculation. The 0.43 is a rounded value determined by 1.2 (allowable stress increase) divided by the quantity of 2.0 times 1.4 (i.e. 0.4286=1.2/(2.0*1.4)).

9.3.5.12.8.4 Concrete anchors other than those shown in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) shall be acceptable for use where designed in accordance with the requirements of the building code and certified by a registered professional engineer.

4. Revise A.9.3.5.12 to read as follows:

A.9.3.5.12

Current fasteners for anchoring to concrete are referred to as post-installed anchors. There are several types of post-installed anchors, including expansion anchors, chemical or adhesive anchors, and undercut anchors. The criteria in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) are based on the use of wedge expansion anchors and undercut anchors. Use of other anchors in concrete should be in accordance with the listing provisions of the anchor. Anchorage designs are usable under allowable stress design (ASD) methods.

Values in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) are based on ultimate strength design values obtained using the procedures in ACI 318-11, Appendix D, which are then adjusted for ASD. Wedge anchors are torque-controlled expansion anchors that are set by applying a torque to the anchor's nut, which causes the anchor to rise while the wedge stays in place. This causes the wedge to be pulled onto a coned section of the anchor and presses the wedge against the wall of the hole. Undercut anchors might or might not be torque-controlled. Typically, the main hole is drilled, a special second drill bit is inserted into the hole, and flare is drilled at the base of the main hole. Some anchors are self-drilling and do not require a second drill bit. The anchor is then inserted into the hole and, when torque is applied, the bottom of the anchor flares out into the flared hole, and a mechanical lock is obtained. Consideration should be given with respect to the position near the edge of a slab and the spacing of anchors. For full capacity in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f)**,** the edge distance spacing between anchors and thickness of concrete should conform to the anchor manufacturer's recommendations.

Calculation of ASD Shear and Tension Values to be used in A.9.3.5.12.1 calculations should be performed in accordance with ACI 318, Chapter 17 formulas using the variables and recommendations obtained from the approved evaluation service reports (such as ICC-ES Reports) for a particular anchor, which should then be adjusted to ASD values. All post-installed concrete anchors must be prequalified in accordance with ACI 355.2 or other approved qualification procedures. This information is usually available from the anchor manufacturer.

The variables below are among those contained in the approved evaluation reports for use in ACI 318, Chapter 17 calculations. These variables do not include the allowable tension and shear capacities, but provide the information needed to calculate them. The strength design capacities must be calculated using the appropriate procedures in ACI 318 Chapter 17, and then converted to allowable stress design capacities.

D a = Anchor diameter

h no m = Nominal Embedment

h ef = Effective Embedment

h min = Min. Concrete Thickness

C a c = Critical Edge Distance *N sa* = Steel Strength in Tension le = Length of Anchor in Shear

N p,cr = Pull-Out Strength Cracked Concrete

K cp = Coefficient for Pryout Strength

V sa,eq = Shear Strength Single Anchor Seismic Loads

V st.deck,eq = Shear Strength Single Anchor Seismic Loads installed through the soffit of the metal deck

5. Replace A.9.3.5.12.1 with the following (retain and renumber all figures):

A.9.3.5.12.~~1~~2 The values for the wedge anchor tables and the undercut anchor tables have been developed using the following formula:

_______ _______? ?

where:

???????? ? ???????? ? 1.2

T = applied service tension load including the effect of prying (*F p w* x *Pr*)

F p w = Horizontal Earthquake Load

Pr = prying factor based on fitting geometry and brace angle from vertical

T allow = allowable service tension load

V = applied service shear load

V allow = allowable service shear load

T/ *T allow* shall not be greater than 1.0.

V/ *V allow* shall not be greater than 1.0.

The allowable tension and shear loads come from the anchor manufacturer's published data. The design loads have been amplified by an over-strength factor of 2.0, and the allowable strength of the anchors has been increased by a factor of 1.2. The effect of prying on the tension applied to the anchor is considered when developing appropriate capacity values. The applied tension equation includes the prying effect which varies with the orientation of the fastener in

relationship to the brace necessary at various brace angles. The letters A through D in the following equations are dimensions of the attachment geometry as indicated in Figures A.9.3.5.12.2(a) through A.9.3.5.12.2(c).

where:

Cr = critical angle at which prying flips to the toe or the heel of the structure attachment fitting.

Pr = Prying factor for service tension load effect of prying

Tan? = Tangent of Brace Angle from vertical

Sin? = Sine of Brace Angle from vertical

The greater *Pr* value calculated in Tension or Compression applies

The *Pr* value cannot be less than 1.000/*Tan?* for designated angle category A, B and C, 1.000 for designated angle category D, E and F or 0.000 for designated angle category G, H, and I.

For designated angle category A, B and C, the Applied Tension including the effect of prying

(*Pr*) is as follows:

For braces acting in **TENSION**: If *Cr* >Brace angle from vertical

? ?? ? ?????? ?

__?

______C ? A

If *Cr* < Brace angle from vertical

?? ? ??????? ? D? /A

? ? ?

______?? ? ?? ? ????? ??/?

For braces acting in **COMPRESSION**:

If *Cr* > Brace angle from vertical
If *Cr* < Brace angle from vertical

?? ? ??

? ? ?
______????

? ? ??/?

? ? ?
______?? ? ?? ? ???????/?

For designated angle category D, E and F, the Applied Tension including the effect of prying (*Pr*) is as follows:

For braces acting in **TENSION**:

? ?? ? ?????? ?
__?

If *Cr* >Brace angle from vertical

?? ? ??

D
______????

? ? ?? ? ??? /B

If *Cr* < Brace angle from vertical

?? ? ??C ? A? ? ?

D
______????

??/A

For braces acting in **COMPRESSION**:
If *Cr* > Brace angle from vertical

D

?? ? ??????? ? ?? ? ??? /A

If *Cr* < Brace angle from vertical

?? ? ??C ? ?? ? ?

D

????

??/B

For designated angle category G, H and I the Applied Tension including the effect of prying (*Pr*) is as follows:

For braces acting in **TENSION**:

For braces acting in **COMPRESSION**:

?? ? ?

D

?/???? B

? Pr ? ?

?

?/??? ?

The lightweight concrete anchor tables 9.3.5.12.2(a) and (b) were based on sand lightweight concrete which represents a conservative assumption for the strength of the material. For seismic applications cracked concrete was assumed.

6. Add a new Annex E.7 to read as follows:

E.7 Allowable Loads for Concrete Anchors. The following sections provide step-by-step examples of the procedures for determining the allowable loads for concrete anchors as they are found in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f). Tables 9.3.5.12.2(a) through (f) were developed using the prying factors found in Table E.7(a) and the representative strength design seismic shear and tension values for concrete anchors found in Table E.7(b).

Table E.7(a) Prying Factors for Table 9.3.5.12.2(a) through Table 9.3.5.12.2(f) Concrete Anchors

Pr Range	**Fig. 9.3.5.12.1** Designated Angle Category A	B	C	D	E	F	G	H	I
Lowest	2.0	1.1	0.7	1.2	1.1	1.1	1.4	0.9	0.8
Low	3.5	1.8	1.0	1.7	1.8	2.0	1.9	1.3	1.1
High	5.0	2.5	1.3	2.2	2.5	2.9	2.4	1.7	1.4
Highest	6.5	3.2	1.6	2.7	3.2	3.8	2.9	2.1	1.7

Table E.7(b)Representative Strength Design Seismic Shear and Tension Values Used for

Concrete Anchors

Wedge Anchors in 3000 psi LW Sand Concrete on Metal Deck

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	573	1172
1/2	2.375	804	1616
5/8	3.125	1102	1744

Wedge Anchors in 3000 psi LW Sand Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	637	550
1/2	3.625	871	745
5/8	3.875	1403	1140
3/4	4.125	1908	1932

Wedge Anchors in 3000 psi NW Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	1063	917
1/2	3.625	2639	2052
5/8	3.875	3004	2489
3/4	4.125	3179	3206

Wedge Anchors in 4000 psi NW Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	1226	1088
1/2	3.625	2601	2369
5/8	3.875	3469	2586
3/4	4.125	3671	3717

Wedge Anchors in 6000 psi NW Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2.25	1592	1322
1/2	3.625	3186	2902
5/8	3.875	4249	3167
3/4	4.125	4497	4553

Undercut Anchors in 3000 psi NW Concrete

Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	5	4096	1867
1/2	7	5322	2800
5/8	9.5	6942	5675
3/4	12	10182	9460

E.7.1 Procedure for Selecting a Wedge Anchor Using Tables 9.3.5.12.2(a) through 9.3.5.12.2(f).

Step 1. Determine the ASD Horizontal Earthquake Load *F p w*.

Step 1a. Calculate the weight of the water-filled pipe within the Zone of Influence of the brace.

Step 1b. Find the applicable Seismic Coefficient *C p* in Table 9.3.5.9.3

Step 1c. Multiply the Zone of Influence weight by *C p* to determine the ASD Horizontal Earthquake Load *F p w*.

Step 2. Select a concrete anchor from Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) with a maximum load capacity that is greater than the calculated horizontal earthquake load *F p w* from Step 1.

Step 2a. Locate the table for the applicable concrete strength.

Step 2b. Find the column in the selected table for the applicable designated angle category (A thru I) and the appropriate prying factor *Pr* range.

Step 2c. Scan down the category column to find a concrete anchor diameter, embedment depth, and maximum load capacity that is greater than the calculated horizontal earthquake load *F p w* from Step 1.

(ALTERNATIVE) Step 2. As an alternative to using the maximum load values in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f), select an AC355.2 seismically pre-qualified concrete anchor with a load-carrying capacity that exceeds the calculated *F p w*, with calculations, including the effects of prying, based on seismic shear and tension values taken from an ICC-ES Report and calculated in accordance with ACI 318, Chapter 17 and adjusted to ASD values by multiplying by 0.43 per 9.3.5.12.8.3(D).

EXAMPLE

Step 1. Zone of Influence *F p w*.

Step 1a.

40 ft. of 2½" Sch. 10 pipe plus 15% Fitting Allowance

40 x 5.89 lbs/ft x 1.15 = 270.94 lbs

Step 1b. Seismic Coefficient *Cp* from Table 9.3.5.9.3

C p = 0.35

Step 1c. *F p w* = 0.35 x 270.94 = 94.8 lbs.

Step 2. Select a concrete anchor from Tables 9.3.5.12.2(a) through 9.3.5.12.2(f).

Step 2a. Using the table for 4000 psi Normal Weight Concrete.

Step 2b. Fastener Orientation "A" – assume the manufacturers prying factor is 3.0 for the fitting. Use the *Pr* range of 2.1 – 3.5.

Step 2c. Allowable *F p w* on 3/8" dia. with 2" embedment = 135 lbs and is greater than the

Calculated *F p w* of 94.8 lbs.

E.7.2 Calculation Procedure for Maximum Load Capacity of Concrete Anchors. This example shows how the effects of prying and brace angle are calculated.

Step 1. Determine the Allowable Seismic Tension Value (*T allow*) and the Allowable Seismic Shear Value (*V allow*) for the anchor, based on data found in the in the anchor manufacturer's approved evaluation report. Note that, in this example, it is assumed the evaluation report provides the allowable tension and shear capacities. If this is not the case, then the strength design anchor capacities must be determined using the procedures in ACI 318, Chapter 17, which are then converted to ASD values by dividing by a factor of 1.4. As an alternative to

calculating the Allowable Seismic Tension Value (*T allow*) and the Allowable Seismic Shear Value

(*V allow*) for the anchor, the seismic tension and shear values that were used to calculate the Figure

9.3.5.12.1 for anchor allowable load tables may be used.

Step 1a. Find the ASD Seismic Tension capacity (*T allow*) for the anchor according to the strength of concrete, diameter of the anchor, and embedment depth of the anchor. Divide the ASD tension value by 2.0 and then multiply by 1.2.

Step 1b. Find the ASD Seismic Shear capacity (*V allow*) for the anchor according to the strength of concrete, diameter of the anchor, and embedment depth of the anchor. Divide

the ASD shear value by 2.0 and then multiply by 1.2.

Step 2. Calculate the Applied Seismic Tension (*T*) and the Applied Seismic Shear (*V*) based on the Calculated Horizontal Earthquake Load *F p w*.

Step 2a. Calculate the designated angle category Applied Tension Factor Including the

Effects of Prying (*Pr*) using the following formulas: Category "A", "B" and "C"

C ? A

?? ? ??????? ? D? /A

Category "D", "E" and "F"

D

?? ? ??C ? A? ? ?

????

??/A

Category "G", "H" and "I"

?

?? ? ?

?

?/ ????

Step 2b. Calculate the ASD Applied Seismic Tension (*T*) on the anchor, including the effects of prying, and when applied at the applicable brace angle from vertical and the designated angle category (A thru I) using the following formula:

T = F p w x *Pr*

Step 2c. Calculate the ASD Applied Seismic Shear (*V*) on the anchor, when applied at the applicable brace angle from vertical and the designated angle category (A thru I) using the following formulas:

Category "A", "B" and "C"

V = F pw

Category "D", "E" and "F"

? ? ???/????

Category "G", "H" and "I"

V = F p w /Sin θ

Step 3. Check the anchor for combined tension and shear loads using the formula:

? ?

???????? ? ???????? ? 1.2

Confirm T/T allow & V/V allow <= 1.0

EXAMPLE

Sample Calculation, Maximum Load Capacity of

Concrete Anchors as Shown in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f)

In this example, a sample calculation is provided showing how the values in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) were calculated.

Step 1. Determine the Allowable Seismic Tension Value (*T allow*) and the Allowable Seismic Shear Value (*V allow*) for a concrete anchor in Figure 9.3.5.12.1.

Step 1a. The Table E.7(b) Strength Design Seismic Tension Value (*T allow*) for a 1/2" Carbon Steel Anchor with 3 5/8" Embedment Depth in 4,000 psi Normal Weight Concrete is 2601 lbs. Therefore, the Allowable Stress Design Seismic Tension Value (*T allow*) is 2601 / 1.4 / 2.0 x 1.2 = 1115 lbs.

Step 1b. The Table E.7(b) Strength Design Seismic Shear Value (*V allow*) for a 1/2" Carbon Steel Anchor with 3 5/8" embedment is 2369 lbs. Therefore, the Allowable Stress Design Seismic Shear Value (*V allow*) is 2369 / 1.4 / 2.0 x 1.2 = 1015 lbs.

Step 2. Using the Applied Seismic Tension Value (*T*) and the Applied Seismic Shear Value (*V*) based on an ASD Horizontal Earthquake Load (*F p w*) of 170 lbs, a 30o brace angle from vertical and designated angle category "A".

Step 2a. Calculate the ASD Applied Seismic Tension Value (*T*) on the anchor, including the effects of prying, using the formula:

C ? A

? ? ???? ??????? ? D??/A

where:

T = applied service tension load including the effect of prying

$F\ p\ w$ = Horizontal Earthquake Load ($F\ p\ w$ = 170)

Tan = Tangent of Brace Angle from vertical (*Tan*? 30o = 0.5774) A = 0.7500

B = 1.5000

C = 2.6250

D = 1.0000

$T = F\ p\ w \times Pr$

? ? ???? ??

2.625 ? 0.75

0.5774 ? ? 1.0??/0.75

? ? ???? ?5.8452 ? 1.0??/0.75

? ? ???? ??5.8452? ? 1.0??/0.75

4.8451

? ? ??? ?

?

0.75

? ? ??? x 6.46

? ? 170 lbs x 6.46 ? 1098.2 lbs

Step 2b. The ASD Applied Seismic Shear Value (*V*) on the anchor for anchor orientations “A”, “B” & “C” is equal to the ASD Horizontal Earthquake Load (*Fpw*) =

170 lbs.

Step 3 Calculate the maximum Allowable Horizontal Earthquake Load *Fpw* using the formula:

? ?

???????? ? ???????? ? 1.2

1098.2

170

? ? .9849 ? .1675 ? 1.1524 ?? ?. ??

? 1115 ? ? ?1015

Issue Date: August 18, 2015

Effective Date: September 7, 2015

(**Note: For further information on NFPA Codes and Standards, please see** www.nfpa.org/codelist)

Additional Proposed Changes

File Name	Description	Approved
TIA_13_16_2.pdf	NFPA TIA 16-2 (Log No. 1180)	

Statement of Problem and Substantiation for Public Input

NOTE: This public input originates from Tentative Interim Amendment No. 16-2 (Log 1180) issued by the Standards Council on August 18, 2015 and per the NFPA Regs., needs to be reconsidered by the Technical Committee for the next edition of the Document.

Submitter Information Verification

Submitter Full Name:	TC ON AUT-HBS
Organization:	NFPA
Affilliation:	TC on Hanging and Bracing of Water-Based Fire Protection Systems
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 17 12:50:04 EDT 2016

Tentative Interim Amendment

NFPA 13

Standard for the Installation of Sprinkler Systems

2016 Edition

Reference: 2.3.1, 3.11.9, A.3.11.9, 9.3.5.12, A.9.3.5.12, A.9.3.5.12.1 and E.7
TIA 16-2
(SC 15-8-15 / TIA Log #1180)

Note: Text of the TIA was issued and incorporated into the document prior to printing, therefore no separate publication is necessary.

1. Revise the reference in 2.3.1 to read as follows:

2.3.1 ACI Publications.
American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333.
ACI 318-14, *Building Code Requirements for Structural Concrete and Commentary*, 2014.
ACI 355.2, *Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary*, 2007.

2. Add a new definition on Prying Factor and corresponding annex to read as follows:

3.11.9* Prying Factor. A factor based on fitting geometry and brace angle from vertical that results in an increase in tension load due to the effects of prying between the upper seismic brace attachment fitting and the structure.

A. 3.11.9 Prying factors in NFPA 13 are utilized to determine the design loads for attachments to concrete. Prying is a particular concern for anchorage to concrete because the anchor may fail in a brittle fashion.

3. Revise section 9.3.5.12 as follows:

9.3.5.12* Fasteners.
9.3.5.12.1 The designated angle category for the fastener(s) used in the sway brace installation shall be determined in accordance with Figure 9.3.5.12.1.

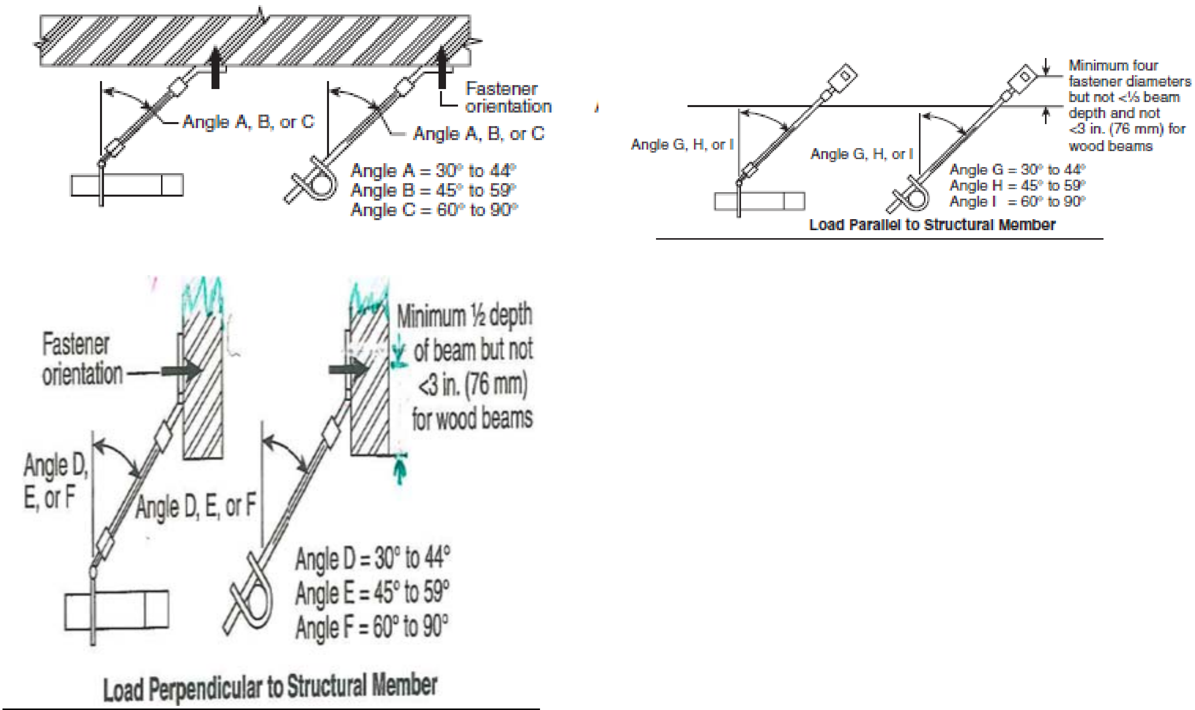


Figure 9.3.5.12.1 Designation of Angle Category Based on Angle of Sway Brace and Fastener Orientation.

9.3.5.12.~~1~~2* For individual fasteners, unless alternate allowable loads are determined and certified by a registered professional engineer, the loads determined in 9.3.5.9 shall not exceed the allowable loads provided in Tables 9.3.5.12.2(a) through 9.3.5.12.2(i)**.**

Table 9.3.5.12.2 (a) Maximum Load for Wedge Anchors in 3000 psi (207 bar) Lightweight Cracked Concrete on Metal Deck.

Wedge Anchors in 3000 psi Lightweight Cracked Concrete on Metal Deck (lbs.)										
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2	117	184	246	-	-	-	-	-	-
1/2	2 3/8	164	257	344	-	-	-	-	-	-
5/8	3 1/8	214	326	424	-	-	-	-	-	-
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2	69	127	196	-	-	-	-	-	-
1/2	2 3/8	97	178	274	-	-	-	-	-	-
5/8	3 1/8	133	232	346	-	-	-	-	-	-
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2	48	97	163	-	-	-	-	-	-
1/2	2 3/8	67	136	228	-	-	-	-	-	-
5/8	3 1/8	93	179	292	-	-	-	-	-	-
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2	36	75	139	-	-	-	-	-	-
1/2	2 3/8	51	106	196	-	-	-	-	-	-
5/8	3 1/8	71	146	252	-	-	-	-	-	-

* Pr = Prying Factor Range. (Refer to Annex for additional information.)
1 lb = 0.45 kg

Table 9.3.5.12.2 (b) Maximum Load for Wedge Anchors in 3000 psi (207 bar) Lightweight Cracked Concrete

Wedge Anchors in 3000 psi Lightweight Cracked Concrete (lbs.)										
Diameter (in.)	**Embedment (in.)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
		Pr < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2	102	144	175	101	144	184	87	128	152
1/2	2 3/8	140	196	238	137	196	251	118	174	207
5/8	3 1/4	222	308	372	215	308	397	220	272	323
3/4	4 1/8	327	469	580	336	469	586	289	426	504
Diameter (in.)	**Embedment (in.)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
		Pr 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2	69	109	150	87	109	121	76	110	133
1/2	2 3/8	94	149	205	119	149	166	104	150	181
5/8	3 1/4	151	237	322	187	237	265	201	236	285
3/4	4 1/8	217	351	492	286	351	380	252	362	436
Diameter (in.)	**Embedment (in.)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
		Pr 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2	52	88	132	76	88	90	68	97	118
1/2	2 3/8	71	121	180	104	121	124	93	132	161
5/8	3 1/4	114	192	284	165	192	198	185	208	254
3/4	4 1/8	162	280	427	249	280	281	223	315	385
Diameter (in.)	**Embedment (in.)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
		Pr 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2	41	74	117	68	74	70	61	86	106
1/2	2 3/8	56	101	160	93	101	97	84	118	145
5/8	3 1/4	91	161	253	148	161	157	172	186	230
3/4	4 1/8	124	233	378	221	233	214	200	279	344

* Pr = Prying Factor Range. (Refer to Annex for additional information.)
1 lb = 0.45 kg

Table 9.3.5.12.2 (c) Maximum Load for Wedge Anchors in 3000 psi (207 bar) Normal Weight Cracked Concrete

Wedge Anchors in 3000 psi Normal Weight Cracked Concrete (lbs.)										
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2	171	240	292	169	240	307	145	214	254
1/2	3 5/8	412	567	682	394	567	735	340	498	592
5/8	3 7/8	480	668	809	468	668	859	479	591	703
3/4	4 1/8	545	780	965	559	780	976	482	709	839
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2	116	183	252	146	183	203	128	184	223
1/2	3 5/8	282	438	592	344	438	493	302	434	523
5/8	3 7/8	327	512	699	406	512	571	438	512	618
3/4	4 1/8	363	584	819	477	584	634	420	604	727
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2	87	148	221	128	148	152	114	162	198
1/2	3 5/8	214	357	523	305	357	371	271	384	469
5/8	3 7/8	247	415	615	359	415	428	404	452	551
3/4	4 1/8	271	467	712	416	467	468	371	526	641
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2	69	124	197	115	124	118	103	145	178
1/2	3 5/8	173	301	469	274	301	296	247	345	425
5/8	3 7/8	197	349	549	321	349	337	374	404	498
3/4	4 1/8	208	389	629	369	389	357	333	465	573

* Pr = Prying Factor Range. (Refer to Annex for additional information.)
1 lb = 0.45 kg

Table 9.3.5.12.2 (d) Maximum Load for Wedge Anchors in 4000 psi (276 bar) Normal Weight Cracked Concrete

Wedge Anchors in 4000 psi Normal Weight Cracked Concrete (lbs.)										
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2	200	282	344	199	282	359	171	251	299
1/2	3 5/8	430	607	742	430	607	770	370	544	645
5/8	3 7/8	532	729	872	505	729	950	511	636	758
3/4	4 1/8	630	903	1117	647	903	1129	558	821	971
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2	135	214	295	171	214	236	150	216	261
1/2	3 5/8	289	460	636	370	460	506	325	467	563
5/8	3 7/8	367	566	760	442	566	642	470	557	672
3/4	4 1/8	419	676	948	552	676	733	486	699	841
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2	101	172	258	150	172	176	134	190	232
1/2	3 5/8	218	370	556	325	370	377	290	410	500
5/8	3 7/8	280	463	674	393	463	484	435	494	603
3/4	4 1/8	313	540	824	481	540	541	430	608	741
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2	79	144	230	134	144	137	121	169	209
1/2	3 5/8	170	310	494	289	310	292	261	365	449
5/8	3 7/8	226	391	605	354	391	389	406	445	547
3/4	4 1/8	241	449	728	427	449	413	386	538	663

* Pr = Prying Factor Range. (Refer to Annex for additional information.)
1 lb = 0.45 kg

Table 9.3.5.12.2(e) Maximum Load for Wedge Anchors in 6000 psi (414 bar) Normal Weight Cracked Concrete

Wedge Anchors in 6000 psi Normal Weight Cracked Concrete (lbs.)										
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	2 1/4	254	354	428	199	354	585	213	313	372
1/2	3 5/8	527	744	910	418	744	1227	454	667	791
5/8	3 7/8	652	893	1069	504	893	1481	626	780	928
3/4	4 1/8	772	1106	1369	622	1106	1819	684	1005	1190
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	2 1/4	172	271	370	215	271	302	188	271	327
1/2	3 5/8	355	564	780	453	564	621	399	573	690
5/8	3 7/8	450	694	932	542	694	786	576	682	823
3/4	4 1/8	514	828	1162	676	828	898	595	856	1030
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	2 1/4	130	219	325	189	219	226	169	239	292
1/2	3 5/8	267	454	682	398	454	462	355	502	613
5/8	3 7/8	343	567	826	481	567	593	534	606	739
3/4	4 1/8	384	662	1009	590	662	663	527	745	909
Diameter (in.)	Embedment (in.)	A	B	C	D	E	F	G	H	I
		Pr 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	2 1/4	103	184	290	170	184	178	153	214	263
1/2	3 5/8	209	380	606	355	380	358	320	447	551
5/8	3 7/8	277	480	741	433	480	476	497	545	671
3/4	4 1/8	295	551	892	523	551	506	473	660	813

* Pr = Prying Factor Range. (Refer to Annex for additional information.)
1 lb = 0.45 kg

Table 9.3.5.12.2(f) Maximum Load for Undercut Anchors in 3000 psi (207 bar) Normal Weight Cracked Concrete

Undercut Anchors in 3000 psi Normal Weight Cracked Concrete (lbs.)										
Diameter (in.)	**Embedment (in.)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
		Pr < 2.0	*Pr* < 1.1	*Pr* < 0.7	*Pr* < 1.2	*Pr* < 1.1	*Pr* < 1.1	*Pr* < 1.4	*Pr* < 0.9	*Pr* < 0.8
3/8	4 3/8	501	638	726	420	638	889	362	525	630
1/2	7	700	911	1051	608	911	1245	525	761	912
5/8	9 1/2	1106	1535	1855	1074	1535	1975	1098	1356	1612
3/4	12	1701	2404	2946	1707	2404	3041	1472	2161	2561
Diameter (in.)	**Embedment (in.)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
		Pr 2.1 - 3.5	*Pr* 1.2 - 1.8	*Pr* 0.8 - 1.0	*Pr* 1.3 - 1.7	*Pr* 1.2 - 1.8	*Pr* 1.2 - 2.0	*Pr* 1.5 - 1.9	*Pr* 1.0 - 1.3	*Pr* 0.9 - 1.1
3/8	4 3/8	368	526	658	381	526	643	333	477	578
1/2	7	505	738	942	547	738	882	479	685	829
5/8	9 1/2	754	1179	1604	933	1179	1318	1005	1177	1419
3/4	12	1143	1819	2520	1468	1819	1996	1291	1854	2233
Diameter (in.)	**Embedment (in.)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
		Pr 3.6 - 5.0	*Pr* 1.9 - 2.5	*Pr* 1.1 - 1.3	*Pr* 1.8 - 2.2	*Pr* 1.9 - 2.5	*Pr* 2.1 - 2.9	*Pr* 2.0 - 2.4	*Pr* 1.4 - 1.7	*Pr* 1.2 - 1.4
3/8	4 3/8	291	447	601	350	447	504	309	437	534
1/2	7	395	620	854	497	620	683	440	622	760
5/8	9 1/2	572	957	1413	825	957	989	927	1039	1268
3/4	12	860	1463	2202	1287	1463	1486	1149	1624	1980
Diameter (in.)	**Embedment (in.)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
		Pr 5.1 - 6.5	*Pr* 2.6 - 3.2	*Pr* 1.4 - 1.6	*Pr* 2.3 - 2.7	*Pr* 2.6 - 3.2	*Pr* 3.0 - 3.8	*Pr* 2.5 - 2.9	*Pr* 1.8 - 2.1	*Pr* 1.5 - 1.7
3/8	4 3/8	241	389	554	323	389	414	287	403	496
1/2	7	324	535	780	455	535	557	407	570	701
5/8	9 1/2	456	806	1263	739	806	781	859	931	1145
3/4	12	670	1223	1955	1146	1223	1147	1035	1444	1778

* Pr = Prying Factor Range. (Refer to Annex for additional information.)
1 lb = 0.45 kg

Table 9.3.5.12.2(g) Maximum Load for Connections to Steel Using Unfinished Steel Bolts

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

Table 9.3.5.12.2(h) Maximum Load for Through-Bolts in Sawn Lumber or Glue-Laminated Timbers

Through-Bolts in Sawn Lumber or Glue-Laminated Timbers (Load Perpendicular to Grain)																											
Length of Bolt in Timber (in.)	Bolt Diameter (in.)																										
	½									⅝									¾								
	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	H	I	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

Note: Wood fastener maximum capacity values are based on the 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 factors in Table 9.3.5.12.2(j).

Table 9.3.5.12.2(i) Maximum Load for Lag Screws and Lag Bolts in Wood

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									½									⅝								
	A	B	C	D	E	F	G	H	I	A	B	C	D	E	F	G	H	I	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 the 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 factors in Table 9.3.5.12.2(i).

Table 9.3.5.12.2(j) Factors for Wood Based on Specific Gravity

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

9.3.5.12.3* The type of fasteners used to secure the bracing assembly to the structure shall be limited to those shown in Tables 9.3.5.12.2(a) through 9.3.5.12.2(i) or to listed devices.

A.9.3.5.12.3 Listed devices may have accompanying software that performs the calculations to determine the allowable load.

9.3.5.12.4* For connections to wood, through-bolts with washers on each end shall be used, unless the requirements of 9.3.5.12.5 are met.

9.3.5.12.5 Where it is not practical to install through-bolts due to the thickness of the wood member in excess of 12 in. (305 mm) or inaccessibility, lag screws shall be permitted and holes shall be pre-drilled 1⁄8 in. (3.2 mm) smaller than the maximum root diameter of the lag screw.

9.3.5.12.6 Holes for through-bolts and similar listed attachments shall be 1⁄16 in. (1.6 mm) greater than the diameter of the bolt.

9.3.5.12.7 The requirements of 9.3.5.12 shall not apply to other fastening methods, which shall be acceptable for use if certified by a registered professional engineer to support the loads determined in accordance with the criteria in 9.3.5.9.

9.3.5.12.7.1 Calculations shall be submitted where required by the authority having jurisdiction.

9.3.5.12.8 Concrete Anchors.
9.3.5.12.~~7~~8.1* Concrete anchors shall be prequalified for seismic applications in accordance with ACI 355.2, *Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary*, and installed in accordance with the manufacturer's instructions.

A.9.3.5.12.8.1 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*.

9.3.5.12.8.2
Unless the requirements of 9.3.5.12.8.3 are met, concrete anchors shall be selected from Table 9.3.5.12.2(a) through Table 9.3.5.12.2(f) based on concrete strength, anchor type, designated angle category A through I, prying factor (*Pr*) range, and allowable maximum load.

9.3.5.12.8.2.1 Sway brace manufacturers shall provide prying factors (*Pr)* based on geometry of the structure attachment fitting and the designated angle category A through I as shown in Figure 9.3.5.12.1.

9.3.5.12.8.2.2 Where the prying factor for the fitting is unknown, the largest prying factor range in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) for the concrete strength and designated angle category A through I shall be used.

9.3.5.12.8.3 In lieu of using the concrete anchor loads in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f)**,** the allowable maximum load may be calculated.

(A) Allowable concrete anchor loads shall be permitted to be determined using approved software that considers the effects of prying for concrete anchors.

(B) Anchors shall be seismically prequalified per 9.3.5.12.8.1.

(C)Allowable maximum loads shall be based on the anchor capacities given in approved evaluation service reports, where the calculation of ASD allowable shear and tension values are determined in accordance with ACI 318, Chapter 17 and include the effects of prying, brace angle, and the over strength factor (**Ω**=2.0).

(D)* The shear and tension values determined in 9.3.5.12.8.3(C) using ACI 318, Chapter 17 shall be multiplied by 0.43.

A.9.3.5.12.8.3(D) The values from ACI 318, Chapter 17 are strength (LRFD) values that must be divided by 1.4 in order to convert them to ASD values. The factor of 0.43 was created to simplify the steps needed to account for the strength capacities and the ASD method of calculation. The 0.43 is a rounded value determined by 1.2 (allowable stress increase) divided by the quantity of 2.0 times 1.4 (i.e. 0.4286=1.2/(2.0*1.4)).

9.3.5.12.8.4 Concrete anchors other than those shown in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) shall be acceptable for use where designed in accordance with the requirements of the building code and certified by a registered professional engineer.

4. Revise A.9.3.5.12 to read as follows:

A.9.3.5.12
Current fasteners for anchoring to concrete are referred to as post-installed anchors. There are several types of post-installed anchors, including expansion anchors, chemical or adhesive anchors, and undercut anchors. The criteria in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) are based on the use of wedge expansion anchors and undercut anchors. Use of other anchors in concrete should be in accordance with the listing provisions of the anchor. Anchorage designs are usable under allowable stress design (ASD) methods.

Values in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) are based on ultimate strength design values obtained using the procedures in ACI 318-11, Appendix D, which are then adjusted for ASD. Wedge anchors are torque-controlled expansion anchors that are set by applying a torque to the anchor's nut, which causes the anchor to rise while the wedge stays in place. This causes the wedge to be pulled onto a coned section of the anchor and presses the wedge against the wall of the hole. Undercut anchors might or might not be torque-controlled. Typically, the main hole is drilled, a special second drill bit is inserted into the hole, and flare is drilled at the base of the main hole. Some anchors are self-drilling and do not require a second drill bit. The anchor is then inserted into the hole and, when torque is applied, the bottom of the anchor flares out into the flared hole, and a mechanical lock is obtained. Consideration should be given with respect to the position near the edge of a slab and the spacing of anchors. For full capacity in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f)**,** the edge distance spacing between anchors and thickness of concrete should conform to the anchor manufacturer’s recommendations.

Calculation of ASD Shear and Tension Values to be used in A.9.3.5.12.1 calculations should be performed in accordance with ACI 318, Chapter 17 formulas using the variables and recommendations obtained from the approved evaluation service reports (such as ICC-ES Reports) for a particular anchor, which should then be adjusted to ASD values. All post-installed concrete anchors must be prequalified in accordance with ACI 355.2 or other approved qualification procedures. This information is usually available from the anchor manufacturer.

The variables below are among those contained in the approved evaluation reports for use in ACI 318, Chapter 17 calculations. These variables do not include the allowable tension and shear capacities, but provide the information needed to calculate them. The strength design capacities must be calculated using the appropriate procedures in ACI 318 Chapter 17, and then converted to allowable stress design capacities.
D_a = Anchor diameter
h_{nom} = Nominal Embedment
h_{ef} = Effective Embedment
h_{min} = Min. Concrete Thickness

C_{ac} = Critical Edge Distance
N_{sa} = Steel Strength in Tension
l_e = Length of Anchor in Shear
$N_{p,cr}$ = Pull-Out Strength Cracked Concrete
K_{cp} = Coefficient for Pryout Strength
$V_{sa,eq}$ = Shear Strength Single Anchor Seismic Loads
$V_{st.deck,eq}$ = Shear Strength Single Anchor Seismic Loads installed through the soffit of the metal deck

5. Replace A.9.3.5.12.1 with the following (retain and renumber all figures):

A.9.3.5.12.~~1~~2 The values for the wedge anchor tables and the undercut anchor tables have been developed using the following formula:

$$\left(\frac{T}{Tallow}\right) + \left(\frac{V}{Vallow}\right) \leq 1.2$$

where:

T = applied service tension load including the effect of prying (F_{pw} x Pr)
F_{pw} = Horizontal Earthquake Load
Pr = prying factor based on fitting geometry and brace angle from vertical
T_{allow} = allowable service tension load
V = applied service shear load
V_{allow} = allowable service shear load

$T/\ T_{allow}$ shall not be greater than 1.0.
$V/\ V_{allow}$ shall not be greater than 1.0.

The allowable tension and shear loads come from the anchor manufacturer's published data. The design loads have been amplified by an over-strength factor of 2.0, and the allowable strength of the anchors has been increased by a factor of 1.2. The effect of prying on the tension applied to the anchor is considered when developing appropriate capacity values. The applied tension equation includes the prying effect which varies with the orientation of the fastener in relationship to the brace necessary at various brace angles. The letters A through D in the following equations are dimensions of the attachment geometry as indicated in Figures A.9.3.5.12.2(a) through A.9.3.5.12.2(c).
where:

Cr = critical angle at which prying flips to the toe or the heel of the structure attachment fitting.
Pr = Prying factor for service tension load effect of prying
$Tan\Theta$ = Tangent of Brace Angle from vertical
$Sin\Theta$ = Sine of Brace Angle from vertical
The greater Pr value calculated in Tension or Compression applies
The Pr value cannot be less than 1.000/$Tan\Theta$ for designated angle category A, B and C, 1.000 for designated angle category D, E and F or 0.000 for designated angle category G, H, and I.

For designated angle category A, B and C, the Applied Tension including the effect of prying (Pr) is as follows:

$$Cr = Tan^{-1}(\frac{C}{D})$$

For braces acting in **TENSION**:
If Cr >Brace angle from vertical

$$Pr = \left(\left(\frac{\mathrm{C}+\mathrm{A}}{Tan\Theta}\right) - \mathrm{D}\right)/\mathrm{A}$$

If Cr < Brace angle from vertical

$$Pr = (D - \left(\frac{C-B}{Tan\Theta}\right))/B$$

For braces acting in **COMPRESSION**:

If Cr > Brace angle from vertical

$$Pr = (\left(\frac{C-B}{Tan\Theta}\right) - D)/B$$

If Cr < Brace angle from vertical

$$Pr = (D - \left(\frac{C+A}{Tan\Theta}\right))/A$$

For designated angle category D, E and F, the Applied Tension including the effect of prying (Pr) is as follows:

$$Cr = Tan^{-1}(\frac{D}{C})$$

For braces acting in **TENSION**:

If Cr >Brace angle from vertical

$$Pr = \left(\left(\frac{\mathrm{D}}{Tan\Theta}\right) - (C-B)\right)/\mathrm{B}$$

If Cr < Brace angle from vertical

$$Pr = ((\mathrm{C}+\mathrm{A}) - \left(\frac{\mathrm{D}}{Tan\Theta}\right))/\mathrm{A}$$

For braces acting in **COMPRESSION**:

If Cr > Brace angle from vertical

$$Pr = \left(\left(\frac{\mathrm{D}}{Tan\Theta}\right) - (C+A)\right)/\mathrm{A}$$

If Cr < Brace angle from vertical

$$Pr = ((\mathrm{C}-B) - \left(\frac{\mathrm{D}}{Tan\Theta}\right))/\mathrm{B}$$

For designated angle category G, H and I the Applied Tension including the effect of prying (Pr) is as follows:

For braces acting in **TENSION**:

$$Pr = (\frac{\mathrm{D}}{\mathrm{B}})/Sin\theta$$

For braces acting in **COMPRESSION**:

$$\mathrm{Pr} = (\frac{D}{A})/Sin\ \theta$$

The lightweight concrete anchor tables 9.3.5.12.2(a) and (b) were based on sand lightweight concrete which represents a conservative assumption for the strength of the material. For seismic applications cracked concrete was assumed.

6. Add a new Annex E.7 to read as follows:

E.7 Allowable Loads for Concrete Anchors. The following sections provide step-by-step examples of the procedures for determining the allowable loads for concrete anchors as they are found in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f). Tables 9.3.5.12.2(a) through (f) were developed using the prying factors found in Table E.7(a) and the representative strength design seismic shear and tension values for concrete anchors found in Table E.7(b).

Table E.7(a) Prying Factors for Table 9.3.5.12.2(a) through Table 9.3.5.12.2(f) Concrete Anchors

Pr Range	**Fig. 9.3.5.12.1** Designated Angle Category								
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Lowest	2.0	1.1	0.7	1.2	1.1	1.1	1.4	0.9	0.8
Low	3.5	1.8	1.0	1.7	1.8	2.0	1.9	1.3	1.1
High	5.0	2.5	1.3	2.2	2.5	2.9	2.4	1.7	1.4
Highest	6.5	3.2	1.6	2.7	3.2	3.8	2.9	2.1	1.7

Table E.7(b)Representative Strength Design Seismic Shear and Tension Values Used for Concrete Anchors

Wedge Anchors in 3000 psi LW Sand Concrete on Metal Deck			
Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	573	1172
1/2	2.375	804	1616
5/8	3.125	1102	1744

Wedge Anchors in 3000 psi LW Sand Concrete			
Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	637	550
1/2	3.625	871	745
5/8	3.875	1403	1140
3/4	4.125	1908	1932

Wedge Anchors in 3000 psi NW Concrete			
Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	1063	917
1/2	3.625	2639	2052
5/8	3.875	3004	2489
3/4	4.125	3179	3206

Wedge Anchors in 4000 psi NW Concrete			
Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2	1226	1088
1/2	3.625	2601	2369
5/8	3.875	3469	2586
3/4	4.125	3671	3717

Wedge Anchors in 6000 psi NW Concrete			
Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	2.25	1592	1322
1/2	3.625	3186	2902
5/8	3.875	4249	3167
3/4	4.125	4497	4553

Undercut Anchors in 3000 psi NW Concrete			
Anchor Dia. (in.)	Nominal Embedment (in.)	LRFD Tension (lbs.)	LRFD Shear (lbs.)
3/8	5	4096	1867
1/2	7	5322	2800
5/8	9.5	6942	5675
3/4	12	10182	9460

E.7.1 Procedure for Selecting a Wedge Anchor Using Tables 9.3.5.12.2(a) through 9.3.5.12.2(f).

Step 1. Determine the ASD Horizontal Earthquake Load F_{pw}.

Step 1a. Calculate the weight of the water-filled pipe within the Zone of Influence of the brace.

Step 1b. Find the applicable Seismic Coefficient C_p in Table 9.3.5.9.3

Step 1c. Multiply the Zone of Influence weight by C_p to determine the ASD Horizontal Earthquake Load F_{pw}.

Step 2. Select a concrete anchor from Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) with a maximum load capacity that is greater than the calculated horizontal earthquake load F_{pw} from Step 1.

Step 2a. Locate the table for the applicable concrete strength.

Step 2b. Find the column in the selected table for the applicable designated angle category (A thru I) and the appropriate prying factor *Pr* range.

Step 2c. Scan down the category column to find a concrete anchor diameter, embedment depth, and maximum load capacity that is greater than the calculated horizontal earthquake load F_{pw} from Step 1.

(ALTERNATIVE) Step 2. As an alternative to using the maximum load values in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f), select an AC355.2 seismically pre-qualified concrete anchor with a load-carrying capacity that exceeds the calculated F_{pw}, with calculations, including the effects of prying, based on seismic shear and tension values taken from an ICC-ES Report and calculated in accordance with ACI 318, Chapter 17 and adjusted to ASD values by multiplying by 0.43 per 9.3.5.12.8.3(D).

EXAMPLE

Step 1. Zone of Influence F_{pw}.

Step 1a.

40 ft. of 2½" Sch. 10 pipe plus 15% Fitting Allowance

40 x 5.89 lbs/ft x 1.15 = 270.94 lbs

Step 1b. Seismic Coefficient *Cp* from Table 9.3.5.9.3

C_p = 0.35

Step 1c. F_{pw} = 0.35 x 270.94 = 94.8 lbs.

Step 2. Select a concrete anchor from Tables 9.3.5.12.2(a) through 9.3.5.12.2(f).

Step 2a. Using the table for 4000 psi Normal Weight Concrete.

Step 2b. Fastener Orientation "A" – assume the manufacturers prying factor is 3.0 for the fitting. Use the *Pr* range of 2.1 – 3.5.

Step 2c. Allowable F_{pw} on 3/8" dia. with 2" embedment = 135 lbs and is greater than the Calculated F_{pw} of 94.8 lbs.

E.7.2 Calculation Procedure for Maximum Load Capacity of Concrete Anchors. This example shows how the effects of prying and brace angle are calculated.

Step 1. Determine the Allowable Seismic Tension Value (T_{allow}) and the Allowable Seismic Shear Value (V_{allow}) for the anchor, based on data found in the in the anchor manufacturer's approved evaluation report. Note that, in this example, it is assumed the evaluation report provides the allowable tension and shear capacities. If this is not the case, then the strength design anchor capacities must be determined using the procedures in ACI 318, Chapter 17, which are then converted to ASD values by dividing by a factor of 1.4. As an alternative to calculating the Allowable Seismic Tension Value (T_{allow}) and the Allowable Seismic Shear Value (V_{allow}) for the anchor, the seismic tension and shear values that were used to calculate the Figure 9.3.5.12.1 for anchor allowable load tables may be used.

Step 1a. Find the ASD Seismic Tension capacity (T_{allow}) for the anchor according to the strength of concrete, diameter of the anchor, and embedment depth of the anchor. Divide the ASD tension value by 2.0 and then multiply by 1.2.

Step 1b. Find the ASD Seismic Shear capacity (V_{allow}) for the anchor according to the strength of concrete, diameter of the anchor, and embedment depth of the anchor. Divide the ASD shear value by 2.0 and then multiply by 1.2.

Step 2. Calculate the Applied Seismic Tension (T) and the Applied Seismic Shear (V) based on the Calculated Horizontal Earthquake Load F_{pw}.

Step 2a. Calculate the designated angle category Applied Tension Factor Including the Effects of Prying (Pr) using the following formulas:

Category "A", "B" and "C"

$$Pr = \left(\left(\frac{\mathrm{C} + \mathrm{A}}{Tan\theta}\right) - \mathrm{D}\right)/\mathrm{A}$$

<u>Category "D", "E" and "F"</u>

$$Pr = ((\mathrm{C} + \mathrm{A}) - \left(\frac{\mathrm{D}}{Tan\theta}\right))/\mathrm{A}$$

Category "G", "H" and "I"

$$Pr = \left(\frac{D}{B}\right) / \ Sin\theta$$

Step 2b. Calculate the ASD Applied Seismic Tension (*T*) on the anchor, including the effects of prying, and when applied at the applicable brace angle from vertical and the designated angle category (A thru I) using the following formula:

$$T = F_{pw} \text{ x } Pr$$

Step 2c. Calculate the ASD Applied Seismic Shear (*V*) on the anchor, when applied at the applicable brace angle from vertical and the designated angle category (A thru I) using the following formulas:

Category "A", "B" and "C"

$$V = F_{pw}$$

Category "D", "E" and "F"

$$V = Fpw/Tan\theta$$

Category "G", "H" and "I"

$$V = F_{pw}/Sin\theta$$

Step 3. Check the anchor for combined tension and shear loads using the formula:

$$\left(\frac{T}{Tallow}\right) + \left(\frac{V}{Vallow}\right) \leq 1.2$$

Confirm T/T_{allow} *&* $V/V_{allow} <= 1.0$

EXAMPLE
Sample Calculation, Maximum Load Capacity
of
Concrete Anchors as Shown in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f)

In this example, a sample calculation is provided showing how the values in Tables 9.3.5.12.2(a) through 9.3.5.12.2(f) were calculated.

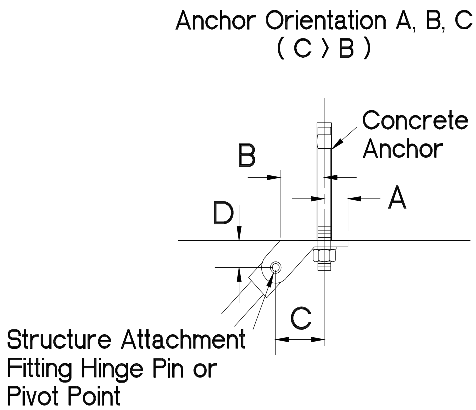
Step 1. Determine the Allowable Seismic Tension Value (T_{allow}) and the Allowable Seismic Shear Value (V_{allow}) for a concrete anchor in Figure 9.3.5.12.1.

Step 1a. The Table E.7(b) Strength Design Seismic Tension Value (T_{allow}) for a 1/2" Carbon Steel Anchor with 3 5/8" Embedment Depth in 4,000 psi Normal Weight Concrete is 2601 lbs. Therefore, the Allowable Stress Design Seismic Tension Value (T_{allow}) is 2601 / 1.4 / 2.0 x 1.2 = 1115 lbs.
Step 1b. The Table E.7(b) Strength Design Seismic Shear Value (V_{allow}) for a 1/2" Carbon Steel Anchor with 3 5/8" embedment is 2369 lbs. Therefore, the Allowable Stress Design Seismic Shear Value (V_{allow}) is 2369 / 1.4 / 2.0 x 1.2 = 1015 lbs.

Step 2. Using the Applied Seismic Tension Value (T) and the Applied Seismic Shear Value (V) based on an ASD Horizontal Earthquake Load (F_{pw}) of 170 lbs, a 30° brace angle from vertical and designated angle category "A".

Step 2a. Calculate the ASD Applied Seismic Tension Value (T) on the anchor, including the effects of prying, using the formula:

$$T = (Fpw\left(\left(\frac{\mathrm{C}+\mathrm{A}}{Tan\theta}\right) - \mathrm{D}\right))/\mathrm{A}$$



where:
T = applied service tension load including the effect of prying
F_{pw} = Horizontal Earthquake Load (F_{pw} = 170)
Tan = Tangent of Brace Angle from vertical ($Tan\,\theta$ 30° = 0.5774)
A = 0.7500
B = 1.5000
C = 2.6250
D = 1.0000

$T = F_{pw}$ x Pr

$$T = (Fpw\left(\left(\frac{2.625+0.75}{0.5774}\right) - 1.0\right))/0.75$$

$$T = (Fpw\ (5.8452 - 1.0))/0.75$$

$$T = (Fpw\ ((5.8452) - 1.0))/0.75$$

$$T = Fpw\ (\frac{4.8451}{0.75})$$

$$T = Fpw \text{ x } 6.46$$

$$T = 170 \text{ lbs x } 6.46 = 1098.2 \text{ lbs}$$

Step 2b. The ASD Applied Seismic Shear Value (V) on the anchor for anchor orientations "A", "B" & "C" is equal to the ASD Horizontal Earthquake Load (Fpw) = 170 lbs.

Step 3 Calculate the maximum Allowable Horizontal Earthquake Load Fpw using the formula:

$$\left(\frac{T}{Tallow}\right) + \left(\frac{V}{Vallow}\right) \leq 1.2$$

$$\left(\frac{1098.2}{1115}\right) + \left(\frac{170}{1015}\right) = .9849 + .1675 = 1.1524\ (\leq \mathbf{1.2})$$

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(**Note: For further information on NFPA Codes and Standards, please see** www.nfpa.org/codelist)

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25.2.1.5* The test pressure shall be read from a gauge located at the low elevation point of the system or portion being tested. ~~The pressures in piping at higher elevations shall be permitted to be less than 200 psi (13.8 bar) when accounting for elevation losses.~~ Systems or portions of systems that can be isolated shall be permitted to be tested separately.

A.25.2.1.5 The pressures in piping at higher elevations is permitted to be less than 200 psi (13.8 bar) when accounting for elevation losses. As an example, in a system that had piping at an elevation that was 25 ft ....

Statement of Problem and Substantiation for Public Input

This is explanatory text and belongs in the annex.

Submitter Information Verification

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Public Input No. 488-NFPA 13-2016 [Global Input]

8.6.5 Obstructions to Sprinkler Discharge (Standard Pendent and Upright Spray Sprinklers).

8.6.5.1 ~~Performance Objective.~~ General

8.6.5.1.1 Sprinklers shall be located so as to minimize obstructions to discharge as defined in 8.6.5 ~~8.6.5.2 and 8.6.5.3,~~ or additional sprinklers shall be provided to ensure adequate coverage of the hazard.

8.6.5.1.2 Sprinklers shall be arranged to comply with one of the following sections:

(1) 8.6.5.2 when the top of continuous and noncontinuous obstructions are above the deflector

(2) 8.6.5.3 when the top of continuous and noncontinuous obstructions are on the same plane or less than or equal to 18 inches below the deflector

(3) 8.6.5.4 when the top of continuous and noncontinuous obstructions are greater than 18 inches below the sprinkler deflector

8.6.5.2 Obstructions Above the Sprinkler Deflector

Table 8.6.5.2.1 ~~8.6.5.1.2~~

Figure 8.6.5.2.1(a) ~~8.6.5.1.2(a)~~

Figure 8.6.5.2.1(b) ~~8.6.5.1.2(b)~~

Figure 8.6.5.2.1(c) ~~8.6.5.1.2(c)~~

8.6.5.2.1 * **~~8.6.5.1.2~~*** Sprinklers shall be arranged to comply with one of the following arrangements:

(1) Subsection 8.5.5.2, Table 8.6.5.2.1 ~~8.6.5.1.2~~, and Figure 8.6.5.2.1(a) ~~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) Sprinklers shall be installed under fixed obstructions over 4 ft (1.2 m) wide for light and ordinary hazard occupancies.

(~~3~~ 4) Obstructions located against the wall and that are not over 30 in. (750 mm) in width shall be permitted to be protected in accordance with Figure 8.6.5.2.1(b) ~~8.6.5.1.2(b).~~ ?

(~~4~~ 5) Obstructions located against the wall and that are not over 24 in. (600 mm) in width shall be permitted to be protected in accordance with Figure 8.6.5.2.1(c) ~~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. ?

8.6.5.3 ~~8.6.5.2~~ Obstructions to Sprinkler Discharge Pattern Development.

8.6.5.3.1 ~~8.6.5.2.1~~ General.

~~**8.6.5.2.1.1** Continuous or noncontinuous obstructions less than or equal to 18 in. (450 mm) below the sprinkler deflector that prevent the pattern from fully developing shall comply with 8.6.5.2.~~

~~**8.6.5.2.1.2** Regardless of the rules of 8.6.5.2, solid continuous obstructions, where the top of the obstruction is level with or above the plane of the deflector, shall meet the applicable requirements of 8.6.5.1.2.~~

8.6.5.3.1.1 Sprinklers shall be installed under fixed obstructions over 4 ft (1.2 m) wide for light and ordinary hazard occupancies.

8.6.5.3.1.2 * **~~8.6.5.2.1.3*~~ Minimum Distance from Obstructions.** Unless the requirements of 8.6.5.3.1.3 ~~8.6.5.2.1.4~~ through 8.6.5.3.1.8 ~~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) in accordance with Figure 8.6.5.3.1.2(a) ~~8.6.5.2.1.3(a)~~ and Figure 8.6.5.3.1.2(b) ~~8.6.5.2.1.3(b)~~.

(A) The maximum clear distance required shall be 24 in. (600 mm).

(B) The maximum clear distance shall not be applied to obstructions in the vertical orientation (e.g., columns).

8.6.5.3.1.3 * ~~8.6.5.2.1.4*~~ For light and ordinary hazard occupancies, structural members only shall be considered when applying the requirements of **8.6.5.3.1.2** ~~8.6.5.2.1.3~~.

8.6.5.3.1.4 ~~8.6.5.2.1.5~~ Sprinklers shall be permitted to be spaced on opposite sides of the obstruction where the distance from the centerline of the obstruction to the sprinklers does not exceed one-half the allowable distance between sprinklers.

8.6.5.3.1.5 ~~8.6.5.2.1.6~~ Sprinklers shall be permitted to be located one-half the distance between the obstructions where the obstruction consists of open trusses 20 in. (500 mm) or greater apart [24 in. (600 mm) on center], provided that all truss members are not greater than 4 in. (100 mm) (nominal) in width.

8.6.5.3.1.6 ~~8.6.5.2.1.7~~ Sprinklers shall be permitted to be installed on the centerline of a truss or bar joist or directly above a beam, provided that the truss chord or beam dimension is not more than 8 in. (200 mm) and the sprinkler deflector is located at least 6 in. (150 mm) above the structural member and where the sprinkler is positioned at a distance three times greater than the maximum dimension of the web members away from the web members.

8.6.5.3.1.7 ~~8.6.5.2.1.8~~ The requirements of **8.6.5.3.1.2** ~~8.6.5.2.1.3~~ shall not apply to sprinkler system piping less than 3 in. (80 mm) in diameter.

8.6.5.3.1.8 ~~8.6.5.2.1.9~~ The requirements of **8.6.5.3.1.2** ~~8.6.5.2.1.3~~ shall not apply to sprinklers positioned with respect to obstructions in accordance with **8.6.5.2.1** ~~8.6.5.1.2~~.

8.6.5.3.1.9 * ~~8.6.5.2.1.10*~~ Sprinklers shall be permitted to be placed without regard to the blades of ceiling fans less than 60 in. (1.5 m) in diameter, provided the plan view of the fan is at least 50 percent open.

8.6.5.3.2 ~~8.6.5.2.2~~ **Suspended or Floor-Mounted Vertical Obstructions.**

Table 8.6.5.3.2 ~~8.6.5.2.2~~

Figure 8.6.5.3.2 ~~8.6.5.2.2~~

The distance from sprinklers to privacy curtains, freestanding partitions, room dividers, and similar obstructions in light hazard occupancies shall be in accordance with Table 8.6.5.3.2 ~~8.6.5.2.2~~ and Figure 8.6.5.3.2 ~~8.6.5.2.2~~.

8.6.5.3.2.1* ~~8.6.5.2.2.1*~~ In light hazard occupancies, privacy curtains, as shown in Figure 8.6.5.3.2 ~~8.6.5.2.2~~, shall not be considered obstructions where all of the following are met:

(1) The curtains are supported by fabric mesh on ceiling track. ?

(2) Openings in the mesh are equal to 70 percent or greater. ?

(3) The mesh extends a minimum of 22 in. (550 mm) down ?from ceiling. ?

8.6.5.4 * ~~8.6.5.3*~~ **Obstructions that Prevent Sprinkler Discharge from Reaching Hazard.**

8.6.5.4.1 ~~8.6.5.3.1~~ Continuous or noncontinuous obstructions that interrupt the water discharge in a horizontal plane more than 18 in. (450 mm) below the sprinkler deflector in a manner to limit the distribution from reaching the protected hazard shall comply with **8.6.5.4** ~~8.6.5.3.~~

~~8.6.5.3.2 The requirements of 8.6.5.3 shall also apply to obstructions 18 in. (450 mm) or less below the sprinkler for light and ordinary hazard occupancies.~~

8.6.5.4.2 * ~~8.6.5.3.3*~~ Sprinklers shall be installed under fixed obstructions over 4 ft (1.2 m) wide.

8.6.5.4.3 ~~8.6.5.3.4~~ Sprinklers shall not be required below obstructions that are not fixed in place, such as conference tables.

8.6.5.4.4 ~~8.6.5.3.5~~ Sprinklers installed under open gratings shall be of the intermediate level/rack storage type or otherwise shielded from the discharge of overhead sprinklers.

8.6.5.4.5 ~~8.6.5.3.6~~ The deflector of automatic sprinklers installed under fixed obstructions shall be positioned no more than 12 in. (300 mm) below the bottom of the obstruction.

8.6.5.4.6 ~~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.

Statement of Problem and Substantiation for Public Input

This change is just editorial but it does fix a couple of problems.
The flow of information on when to apply which section for obstructions less than 18 inches below the sprinkler is convoluted. 8.6.5.1 is titled performance objectives but the majority of the text is about obstructions close to the ceiling. These obstructions are also less than 18 inches below the deflector so technically belongs under the title of 8.6.5.2. This lead to the need to previously add 8.6.5.2.1.2 to attempt to differentiate between the two sections. 8.6.5.3 addresses obstructions greater than 18 inches below the deflector and yet 8.6.5.3.2 provides criteria for obstructions less than 18 inches below the deflector. I retained the interesting restriction that this criteria applies only to light and ordinary hazard occupancies when located less than 18 inches but not for greater than 18 inches (though submitted a separate PI)
The new format more cleanly directs the user on which section is to be applied, makes some existing text unnecessary, and provides criteria in the correct locations (by title).
If accepted:
A - the sections numbers for the Annex material needs to be modified and a very minor amount of editing such as Figure A.8.6.5.1.2 and associated text (another example of text in the wrong location)
B - the other sprinkler types need to be reformatted

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Submittal Date: Tue Jun 28 12:45:24 EDT 2016

Public Input No. 526-NFPA 13-2016 [Global Input]

Throughout the standard, when referring to Group A plastic commodities, revise the word "uncartoned" to "exposed" and similarly revise "unexpanded" to "nonexpanded".

Statement of Problem and Substantiation for Public Input

During the previous cycle, First Revision No. 177 took the action to revise the word "uncartoned" to "exposed" and similarly revise "unexpanded" to "nonexpanded" throughout the standard. However the term "uncartoned" is still in place in several places and the term "unexpanded" was retained in numerous locations. Therefore, for this cycle the change of terminology should be completed. For clarity, the verbiage used should always be consistent.

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Public Input No. 405-NFPA 13-2016 [Section No. 1.7.2]

1.7.2

Materials or devices not specifically designated by this standard shall be utilized in complete accord with all conditions, requirements, and limitations of their listings.

1.7.2.1* Devices and equipment utilized to perform automated inspection and testing procedures that are not subjected to system pressure shall not be required to be listed.

1.7.2.2* Devices and equipment utilized to perform distance monitoring of system or component status that are not subjected to system pressure shall not be required to be listed.

Statement of Problem and Substantiation for Public Input

Technology now allows for monitoring certain conditions of a sprinkler system from a distance as well as automated inspection and testing procedures. When the device is external to the sprinkler system, doesn't enter the system piping and is not subject to system pressure there isn't a need to have it listed.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 408-NFPA 13-2016 [New Section after A.1.6.3]	
Public Input No. 412-NFPA 13-2016 [New Section after 3.3.7]	
Public Input No. 413-NFPA 13-2016 [Section No. 6.1.1.5]	

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Submittal Date: Mon Jun 27 16:06:37 EDT 2016

Public Input No. 1-NFPA 13-2015 [Chapter 2]

Chapter 2 Referenced Publications

2.1 General.

The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam,* 2016 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems,* 2013 edition.

NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection,* 2012 edition.

NFPA 16, *Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems,* 2015 edition.

NFPA 17, *Standard for Dry Chemical Extinguishing Systems,* 2013 edition.

NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection,* 2016 edition.

NFPA 22, *Standard for Water Tanks for Private Fire Protection,* 2013 edition.

NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances,* 2016 edition.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems,* 2014 edition.

NFPA 30, *Flammable and Combustible Liquids Code,* 2015 edition.

NFPA 30B, *Code for the Manufacture and Storage of Aerosol Products,* 2015 edition.

NFPA 33, *Standard for Spray Application Using Flammable or Combustible Materials,* 2016 edition.

NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Film,* 2016 edition.

NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work,* 2014 edition.

NFPA 70® , *National Electrical Code®,* 2014 edition.

NFPA 72® , *National Fire Alarm and Signaling Code,* 2016 edition.

NFPA 82, *Standard on Incinerators and Waste and Linen Handling Systems and Equipment,* 2014 edition.

NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations,* 2014 edition.

NFPA 101® , *Life Safety Code®,* 2015 edition.

NFPA 120, *Standard for Fire Prevention and Control in Coal Mines,* 2015 edition.

NFPA 170, *Standard for Fire Safety and Emergency Symbols,* 2015 edition.

NFPA 214, *Standard on Water-Cooling Towers,* 2011 edition.

NFPA 259, *Standard Test Method for Potential Heat of Building Materials,* 2013 edition.

NFPA 400, *Hazardous Materials Code,* 2016 edition.

NFPA 409, *Standard on Aircraft Hangars,* 2016 edition.

NFPA 703, *Standard for Fire Retardant–Treated Wood and Fire-Retardant Coatings for Building Materials,* 2015 edition.

NFPA 750, *Standard on Water Mist Fire Protection Systems,* 2015 edition.

NFPA 780, *Standard for the Installation of Lightning Protection Systems,* 2014 edition.

NFPA 804, *Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants,* 2015 edition.

NFPA 909, *Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship,* 2013 edition.

NFPA 1963, *Standard for Fire Hose Connections,* 2014 edition.

2.3 Other Publications.

2.3.1 ACI Publications.

American Concrete Institue, ~~P.O. Box 9094~~ **38800 Country Club Dr.** , Farmington Hills, MI ~~48333~~ **48331-3439** .

ACI 318, *Building Code Requirements for Structural Concrete and Commentary*, 2014**, Errata, 2015** .

ACI 355.2, *Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary*, 2007.

2.3.2 ASCE Publications.

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

SEI/ASCE 7-10 including Supplement 1, *Minimum Design Loads of Buildings and Other Structures,* 2013.

2.3.3 ASME Publications.

~~American Society of Mechanical Engineers~~ **ASME International** , Two Park Avenue, New York, NY 10016-5990.

Boiler and Pressure Vessel Code, Section IX — “Welding**,** Brazing **and** ~~Brazing Qualifications~~ **Fusing** Qualifications ,” ~~2004~~ **2015** .

ASME A17.1, *Safety Code for Elevators and Escalators*, ~~2010~~ **2013** /CSA B44-~~10~~ **13** .

ASME B1.20.1, *Pipe Threads, General Purpose (Inch)*, ~~2001~~ **2013** .

ASME B16.1,~~Cast~~ ***Gray*** *Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, and 250*, ~~1998~~ **2015** .

ASME B16.3, *Malleable Iron Threaded Fittings, Classes 150 and 300*, ~~1998~~ **2011** .

ASME B16.4,~~Cast~~ ***Gray*** *Iron Threaded Fittings, Classes 125 and 250*, ~~1998~~ **2011** .

ASME B16.5, *Pipe Flanges and Flanged Fittings*~~, 1996~~ **NPS 1/2 Through 24 Metric/Inch Standard , 2013** .

ASME B16.9, *Factory-Made Wrought Steel Buttwelding Fittings*, ~~2001~~ **2012** .

ASME B16.11, *Forged ~~Steel~~ Fittings, Socket-Welding and Threaded*, ~~1996~~ **2011** .

ASME B16.15, *Cast Copper Alloy Threaded Fittings Classes 125 and 250*, ~~2011~~ **2013** .

ASME B16.18, *Cast Copper Alloy Solder Joint Pressure Fittings*, ~~1994~~ **2012** .

ASME B16.22, *Wrought Copper and Copper Alloy Solder***-** *Joint Pressure Fittings*, ~~1995~~ **2013** .

ASME B16.25, *Buttwelding Ends*, ~~1997~~ **2012** .

~~ANSI/~~ ASME B31.1, *~~Code for~~ Power Piping*, ~~2001~~ **2014** .

~~ANSI/~~ ASME B36.10M, *Welded and Seamless Wrought Steel Pipe*, ~~2000~~ **2015** .

2.3.4 ASTM Publications.

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

~~ANSI/~~ ASTM A53/A53M, *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless*, 2012.

ASTM A106/A106M, *Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service*, ~~2013~~ **2015** .

ASTM A135/A135M, *Standard Specification for Electric-Resistance-Welded Steel Pipe*, 2009 ~~(~~ **, reapproved 2014** ~~)~~ .

ASTM A153A/153M, *Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware*, ~~2009~~ **2016** .

ASTM A234/A234M, *Standard Specification for Piping Fittings of Wrought-Carbon Steel and Alloy Steel for Moderate and High Temperature Service*, ~~2013 e1~~ **2015** .

ASTM A795/A795M, *Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use*, 2013.

ASTM B32, *Standard Specification for Solder Metal*, 2008**, reapproved 2014** .

ASTM B43, *Specification for Seamless Red Brass Pipe* **,** ~~2009~~ **Standard Sizes , 2015** .

ASTM B75**/B75M** , *Standard Specification for Seamless Copper Tube*, 2011.

ASTM B88, *Standard Specification for Seamless Copper Water Tube*, ~~2009~~ **2014** .

ASTM B251, *Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube*, 2010.

ASTM B446, *Standard Specification for Nickel-Chromium-Molybdenum-Columbium Alloy (UNSN 06625) and Nickel-Chromium-Molybdenum-Silicon Alloy (UNSN 06219) Rod and Bar*, 2003 ~~(2008) e1~~ **, reapproved 2014** .

ASTM B813, *Standard Specification for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper-Alloy Tube*, ~~2010~~ **2016** .

ASTM B828, *Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings*, 2002 ~~(~~ **, reapproved 2010** ~~)~~ .

ASTM C635**/C635M** , *Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings*, ~~2013a12~~ 2013a .

ASTM C636**/C636M** , *Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels*, 2013.

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials,* ~~2014~~ **2015b** .

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, ~~2012a~~ **2016** .

ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, ~~2012~~ **2016** .

ASTM F437, *Standard Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, ~~2009~~ **2015** .

ASTM F438, *Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40*, ~~2009~~ **2015** .

ASTM F439, *Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, 2013.

ASTM F442/F442M, *Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)*, 2013e1.

ASTM F1121, *Standard Specification for International Shore Connections for Marine Fire Applications*, ~~87(2010)~~ **1987, reapproved 2015** .

ASTM SI10, *Standard for Use of the International System of Units (SI): The Modern Metric System*, 2010.

2.3.5 AWS Publications.

American Welding Society, ~~550 N~~ **8869 N .W.** ~~LeJeune Road~~ **36 Street , #130 ,** Miami, FL ~~33126~~ **33166-6672** .

AWS **A5. 8M/** A5. 8, *Specification for Filler Metals for Brazing and Braze Welding*, ~~1992~~ **2011** .

AWS B2.1**/B2.1M** , *Specification for Welding Procedure and Performance Qualification*, ~~2000~~ **2014** .

2.3.6 AWWA Publications.

American Water Works Association, 6666 West Quincy Avenue, Denver, CO 80235.

AWWA C104/**A21.4** , *Cement- Mortar Lining for Ductile Iron Pipe and Fittings ~~for Water~~* , ~~1995~~ **2013** .

AWWA C105/**A21.5** , *Polyethylene Encasement for Ductile Iron Pipe Systems,* ~~1999~~ **2010** .

AWWA C110/**A21.10** , *Ductile Iron and Gray Iron Fittings, ~~3-in. Through 48-in. (76 mm Through 1219 mm), for Water and Other Liquids~~* , ~~1998.~~ **2012** .

AWWA C111/**A21.11** , *Rubber- Gasket Joints for Ductile- Iron Pressure Pipe and Fittings,* ~~2000~~ **2012** .

AWWA C115/**A21.15** , *Flanged Ductile- Iron Pipe with Ductile- Iron or Gray- Iron Threaded Flanges,* ~~1999~~ **2011** .

AWWA C116/**A21.16** , *Protective Fusion-Bonded Epoxy Coatings Internal and External Surface Ductile-Iron ~~/~~ **and** Gray-Iron Fittings*, ~~2003~~ **2009, Erratum, 2010** .

AWWA C150/**A21.50** , *Thickness Design of Ductile- Iron Pipe,* ~~1996~~ **2014** .

AWWA C151/**A21.51** , *Ductile- Iron Pipe, Centrifugally Cast ~~for Water~~* , ~~1996~~ **2009** .

AWWA C153/**A21.53** , *Ductile-Iron Compact Fittings ~~for Water Service~~* , ~~2000~~ **2011** .

AWWA C200, *Steel Water Pipe,* *6 in. (150 mm) and Larger,* ~~1997~~ **2012, Errata, 2012** .

AWWA C203, *Coal-Tar Protective Coatings and Linings for Steel Water ~~Pipelines Enamel and Tape — Hot Applied,~~* ~~1997~~ *Pipe,* **2015** .

AWWA C205, *Cement-Mortar Protective Lining and Coating for Steel Water Pipe,* *4 in. (100 mm) and Larger — Shop Applied,* ~~2000~~ **2012** .

AWWA C206, *Field Welding of Steel Water Pipe,* ~~1997~~ **2011** .

AWWA C207, *Steel Pipe Flanges for Waterworks Service — Sizes 4 in. Through 144 in. (100 mm Through 3,600 mm)*, ~~1994~~ **2013** .

AWWA C208, *Dimensions for Fabricated Steel Water Pipe Fittings*, ~~1996~~ **2012** .

AWWA C300, *Reinforced Concrete Pressure Pipe, Steel-Cylinder Type, ~~for Water and Other Liquids,~~* ~~1997~~ **2011** .

AWWA C301, *Prestressed Concrete Pressure Pipe, Steel-Cylinder Type, ~~for Water and Other Liquids~~* ~~,~~ ~~1999~~ **2014** .

AWWA C302, *Reinforced Concrete Pressure Pipe, Non-Cylinder Type, ~~for Water and Other Liquids~~* ~~, 1995~~ **2011** .

AWWA C303, *Reinforced Concrete Pressure Pipe, **Bar-Wrapped,** Steel-Cylinder Type, Pretensioned, ~~for Water and Other Liquids~~* ~~, 1995~~ **2008** .

AWWA C400, *~~Standard for Asbestos-Cement Distribution Pipe, 4 in. Through 16 in. (100 mm Through 400 mm), for Water and Other Liquids~~* ~~, 1998.~~ **Withdrawn** .

AWWA C401, *~~Standard Practice for the Selection of Asbestos-Cement Water Pipe, 4 in. Through 16 in. (100 mm Through 400 mm)~~* ~~, 1998.~~ **Withdrawn** .

AWWA C600, *~~Standard for the~~ Installation of Ductile- Iron Water Mains and Their Appurtenances,* ~~1999~~ **2010** .

AWWA C602, *Cement-Mortar Lining of Water Pipe Lines 4 in. (100 mm) and Larger ~~— in Place~~* , ~~2000~~ **2011** .

AWWA C603, *~~Standard for the Installation of Asbestos-Cement Water Pipe~~* ~~, 1996~~ **Withdrawn** .

AWWA C900, *Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. Through 12 in. (100 mm Through 300 mm), for Water **Transmission** and ~~Other Liquids~~* ~~, 1997~~ **Distribution** , **2007, Errata, 2008** .

AWWA C906, *Polyethylene (PE) Pressure Pipe and Fittings, 4 in. ~~(100 mm) Th.~~* **Through 63 in .** *(~~1~~ 100 mm* **Through 1 ,** ~~575 mm~~ **650** *mm), for ~~Water Distribution and Transportation~~* ~~, 1999~~ **Waterworks** , **2015** .

2.3.7 IEEE Publications.

IEEE, Three Park Avenue, 17th Floor, New York, NY 10016-5997.

IEEE 45, *Recommended Practice for Electric Installations on Shipboard*, ~~1998~~ **2002** .

2.3.8 UL Publications.

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

~~ANSI/~~ UL 62, *Flexible Cords and Cables*, ~~2010~~ **2014** .

~~ANSI/~~ UL 723, *Standard for Surface Burning Characteristics of Building Materials*, 2008, Revised ~~2010~~ **2013** .

~~ANSI/~~ UL 1581, *Reference Standard for Electrical Wires, Cables, and Flexible Cords*, 2011**, revised 2015** .

2.3.9 U.S. Government Publications.

U.S. ~~Government Printing~~ Government **Publishing** Office, **732 North Capitol Street, NW,** Washington, DC ~~20402~~ **20401-0001** .

Title 46, CFR, Parts 54.15-10 Safety and Relief Valves, 56.20 Valves, 56.20-5(a) Markings, 56.50-95 Overboard Discharges and Shore Connections, 56.60 Materials, and 58.01-40 Machinery, Angle of Inclination.

Title 46, CFR, Subchapter F, “Marine Engineering.”

Title 46, CFR, Subchapter J, “Electrical Engineering.”

2.3.10 Other Publications.

Merriam-Webster’s Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 1, *Fire Code* , 2015 edition.

NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances,* 2016 edition.

NFPA 33, *Standard for Spray Application Using Flammable or Combustible Materials,* 2016 edition.

NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines,* 2015 edition.

NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Film,* 2016 edition.

NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals,* 2015 edition.

NFPA 51, *Standard for the Design and Installation of Oxygen–Fuel Gas Systems for Welding, Cutting, and Allied Processes,* 2013 edition.

NFPA 51A, *Standard for Acetylene Cylinder Charging Plants,* 2012 edition.

NFPA 55, *Compressed Gases and Cryogenic Fluids Code,* 2016 edition.

NFPA 59, *Utility LP-Gas Plant Code,* 2015 edition.

NFPA 59A, *Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG),* 2013 edition.

NFPA 70® , *National Electrical Code®,* 2014 edition.

NFPA 75, *Standard for the Fire Protection of Information Technology Equipment,* 2013 edition.

NFPA 76, *Standard for the Fire Protection of Telecommunications Facilities,* 2012 edition.

NFPA 82, *Standard on Incinerators and Waste and Linen Handling Systems and Equipment,* 2014 edition.

NFPA 86, *Standard for Ovens and Furnaces,* 2015 edition.

NFPA 91, *Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Particulate Solids,* 2015 edition.

NFPA 99, *Health Care Facilities Code,* 2015 edition.

NFPA 99B, *Standard for Hypobaric Facilities,* 2015 edition.

NFPA 120, *Standard for Fire Prevention and Control in Coal Mines,* 2015 edition.

NFPA 122, *Standard for Fire Prevention and Control in Metal/Nonmetal Mining and Metal Mineral Processing Facilities,* 2015 edition.

NFPA 130, *Standard for Fixed Guideway Transit and Passenger Rail Systems,* 2014 edition.

NFPA 140, *Standard on Motion Picture and Television Production Studio Soundstages, Approved Production Facilities, and Production Locations,* 2013 edition.

NFPA 150, *Standard on Fire and Life Safety in Animal Housing Facilities,* 2016 edition.

NFPA 214, *Standard on Water-Cooling Towers,* 2011 edition.

NFPA 307, *Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves,* 2016 edition.

NFPA 318, *Standard for the Protection of Semiconductor Fabrication Facilities,* 2015 edition.

NFPA 400, *Hazardous Materials Code,* 2016 edition.

NFPA 415, *Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways,* 2016 edition.

NFPA 423, *Standard for Construction and Protection of Aircraft Engine Test Facilities,* 2016 edition.

NFPA 804, *Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants,* 2015 edition.

NFPA 805, *Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants,* 2015 edition.

NFPA 909, *Code for the Protection of Cultural Resource Properties — Museums, Libraries, and Places of Worship,* 2013 edition.

Statement of Problem and Substantiation for Public Input

Referenced current SDO names, addresses, standard names, numbers, and editions.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 2-NFPA 13-2015 [Chapter F]	

Submitter Information Verification

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Submittal Date: Wed Dec 16 18:24:26 EST 2015

Public Input No. 584-NFPA 13-2016 [Section No. 2.3.3]

2.3.3 ASME Publications.

American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

Boiler and Pressure Vessel Code, Section IX — "Welding and Brazing Qualifications," 2004.

ASME A17.1, *Safety Code for Elevators and Escalators*, 2010/CSA B44-10.

ASME B1.20.1, *Pipe Threads, General Purpose (Inch)*, 2001.

ASME B16.1, *Cast Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, and 250*, 1998.

ASME B16.3, *Malleable Iron Threaded Fittings, Classes 150 and 300*, 1998.

ASME B16.4, *Cast Iron Threaded Fittings, Classes 125 and 250*, 1998.

ASME B16.5, *Pipe Flanges and Flanged Fittings*, 1996.

ASME B16.9, *Factory-Made Wrought Steel Buttwelding Fittings*, 2001.

ASME B16.11, *Forged Steel Fittings, Socket-Welding and Threaded*, 1996.

ASME B16.15, *Cast Copper Alloy Threaded Fittings Classes 125 and 250*, 2011.

ASME B16.18, *Cast Copper Alloy Solder Joint Pressure Fittings*, 1994.

ASME B16.22, *Wrought Copper and Copper Alloy Solder Joint Pressure Fittings*, 1995.

ASME B16.25, *Buttwelding Ends*, 1997.

ASME B16.51 Copper and Copper Alloy Press-Connect Pressure Fittings

ANSI/ASME B31.1, *Code for Power Piping*, 2001.

ANSI/ASME B36.10M, *Welded and Seamless Wrought Steel Pipe*, 2000.

Statement of Problem and Substantiation for Public Input

Currently NFPA 13 does not currently reference ASME B16.51 This Standard establishes requirements for cast copper alloy, wrought copper, and wrought copper alloy, press-connect pressure fittings for use with hard drawn seamless copper water tube conforming to ASTM B88 for piping systems conveying water. The press-connect system (tube, fitting, and joint) conforming to this Standard is for use at a maximum pressure of 1 380 kPa (200 psi) over the temperature range from 0°C to 93°C (32°F to 200°F).

This Standard provides requirements for fittings suitable for press-connect joining and covers the following:
(a) size designations
(b) pressure–temperature ratings
(c) terminology
(d) dimensions and tolerances
(e) materials
(f) design qualification
(g) required installation instructions
(h) markings

By adding this standard, this will direct users to the correct design and material dimensions for copper press-connect fittings.

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Public Input No. 10-NFPA 13-2016 [Section No. 2.3.4]

2.3.4 ASTM Publications.

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

ANSI/ASTM A53/A53M, *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless*, 2012.

ASTM A106/A106M, *Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service*, 2013.

ASTM A135/A135M, *Standard Specification for Electric-Resistance-Welded Steel Pipe*, 2009 (2014).

ASTM A153A/153M, *Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware*, 2009.

ASTM A234/A234M, *Standard Specification for Piping Fittings of Wrought-Carbon Steel and Alloy Steel for Moderate and High Temperature Service*, 2013 e1.

ASTM A795/A795M, *Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use*, 2013.

ASTM B32, *Standard Specification for Solder Metal*, 2008.

ASTM B43, *Specification for Seamless Red Brass Pipe*, 2009.

ASTM B75, *Standard Specification for Seamless Copper Tube*, 2011.

ASTM B88, *Standard Specification for Seamless Copper Water Tube*, 2009.

ASTM B251, *Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube*, 2010.

ASTM B446, *Standard Specification for Nickel-Chromium-Molybdenum-Columbium Alloy (UNSN 06625) and Nickel-Chromium-Molybdenum-Silicon Alloy (UNSN 06219) Rod and Bar*, 2003 (2008) e1.

ASTM B813, *Standard Specification for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper-Alloy Tube*, 2010.

ASTM B828, *Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings*, 2002 (2010).

ASTM C635, *Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings*, 2013a12.

ASTM C636, *Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels*, 2013.

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials,*~~2014~~ 2015b .

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, ~~2012a~~ 2015 .

ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, ~~2012~~ 2015 .

ASTM E2768, Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel test), 2011.

ASTM F437, *Standard Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, ~~2009~~ 2015 .

ASTM F438, *Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40*, ~~2009~~ 2015 .

ASTM F439, *Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, 2013.

ASTM F442/F442M, *Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)*, 2013e1.

ASTM F1121, *Standard Specification for International Shore Connections for Marine Fire Applications*, 87(2010).

ASTM SI10, *Standard for Use of the International System of Units (SI): The Modern Metric System*, 2010.

Statement of Problem and Substantiation for Public Input

date updates and addition of ASTM E2768, included in some public inputs.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 22-NFPA 13-2016 [Section No. 8.15.1.2.10]	
Public Input No. 23-NFPA 13-2016 [Section No. 11.2.3.1.5.2]	

Submitter Information Verification

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Submittal Date: Sun Jan 03 19:58:55 EST 2016

Public Input No. 15-NFPA 13-2016 [Section No. 2.3.4]

2.3.4 ASTM Publications.

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

ANSI/ASTM A53/A53M, *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless*, 2012.

ASTM A106/A106M, *Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service*, 2013.

ASTM A135/A135M, *Standard Specification for Electric-Resistance-Welded Steel Pipe*, 2009 (2014).

ASTM A153A/153M, *Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware*, 2009.

ASTM A234/A234M, *Standard Specification for Piping Fittings of Wrought-Carbon Steel and Alloy Steel for Moderate and High Temperature Service*, 2013 e1.

ASTM A795/A795M, *Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use*, 2013.

ASTM B32, *Standard Specification for Solder Metal*, 2008.

ASTM B43, *Specification for Seamless Red Brass Pipe*, 2009.

ASTM B75, *Standard Specification for Seamless Copper Tube*, 2011.

ASTM B88, *Standard Specification for Seamless Copper Water Tube*, 2009.

ASTM B251, *Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube*, 2010.

ASTM B446, *Standard Specification for Nickel-Chromium-Molybdenum-Columbium Alloy (UNSN 06625) and Nickel-Chromium-Molybdenum-Silicon Alloy (UNSN 06219) Rod and Bar*, 2003 (2008) e1.

ASTM B813, *Standard Specification for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper-Alloy Tube*, 2010.

ASTM B828, *Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings*, 2002 (2010).

ASTM C635, *Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings*, 2013a12.

ASTM C636, *Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels*, 2013.

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials,*~~2014~~ 2015 .

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, ~~2012a~~ 2015 .

ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, ~~2012~~ 2015 .

ASTM F437, *Standard Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, 2009.

ASTM F438, *Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40*, 2009.

ASTM F439, *Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, 2013.

ASTM F442/F442M, *Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)*, 2013e1.

ASTM F1121, *Standard Specification for International Shore Connections for Marine Fire Applications*, 87(2010).

ASTM SI10, *Standard for Use of the International System of Units (SI): The Modern Metric System*, 2010.

Statement of Problem and Substantiation for Public Input

Date updates

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Public Input No. 376-NFPA 13-2016 [Section No. 2.3.6]

2.3.6 AWWA Publications.

American Water Works Association, 6666 West Quincy Avenue, Denver, CO 80235.

AWWA C104, *Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water,* 1995.

AWWA C105, *Polyethylene Encasement for Ductile Iron Pipe Systems,* 1999.

AWWA C110, *Ductile Iron and Gray Iron Fittings, 3-in. Through 48-in. (76 mm Through 1219 mm), for Water and Other Liquids*, 1998.

AWWA C111, *Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings,* 2000.

AWWA C115, *Flanged Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges,* 1999.

AWWA C116, *Protective Fusion-Bonded Epoxy Coatings Internal and External Surface Ductile-Iron/Gray-Iron Fittings*, 2003.

AWWA C150, *Thickness Design of Ductile Iron Pipe,* 1996.

AWWA C151, *Ductile Iron Pipe, Centrifugally Cast for Water,* 1996.

AWWA C153, *Ductile-Iron Compact Fittings for Water Service*, 2000.

AWWA C200, *Steel Water Pipe 6 in. (150 mm) and Larger,* 1997.

AWWA C203, *Coal-Tar Protective Coatings and Linings for Steel Water Pipelines Enamel and Tape — Hot Applied,* 1997.

AWWA C205, *Cement-Mortar Protective Lining and Coating for Steel Water Pipe 4 in. (100 mm) and Larger — Shop Applied,* 2000.

AWWA C206, *Field Welding of Steel Water Pipe,* 1997.

AWWA C207, *Steel Pipe Flanges for Waterworks Service — Sizes 4 in. Through 144 in. (100 mm Through 3,600 mm)*, 1994.

AWWA C208, *Dimensions for Fabricated Steel Water Pipe Fittings*, 1996.

AWWA C300, *Reinforced Concrete Pressure Pipe, Steel-Cylinder Type, for Water and Other Liquids,* 1997.

AWWA C301, *Prestressed Concrete Pressure Pipe, Steel-Cylinder Type, for Water and Other Liquids*, 1999.

AWWA C302, *Reinforced Concrete Pressure Pipe, Non-Cylinder Type, for Water and Other Liquids*, 1995.

AWWA C303, *Reinforced Concrete Pressure Pipe, Steel-Cylinder Type, Pretensioned, for Water and Other Liquids*, 1995.

AWWA C400, *Standard for Asbestos-Cement Distribution Pipe, 4 in. Through 16 in. (100 mm Through 400 mm), for Water and Other Liquids*, 1998.

AWWA C401, *Standard Practice for the Selection of Asbestos-Cement Water Pipe, 4 in. Through 16 in. (100 mm Through 400 mm)*, 1998.

AWWA C600, *Standard for the Installation of Ductile Iron Water Mains and Their Appurtenances,* 1999.

AWWA C602, *Cement-Mortar Lining of Water Pipe Lines 4 in. (100 mm) and Larger — in Place*, 2000.

AWWA C603, *Standard for the Installation of Asbestos-Cement Water Pipe*, 1996.

AWWA C900, *Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. Through 12 in. (100 mm Through 300 mm), for Water and Other Liquids*, 1997.

AWWA C906, *Polyethylene (PE) Pressure Pipe and Fittings, 4 in. (100 mm) Th. 63 in (1,575 mm), for Water Distribution and Transportation*, 1999.

<u>AWWA M11, A Guide for Steel Pipe Design and Installation, 4th edition, 2004.</u>

Statement of Problem and Substantiation for Public Input

Reference is made to the statement of problem and substantiation of Public Input No. 24-NFPA 24-2016 [Section No. 10.1.1.1].

Related Public Inputs for This Document:
Public Input No. 375-NFPA 13-2016 [Section No. 10.1.1.1]
Public Input No. 25-NFPA 24-2016 [Section No. 2.3.3]

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 375-NFPA 13-2016 [Section No. 10.1.1.1]	

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Public Input No. 192-NFPA 13-2016 [Section No. 2.3.8]

2.3.8 UL Publications.

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

ANSI/UL 62, *Flexible Cords and Cables*, 2010.

ANSI/ UL 213 Rubber Gasketed Fittings for Fire Protection Service, 2004.

ANSI/ UL 723, *Standard for Surface Burning Characteristics of Building Materials*, 2008, Revised 2010.

ANSI/ UL 852 Standard for Metallic Sprinkler Pipe for Fire Protection Service, 2008.

ANSI/ UL 1581, *Reference Standard for Electrical Wires, Cables, and Flexible Cords*, 2011.

ANSI/UL 1821 Standard for Thermoplastic Sprinkler Pipe and Fittings For Fire Protection Service, 2015.

Statement of Problem and Substantiation for Public Input

Currently the UL 213, UL 852 and UL 1821 Standards are not referenced by NFPA 13 but are widely used standards for Rubber Gasketed Fittings for Fire Protection Service and Thermoplastic sprinkler pipe and fittings and Metallic Sprinkler Pipe for Fire protection service. The addition of the publications coincides with the related public input submittals and will help to more clearly identify accepted reference standards for fire protection pipe and fittings. The addition of these publications coincides with the related public input submittals. There is no fiscal impact associated with this proposal.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 204-NFPA 13-2016 [Section No. 6.3.1.1 [Excluding any Sub-Sections]]	Refernce in Piping Table
Public Input No. 205-NFPA 13-2016 [Section No. 6.4.1]	

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Public Input No. 404-NFPA 13-2016 [Section No. 2.3.8]

2.3.8 UL Publications.

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

ANSI/UL 62, *Flexible Cords and Cables*, 2010, Revised 2013 .

ANSI/UL 723, *Standard for Surface Burning Characteristics of Building Materials*, 2008, Revised ~~2010~~ 2013 .

ANSI/UL 1581, *Reference Standard for Electrical Wires, Cables, and Flexible Cords*, 2011, Revised 2015 .

Statement of Problem and Substantiation for Public Input

The changes proposed reflect updates to UL Standards referenced to the current edition.

Submitter Information Verification

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Public Input No. 540-NFPA 13-2016 [Section No. 2.3.8]

2.3.8 UL Publications.

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

ANSI/UL 62, *Flexible Cords and Cables*, 2010.

ANSI/UL 723, *Standard for Surface Burning Characteristics of Building Materials*, 2008, Revised 2010.

ANSI/UL 1581, *Reference Standard for Electrical Wires, Cables, and Flexible Cords*, 2011.

ANSI/UL 263 Fire Tests of Building Construction and Materials, 2014.

Statement of Problem and Substantiation for Public Input

Reason Statement: ASTM E 119 is a listed test referenced in Chapter 2. ANSI/UL 263 is a comparable test available for establishing fire resistance in building and construction materials and should also be listed as an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 541-NFPA 13-2016 [Section No. 3.3.25]	
Public Input No. 542-NFPA 13-2016 [Section No. 3.10.1]	
Public Input No. 543-NFPA 13-2016 [Section No. 3.10.2]	
Public Input No. 544-NFPA 13-2016 [Section No. 3.10.9]	
Public Input No. 545-NFPA 13-2016 [Section No. 26.1.3]	
Public Input No. 546-NFPA 13-2016 [Section No. A.3.10.4]	
Public Input No. 551-NFPA 13-2016 [Section No. A.26.1.3(4)]	

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Submittal Date: Wed Jun 29 08:46:56 EDT 2016

Public Input No. 397-NFPA 13-2016 [New Section after 3.3.2]

3.3.3 Balcony.

A space generally located on the exterior of the building open to the outside atmosphere and open on one, two or three sides.

Statement of Problem and Substantiation for Public Input

Many AHJ's consider that a balcony must be a projection from the building open on 3 sides. A balcony can be a space enclosed on 2 or 3 sides by the surrounding unit or rooms.

Submitter Information Verification

Submitter Full Name: Peter Schwab
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Submittal Date: Mon Jun 27 11:43:06 EDT 2016

Public Input No. 411-NFPA 13-2016 [New Section after 3.3.2]

TITLE OF NEW CONTENT

3.3.2 Automated Inspection and Testing. The performance of inspections and tests at a distant location from the system or component being inspected or tested through the use of electronic devices or equipment installed for the purpose.

Statement of Problem and Substantiation for Public Input

Technology now allows for inspecting and testing a sprinkler system from a distant location. New text has been added to NFPA 13 allowing for the installation and requirements for the devices and equipment used for this purpose. A definition is needed to describe the intent of the new requirements and allowances.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 412-NFPA 13-2016 [New Section after 3.3.7]	
Public Input No. 413-NFPA 13-2016 [Section No. 6.1.1.5]	
Public Input No. 414-NFPA 13-2016 [New Section after 25.2.6]	

Submitter Information Verification

Submitter Full Name: Terry Victor
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Submittal Date: Mon Jun 27 16:33:20 EDT 2016

Public Input No. 161-NFPA 13-2016 [Section No. 3.3.5.1]

3.3.5.1 Cloud Ceiling.

Any ceiling system installed in the same plane with horizontal openings to the structure above ~~on all sides~~ . This does not include sloped ceilings as defined in 3.3.5.4 .

Statement of Problem and Substantiation for Public Input

Many cloud ceilings go all the way to the wall in at least one (and sometimes more) dimensions. There is no reason to require that the gap appear at the wall. in fact, having the gap at the wall is the worst possible fire protection scenario. If the ceiling goes all the way to the wall, it helps the fire plume turn horizontally and activate sprinklers sooner, which is a good thing. We should not be prohibiting good things in fire protection.

Submitter Information Verification

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Submittal Date: Thu May 26 15:40:24 EDT 2016

Public Input No. 479-NFPA 13-2016 [Section No. 3.3.5.1]

3.3.5.1 Cloud Ceiling.

Any ceiling system installed in the same plane with horizontal openings to the structure above on ~~all~~ two or more sides. This does not include sloped ceilings as defined in 3.3.5.4.

Statement of Problem and Substantiation for Public Input

There is no reason why a ceiling cloud needs to be open on all sides. The outcome from omitting sprinkler above the structure would if anything be improved by fewer openings (such as a ceiling cloud that are directly connected to a wall on one or two sides but has openings on only two sides).

Submitter Information Verification

Submitter Full Name: Roland Huggins
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Submittal Date: Tue Jun 28 12:01:56 EDT 2016

Public Input No. 444-NFPA 13-2016 [Section No. 3.3.6]

3.3.6 Compartment.

A space completely enclosed by walls and a ceiling. Each wall in the compartment is permitted to have openings to an adjoining space if the openings have a minimum lintel depth of 8 in. (200 mm) from the ceiling and the total width of the openings in each wall does not exceed 8 ft every 40 linear feet (2.4 m). A single opening of 36 in. (900 mm) or less in width without a lintel is permitted when there are no other openings to adjoining spaces every 40 linear feet .

Statement of Problem and Substantiation for Public Input

A compartment should be allowed greater openings if they are spaced far enough apart and do not make up a significant percentage of their perimeter. As an example, if the openings are over 40 feet apart. The NFSA has modeling research ongoing using CFAST. This is a placeholder to see what the data shows.

Submitter Information Verification

Submitter Full Name: Louis Guerrazzi
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Submittal Date: Tue Jun 28 08:57:09 EDT 2016

Public Input No. 412-NFPA 13-2016 [New Section after 3.3.7]

TITLE OF NEW CONTENT

3.3.8 Distance Monitoring. The monitoring of various conditions of a system or component from a location distant from the system or component through the use of electronic devices, meters, or equipment installed for the purpose.

Statement of Problem and Substantiation for Public Input

Technology now allows for monitoring certain conditions of a sprinkler system or component from a distant location. New text has been added to NFPA 13 allowing for the installation and requirements for the devices, meters and equipment used for this purpose. A definition is needed to describe the intent of the new requirements and allowances.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 405-NFPA 13-2016 [Section No. 1.7.2]	
Public Input No. 411-NFPA 13-2016 [New Section after 3.3.2]	
Public Input No. 413-NFPA 13-2016 [Section No. 6.1.1.5]	
Public Input No. 414-NFPA 13-2016 [New Section after 25.2.6]	

Submitter Information Verification

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Submittal Date: Mon Jun 27 16:35:33 EDT 2016

Public Input No. 13-NFPA 13-2016 [Section No. 3.3.16]

3.3.16* Limited-Combustible (Material).

~~Refers to a building construction material not complying with the definition of noncombustible material that, in the form in which it is used, has a potential heat value not exceeding 3500 Btu/lb (8100 kJ/kg), where tested in accordance with NFPA 259, and includes either of the following: (1) materials having a structural base of noncombustible material, with a surfacing not exceeding a thickness of 1/8 in. (3.2 mm) that has a flame spread index not greater than 50; or (2) materials, in the form and thickness used, having neither a flame spread index greater than 25 nor evidence of continued progressive combustion, and of such composition that surfaces that would be exposed by cutting through the material on any plane would have neither a flame spread index greater than 25 nor evidence of continued progressive combustion, when tested in accordance with ASTM E84,~~ ~~*Standard Test Method of Surface Burning Characteristics of Building Materials,*~~ ~~or ANSI/UL 723,~~ ~~*Standard Test Method of Surface Burning Characteristics of Building Materials*~~ ~~.~~

(see 5.1.2)

Statement of Problem and Substantiation for Public Input

Moves the definition to chapter 5, consistent with most other major NFPA documents.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 12-NFPA 13-2016 [Chapter 5]	
Public Input No. 14-NFPA 13-2016 [Section No. 3.3.17]	

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Submittal Date: Sun Jan 03 20:55:18 EST 2016

Public Input No. 14-NFPA 13-2016 [Section No. 3.3.17]

3.3.17 Noncombustible Material.

~~A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat; materials that are reported as passing ASTM E136,~~ ~~*Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C,*~~ ~~shall be considered noncombustible materials.~~

(see 5.1.1)

Statement of Problem and Substantiation for Public Input

This moves the definition and requirements into chapter 5,consistent with NFPA 1, 101, 5000 and other major NFPA documents.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 12-NFPA 13-2016 [Chapter 5]	
Public Input No. 13-NFPA 13-2016 [Section No. 3.3.16]	

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Public Input No. 195-NFPA 13-2016 [New Section after 3.3.20]

3.3.20 Shadow Area

The dry floor area within the protection area of a sprinkler created by the portion of sprinkler discharge that is blocked by a wall or partition.

Statement of Problem and Substantiation for Public Input

This comment provides a definition of shadow area, and subsequent comments will propose language to the standard and Annex.

Attempts were made in the 2013 cycle to specify permissible "shadowing," similar to proposals that were made for NFPA 13D and NFPA 13R. The NFPA 13 technical committee rejected these proposals, based at least in part on an unwillingness to provide a specific area. Instead, language discussing the concept of shadowing was added to the Annex. While there may be concern about a lack of flexibility by providing a specific area, the reaction of the AHJ community seems to be in the opposite direction. My firm has been involved in several housing projects where small closets or mechanical equipment enclosures create shadow areas (typically 5 square feet or less) which have been questioned by the AHJs. For most of these projects we have ultimately been successful in convincing the AHJ that this condition does not impair system performance, but on at least one occasion the AHJ was unwilling to accept any amount of shadow area. A definitive minimum allowable amount of shadow area is appropriate and will provide guidance to the architectural/engineering community, contractors and AHJs.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 198-NFPA 13-2016 [New Section after 8.8.5.3.6]	
Public Input No. 199-NFPA 13-2016 [New Section after 8.9.5.3.3]	
Public Input No. 200-NFPA 13-2016 [New Section after 8.10.6.3.4]	
Public Input No. 201-NFPA 13-2016 [New Section after 8.10.7.3.6]	
Public Input No. 196-NFPA 13-2016 [New Section after 8.6.5.3.7]	
Public Input No. 197-NFPA 13-2016 [New Section after 8.7.5.3.3]	
Public Input No. 202-NFPA 13-2016 [Section No. A.8.1.1(3)]	

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Public Input No. 541-NFPA 13-2016 [Section No. 3.3.25]

3.3.25 Thermal Barrier.

A material that limits the average temperature rise of the unexposed surface to not more than 250°F (121°C) above ambient for a specified fire exposure duration using the standard time–temperature curve of ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials* or ANSI/UL 263 Fire Tests of Building Construction Materials .

Statement of Problem and Substantiation for Public Input

Reason Statement: ASTM E 119 is a listed test referenced in Chapter 2. ANSI/UL 263 is a comparable test available for establishing fire resistance in building and construction materials and should also be listed as an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 540-NFPA 13-2016 [Section No. 2.3.8]	
Public Input No. 542-NFPA 13-2016 [Section No. 3.10.1]	
Public Input No. 543-NFPA 13-2016 [Section No. 3.10.2]	
Public Input No. 545-NFPA 13-2016 [Section No. 26.1.3]	
Public Input No. 546-NFPA 13-2016 [Section No. A.3.10.4]	
Public Input No. 551-NFPA 13-2016 [Section No. A.26.1.3(4)]	

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Submittal Date: Wed Jun 29 08:49:59 EDT 2016

Public Input No. 111-NFPA 13-2016 [Section No. 3.4.1 [Excluding any Sub-Sections]]

A wet pipe system using automatic sprinklers that contains a liquid solution to prevent freezing of the system~~, intended to discharge the solution upon sprinkler operation, followed immediately by water from a water supply~~ .

Statement of Problem and Substantiation for Public Input

This is descriptive language that doesn't need to be in the standard. Additionally, this is being interpreted as criteria regarding tanks (which if t's decide it is the TC's intent does not belong here).

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Submittal Date: Wed May 04 18:27:57 EDT 2016

Public Input No. 267-NFPA 13-2016 [New Section after 3.4.5]

3.4.5.1 Low Differential Dry Pipe Valves

Where the air/nitrogen to water ratio to keep a dry valve closed is greater than 1 in 6.

Statement of Problem and Substantiation for Public Input

During the last revision there was debate on what constituted low differential. This would add a definition to remove subjectivity.

Submitter Information Verification

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Submittal Date: Thu Jun 23 15:08:20 EDT 2016

Public Input No. 188-NFPA 13-2016 [New Section after 3.5.8]

TITLE OF NEW CONTENT

Press-Connect Fitting-

A permanent mechanical connection for joining copper tubing, steel and stainless steel pipe utilizing elastomeric seal or an elastomeric seal and corrosion-resistant grip ring

or rings. Fitting connections are made with a pressing tool and jaws or rings approved by the fitting manufacturer for use in accordance with the product listing.

Statement of Problem and Substantiation for Public Input

Currently there is no definition for Press-Connect fittings in NFPA 13. The term Press-Connect Fitting is used in both the IAPMO and ICC codes. The wide use of Mechanical type fittings has created the need to identify fittings such as Press-Connect and provide definitions to prevent confusion between mechanical fitting types and to help identify the correct standards these fittings are required to be listed to. This definition is proposed to prevent confusion within the industry and aligns definitions for these type fittings.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 190-NFPA 13-2016 [Section No. 6.5.4]	Reference to Press-Connect in the code.

Submitter Information Verification

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Submittal Date: Mon Jun 06 15:40:55 EDT 2016

Public Input No. 144-NFPA 13-2016 [Section No. 3.5.8]

3.5.8 Flexible ~~Listed Pipe~~ Coupling.

A listed coupling or fitting that allows axial displacement, rotation, and at least 1 degree of angular movement of the pipe without inducing harm on the pipe. For pipe diameters of 8 in. (200 mm) and larger, the angular movement shall be permitted to be less than 1 degree but not less than 0.5 degree.

Statement of Problem and Substantiation for Public Input

Throughout section 9.3.2 there are several different terms intended to be the same thing ("coupling", "listed flexible pipe coupling", and "flexible coupling"). The most frequently used of these terms is "flexible coupling" so I am attempting to standardize the terminology by using this term exclusively.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 145-NFPA 13-2016 [Section No. 9.3.2]	

Submitter Information Verification

Submitter Full Name:	Kenneth Isman
Organization:	University of Maryland
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City:	
State:	
Zip:	
Submittal Date:	Wed May 25 15:04:27 EDT 2016

Public Input No. 279-NFPA 13-2016 [Section No. 3.5.8]

3.5.8 Flexible Listed Pipe Coupling.

A listed coupling or fitting that allows axial displacement, rotation, and ~~at least 1 degree of angular~~ axial movement of the pipe without inducing harm on the pipe. ~~For pipe diameters of 8 in. (200 mm) and larger, the angular movement shall be permitted to be less than 1 degree but not less than 0.5 degree.~~ Follow the manufacturer's listing for movement capabilities.

Statement of Problem and Substantiation for Public Input

Due to different manufacturer's coupling design, the manufacturer's listing should be adhered for the allowable deflection capabilities of the joint.

Submitter Information Verification

Submitter Full Name: Ahmed Saleh
Organization: Victaulic Company of America
Street Address:
City:
State:
Zip:

Submittal Date: Thu Jun 23 15:48:48 EDT 2016

Public Input No. 439-NFPA 13-2016 [Section No. 3.5.13]

3.5.13 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), a pressure gauge, ~~a main drain~~ a drain , and a waterflow alarm device.

Statement of Problem and Substantiation for Public Input

This proposal is asking that the definition of a system riser be returned to the way it was in the 2013 edition of NFPA 13.

During the previous cycle the definition was revised by changing the word “drain” to the term “main drain”, but this was an unfortunate decision, because the main drain cannot always be located at the riser. There are many occasions where the riser must be located at a basement level, or in a closet, or under a stair landing, or other area(s), where it is not possible to discharge to the outside or to a suitably sized drain location. However, as per Section 8.16.2.4.6, the main drain test connection must be provided at locations that will permit flow testing, with the valve opened wide, without causing water damage. With this it is sometimes necessary to locate the main drain downstream of the system riser, so the testing can be properly accomplished. Therefore, the location for a main drain connection should not be tied exclusively to the system riser.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: PLC Fire Safety Solutions
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 07:32:51 EDT 2016

Public Input No. 269-NFPA 13-2016 [Section No. 3.6.3.2]

3.6.3.2* Dry Sprinkler.

A sprinkler secured in an extension ~~nipple~~ that has a seal at the inlet end to prevent water from entering the nipple until the sprinkler operates.

Statement of Problem and Substantiation for Public Input

Nipple could be interpreted as a straight section of pipe.

Submitter Information Verification

Submitter Full Name: Brian Sloan

Organization: Victaulic

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 23 15:21:04 EDT 2016

Public Input No. 542-NFPA 13-2016 [Section No. 3.10.1]

3.10.1 A-Class Boundary.

A boundary designed to resist the passage of smoke and flame for 1 hour when tested in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials* or ANSI/UL 263 Fire Tests of Building Construction Materials .

Statement of Problem and Substantiation for Public Input

Reason Statement: ASTM E 119 is a listed test referenced in Chapter 2. ANSI/UL 263 is a comparable test available for establishing fire resistance in building and construction materials and should also be listed as an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 540-NFPA 13-2016 [Section No. 2.3.8]	
Public Input No. 541-NFPA 13-2016 [Section No. 3.3.25]	
Public Input No. 543-NFPA 13-2016 [Section No. 3.10.2]	
Public Input No. 545-NFPA 13-2016 [Section No. 26.1.3]	
Public Input No. 546-NFPA 13-2016 [Section No. A.3.10.4]	
Public Input No. 551-NFPA 13-2016 [Section No. A.26.1.3(4)]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello

Organization: UL llc

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City:

State:

Zip:

Submittal Date: Wed Jun 29 08:53:16 EDT 2016

Public Input No. 543-NFPA 13-2016 [Section No. 3.10.2]

3.10.2 B-Class Boundary.

A boundary designed to resist the passage of flame for ½ hour when tested in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials* or ANSI/UL 263 Fire Tests of Building Construction Materials .

Statement of Problem and Substantiation for Public Input

Reason Statement: ASTM E 119 is a listed test referenced in Chapter 2. ANSI/UL 263 is a comparable test available for establishing fire resistance in building and construction materials and should also be listed as an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 542-NFPA 13-2016 [Section No. 3.10.1]	
Public Input No. 541-NFPA 13-2016 [Section No. 3.3.25]	
Public Input No. 540-NFPA 13-2016 [Section No. 2.3.8]	
Public Input No. 545-NFPA 13-2016 [Section No. 26.1.3]	
Public Input No. 546-NFPA 13-2016 [Section No. A.3.10.4]	
Public Input No. 551-NFPA 13-2016 [Section No. A.26.1.3(4)]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
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City:
State:
Zip:
Submittal Date: Wed Jun 29 08:56:27 EDT 2016

Public Input No. 544-NFPA 13-2016 [Section No. 3.10.9]

3.10.9* Marine Thermal Barrier.

An assembly that is constructed of noncombustible materials and made intact with the main structure of the vessel, such as shell, structural bulkheads, and decks; meets the requirements of a B-Class boundary; and is insulated such that, if tested in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials* or ANSI/UL 263 Fire Tests of Building Construction Materials , for 15 minutes, the average temperature of the unexposed side does not rise more than 250°F (139°C) above the original temperature, nor does the temperature at any one point, including any joint, rise more than 405°F (225°C) above the original temperature.

Statement of Problem and Substantiation for Public Input

Reason Statement: ASTM E 119 is a listed test referenced in Chapter 2. ANSI/UL 263 is a comparable test available for establishing fire resistance in building and construction materials and should also be listed as an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 540-NFPA 13-2016 [Section No. 2.3.8]	
Public Input No. 545-NFPA 13-2016 [Section No. 26.1.3]	
Public Input No. 546-NFPA 13-2016 [Section No. A.3.10.4]	
Public Input No. 551-NFPA 13-2016 [Section No. A.26.1.3(4)]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
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City:
State:
Zip:
Submittal Date: Wed Jun 29 08:58:58 EDT 2016

Public Input No. 609-NFPA 13-2016 [New Section after 4.1]

4.1.1 Temporary Protection During Construction, Alteration or Demolition

During construction, alteration or demolition, the use of temporary fire sprinkler protection installed in accordance with approval of the AHJ shall be permitted as supplemental protection of hazardous conditions.

A.4.1.1 During construction, alternation and demolition, there are many hazardous conditions, such as cutting, welding, grinding and hazardous product storage that can be made safer by installing a temporary fire sprinkler system. Without this section, there would be no allowance in NFPA 13R to permit such systems because they would not fully comply with the provisions of the standard. Given that such protection would be supplemental to any other protection that would be required, there is no harm in allowing this additional safety feature on a temporary basis if the design and installation is considered reasonable by the AHJ.

Statement of Problem and Substantiation for Public Input

There is a history of major fires during construction that were associated with hazardous conditions during construction. In some cases, developers will consolidate hazardous operations, such as a welding or grinding area, in a designated area of a building to increase control of the operation. Site managers will sometimes provide temporary sprinkler systems to supplement fire extinguishers and other safety features (not diminishing any other required protection feature) to improve safety, but there have been cases where AHJs have ordered these systems removed because they aren't currently permitted by NFPA 13 or NFPA 13R. Given that it's better to have some protection, as approved by the AHJ, vs.prohibiting an additional measure of safety, this proposal adds an allowance in NFPA 13 to permit temporary installations. A parallel proposal is being submitted to NFPA 13R.

Submitter Information Verification

Submitter Full Name: Jeffrey Shapiro

Organization: International Code Consultants

Affilliation: National Multifamily Housing Council

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 17:42:35 EDT 2016

Public Input No. 17-NFPA 13-2016 [Section No. 6.1.1.5]

6.1.1.5

Components that do not affect system performance ~~such as drain piping, drain valves, and signs~~ shall not be required to be listed.

A.6.1.1.5

Certain components installed in sprinkler systems are not required to be listed as their improper operation will not detrimentally affect the automatic system performance. Examples include but are not limited to: Drain valves, drain piping, signs, guages, fire department connections not using threadless couplings, etc.

Statement of Problem and Substantiation for Public Input

Manual of style indicates that examples should be in the annex. This input moves the examples in 6.1.1.5 to the annex and adds others that are missing.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jan 04 13:44:50 EST 2016

Public Input No. 413-NFPA 13-2016 [Section No. 6.1.1.5]

6.1.1.5

Components, devices, and equipment that do not affect system performance such as drain piping, drain valves, automated inspection and testing devices and equipment, distance monitoring devices and equipment, and signs shall not be required to be listed.

Statement of Problem and Substantiation for Public Input

Technology now allows for automated inspection and testing as well as monitoring certain conditions of a sprinkler system from a distant location. When the device is external to the sprinkler system, doesn't enter the system piping and is not subject to system pressure there isn't a need to have it listed and it should be added to this list.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 405-NFPA 13-2016 [Section No. 1.7.2]	
Public Input No. 411-NFPA 13-2016 [New Section after 3.3.2]	
Public Input No. 412-NFPA 13-2016 [New Section after 3.3.7]	
Public Input No. 414-NFPA 13-2016 [New Section after 25.2.6]	

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco Simplex Grinnell
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City:
State:
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Submittal Date: Mon Jun 27 16:38:02 EDT 2016

Public Input No. 559-NFPA 13-2016 [Section No. 6.1.1.5]

6.1.1.5

Components that do not affect system performance ~~such as drain piping, drain valves, and signs~~ shall not be required to be listed.

New Annex - Examples include drain piping, drain valves and signs.

Statement of Problem and Substantiation for Public Input

In accordance with the NFPA's Manual of Style, this material should be in the Annex.

Submitter Information Verification

Submitter Full Name:	John Denhardt
Organization:	Strickland Fire Protection In
Affilliation:	American Fire Sprinkler Association
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 11:10:22 EDT 2016

Public Input No. 114-NFPA 13-2016 [New Section after 6.1.1.6]

Where listed pre-engineered systems are installed, they shall be installed within the limitations that have been established by the testing laboratories.

Additional Proposed Changes

File Name	Description	Approved
PC_344.pdf	13-PC_344	

Statement of Problem and Substantiation for Public Input

This Public Input appeared as “Reject but Hold” in Public Comment No. 344 of the (A2015 cycle) Second Draft Report.

Currently NFPA 13D allows pre-engineered systems to be installed as an acceptable alternative. Under the definition of pre-engineered, the systems must have been successfully tested to the appropriate hazard. Allowing alternate systems and new technologies through sections 1.4 and 1.6 of this standard, requires engineering proof that the alternative is equal or better protection than what is in the standard. Often obtaining engineering support or approval can be difficult and expensive. This would open it up to being approved under standard review from an engineer or authority having jurisdiction. I also believe that this is also a correlating issue from 13D.

Submitter Information Verification

Submitter Full Name: TC ON AUT-SSI

Organization: NFPA

Affilliation: TC on Sprinkler System Installation Criteria

Street Address:

City:

State:

Zip:

Submittal Date: Mon May 16 09:31:34 EDT 2016

Public Comment No. 344-NFPA 13-2014 [New Section after 6.1.1.6]

Pre-Engineered Systems.

Where listed pre-engineered systems are installed, they shall be installed within the limitations that have been established by the testing laboratories.

Statement of Problem and Substantiation for Public Comment

Currently NFPA 13D allows pre-engineered systems to be installed as an acceptable alternative. Under the definition of pre-engineered, the systems must have been successfully tested to the appropriate hazard. Allowing alternate systems and new technologies through sections 1.4 and 1.6 of this standard, requires engineering proof that the alternative is equal or better protection than what is in the standard. Often obtaining engineering support or approval can be difficult and expensive. This would open it up to being approved under standard review from an engineer or authority having jurisdiction. I also believe that this is also a correlating issue from 13D.

Related Item

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

Submitter Information Verification

Submitter Full Name: Daniel Wake

Organization: Victaulic Company

Street Address:

City:

State:

Zip:

Submittal Date: Fri May 16 14:34:49 EDT 2014

Committee Statement

Committee Action: Rejected but held

Resolution: This is new material and should be held until the next revision cycle.

Public Input No. 406-NFPA 13-2016 [Section No. 6.1.3]

6.1.3 Rated Pressure.

System components shall be rated for the maximum system working pressure to which they are exposed but shall not be rated at less than 175 psi (12 bar) for components installed above ground and 150 psi (10 bar) for components installed underground. When the underground piping can be supplied or pressurized by a Fire Department Connection (FDC), the underground piping shall be designed to withstand a working pressure of not less than 200 psi (Class 200), or 50 psi greater than the system design pressure, whichever is greater.

Statement of Problem and Substantiation for Public Input

This change intends to require higher pressure ratings for underground lines that can be fed by FDC. Delivery of water at FDC can cause pressures that exceed 150 psi. Typically, use of 200 psi rated line can withstand the pressures delivered at the FDC. However, when higher pressures are required at the FDC due to system demands, the underground line is required to be listed for 50 psi above that demand pressure. The 50 psi above design pressure is to allow for pipe to be listed for the pressure used during the hydrostatic test.

Submitter Information Verification

Submitter Full Name: Lynn Nielson
Organization: City Of Henderson
Affilliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 27 16:07:48 EDT 2016

Public Input No. 598-NFPA 13-2016 [Section No. 6.2.2]

6.2.2* Sprinkler Identification.

All sprinklers shall be permanently marked with one or two English uppercase alphabetic characters to identify the manufacturer, immediately followed by three or four numbers, to uniquely identify a sprinkler as to K-factor ~~(orifice size) or orifice shape~~ , deflector characteristic, pressure rating, and thermal sensitivity.

Statement of Problem and Substantiation for Public Input

The use of the term orifice has been phased out of the standard.

Submitter Information Verification

Submitter Full Name: John Denhardt

Organization: Strickland Fire Protection In

Affilliation: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 16:30:28 EDT 2016

Public Input No. 560-NFPA 13-2016 [Section No. 6.2.6.4.3]

6.2.6.4.3

Sprinklers that have been painted or coated by other than the sprinkler manufacturer shall be replaced in accordance with the requirements of 6.2.6.2.2.

Statement of Problem and Substantiation for Public Input

Additional language to clarify that this requirement does not apply to manufacturer applied finishes.

Submitter Information Verification

Submitter Full Name:	John Denhardt
Organization:	Strickland Fire Protection In
Affilliation:	American Fire Protection Association
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 11:20:36 EDT 2016

Public Input No. 561-NFPA 13-2016 [Section No. 6.2.8]

6.2.8 Guards.

Sprinklers that could be to be expected subject to mechanical injury shall be protected with listed guards.

Annex - All sprinklers could be subject to mechanical injury at anytime during their life. The intent is to provide listed guards anytime an installed sprinkler could be reasonable expected to be subject to mechanical injury.

Statement of Problem and Substantiation for Public Input

We have had sprinklers that were damaged that were in an open corridor in a hotel. No reasonable person would have installed an guard on this sprinkler. However, based on the current language in the standard, legal liability was being placed on the installing contractor because of the current language. The proposed language would assist to clarify the intent of the standard.

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: Strickland Fire Protection In
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Street Address:
City:
State:
Zip:

Submittal Date: Wed Jun 29 11:24:17 EDT 2016

Public Input No. 563-NFPA 13-2016 [Section No. 6.2.9.7 [Excluding any Sub-Sections]]

A list of the sprinklers installed in the property shall be posted in, on or near the sprinkler cabinet.

Statement of Problem and Substantiation for Public Input

In many cases, the sign will not fit inside the cabinet. As long as the sign is near the cabinet, the intent is satisfied.

Submitter Information Verification

Submitter Full Name: John Denhardt
Organization: Strickland Fire Protection In
Affilliation: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jun 29 11:38:21 EDT 2016

Public Input No. 407-NFPA 13-2016 [Section No. 6.2.9.7.1]

6.2.9.7.1*

The list shall be on a machine-engraved metal or rigid plastic sign with capitalized lettering a minimum 14 point (¼ inch high) in Arial or similar font and

include the following:

(1) Sprinkler Identification Number (SIN) if equipped; or the manufacturer, model, orifice, deflector type, thermal sensitivity, and pressure rating

(2) General description

(3) Quantity of each type to be contained in the cabinet

(4) Issue or revision date of the list

Statement of Problem and Substantiation for Public Input

The intent of this proposal is to require professionally engraved signs to be used for the sprinkler cabinet sign. For years, these plates have been installed as a sticker using permanent marker or a metal plate using a scribing tool. The areas where this cabinet is usually placed on a property are generally dusty and/or exposed to the extreme heat of the Las Vegas Valley. Our findings have shown that permanent marker is good for less than five (5) years when these are regularly exposed to these conditions. Two other problems are consistently noted with these plates being installed with permanent marker or a scribing tool. The first deals with those written in permanent marker. Not everyone prints well and the information required often cannot be written small and legibly enough with a permanent marker or a scribing tool to make the information permanently readable. The other deals with the scribing tools and the fact that most scribing tools give very thin lines that again are not readable. People often make mistakes with these also which leads to other issues with their readability.

Submitter Information Verification

Submitter Full Name: Lynn Nielson

Organization: City Of Henderson

Affilliation: Self

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Zip:

Submittal Date: Mon Jun 27 16:10:58 EDT 2016

Public Input No. 565-NFPA 13-2016 [Section No. 6.2.9.7.1]

6.2.9.7.1 *

The list shall include the following:

(1) Sprinkler Identification Number (SIN) if equipped; or the manufacturer, model, ~~orifice~~ K-factor , deflector type, thermal sensitivity, and pressure rating

(2) General description

(3) Quantity of each type to be contained in the cabinet

(4) Issue or revision date of the list

Statement of Problem and Substantiation for Public Input

K-factor is the correct term based on recent editions of the standard.

Submitter Information Verification

Submitter Full Name: John Denhardt

Organization: Strickland Fire Protection In

Affilliation: American Fire Sprinkler Association

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City:

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Zip:

Submittal Date: Wed Jun 29 11:43:44 EDT 2016

Public Input No. 204-NFPA 13-2016 [Section No. 6.3.1.1 [Excluding any Sub-Sections]]

Pipe or tube shall meet or exceed one of the standards in Table 6.3.1.1 or be in accordance with 6.3.10.

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 A795
Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless	ANSI/ASTM A53
Wrought Steel Pipe	ANSI/ASME B36.10M
Specification for Electric-Resistance-Welded Steel Pipe	ASTM A135
Standard for Metallic Sprinkler Pipe for Fire Protection Service	***UL 852***
Copper Tube (Drawn, Seamless)	
Specification for Seamless Copper Tube	ASTM B75
Specification for Seamless Copper Water Tube	ASTM B88
Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube	ASTM B251
Specification for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper-Alloy Tube	ASTM B813
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 B32
Alloy Materials	ASTM B446
Standard for Metallic Sprinkler Pipe for Fire Protection Service	***UL 852***
CPVC	
Nonmetallic Piping Specification for Special Listed Chlorinated Polyvinyl chloride (CPVC) Pipe	ASTM F442
Standard for Thermoplastic Pipe and Fittings for Fire Protection Service	***UL 1821***
Brass Pipe	
Specification for Seamless Red Brass Pipe	ASTM B43
Stainless Steel	
Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes	ASTM A312/312M
Standard for Metallic Sprinkler Pipe for Fire Protection Service	***UL 852***

Statement of Problem and Substantiation for Public Input

UL 1821 and UL 852 standards are widely used standards for Plastic Pipe and Fittings and Metallic Pipe for Fire Protection Services. Currently these standards are not mentioned as a reference standards in the pipe or fittings tables. The addition of the standard will also be consistent with referenced standards in the ICC Fire Code TABLE AG101.1 and Section AG102 for UL 1821 and will help guide manufacturer's to another widely used Standard for Metallic Sprinkler Pipe for Fire Protection Service and will help to prevent confusion within the industry as to the applicable standards for Fire Protection piping for materials.. This addition will guide manufacturers, designers and installers to the correct standards that comply with NFPA 13, 13R and 13D requirements which these same changes have been proposed. There is no fiscal impact associated with these proposals. UL 1821 has additional performance standards above and beyond the other non-metallic pipe standard listed in the table and should be added.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 192-NFPA 13-2016 [Section No. 2.3.8]	
Public Input No. 205-NFPA 13-2016 [Section No. 6.4.1]	

Submitter Information Verification

Submitter Full Name: Mark Fasel
Organization: Viega Llc
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 09 11:44:55 EDT 2016

Public Input No. 349-NFPA 13-2016 [Section No. 6.3.2]

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 (21 bar) shall be in accordance with Schedule 10 for pipe sizes up to 5 in. (125 mm), 0.134 in. (3.4 mm) for 6 in. (150 mm) pipe, 0.188 in. (4.8 mm) for 8 in. and 10 in. (200 mm and 250 mm) pipe, and 0.330 in. (8.4 mm) for 12 in. (300 mm) pipe.

Statement of Problem and Substantiation for Public Input

The removal of the word "roll" from this section allows for a manufacturing method which applies a groove to the end of the pipe that conforms to the required dimensions and performance of a groove, but does not limit the manufacturing method by which the groove is applied.

“Roll” is a manufacturing method by which a keyway is formed on pipe ends in order for mechanical grooved couplings/fittings to be installed. The deformation of the pipe end can be made by several mechanical manufacturing methods (roll, swage or cut whereby removing pipe wall) In either case, the pipe deformation is consistent with the manufacturers dimensional requirements.

Submitter Information Verification

Submitter Full Name: Greg Maurer
Organization: Wheatland Tube Co
Street Address:
City:
State:
Zip:

Submittal Date: Fri Jun 24 08:18:05 EDT 2016

Public Input No. 88-NFPA 13-2016 [Section No. 6.3.2]

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 (21 bar) shall be in accordance with Schedule 10 for pipe sizes up to 5 in. (125 mm), 0.134 in. (3.4 mm) for 6 in. (150 mm) pipe, 0.188 in. (4.8 mm) for 8 in. and 10 in. (200 mm and 250 mm) pipe, and 0.330 in. (8.4 mm) for 12 in. (300 mm) pipe.

(NEW) 6.3.2 Electric resistance welding. Horizontal pipe that is joined be welds with electric resistance methods shall be installed with the seam at the top of the pipe.

Statement of Problem and Substantiation for Public Input

This installation method may reduce the likelihood of MIC build up originating at these seams. We have data from FMGlobal, a respected voice in the fire safety industry, that recommends this practice. See link below.

http://standards.plantops.umich.edu/wp-content/uploads/2016/01/13-30-NFPA-13-FMDS0200-David-King-data-from-Factory-Mutual.pdf

Submitter Information Verification

Submitter Full Name: Michael Anthony
Organization: University of Michigan
Affilliation: @StandardsUMich
Street Address:
City:
State:
Zip:
Submittal Date: Mon Mar 28 21:40:48 EDT 2016

Public Input No. 260-NFPA 13-2016 [New Section after 6.3.9.6.1]

New Section 6.3.9.6.2

Nonmetallic pipe installed in accordance with 6.3.9.6 shall be permitted to be installed in ordinary hazard rooms larger than 400 ft^2 (37 m^2) where the pipe is concealed within a 1-hour fire resistance-rated assembly.

Statement of Problem and Substantiation for Public Input

In residential buildings with ordinary hazard rooms larger than 400 square feet, the installer is required to transition from listed nonmetallic pipe to metallic pipe. This change will eliminate that issue. The requirement to install the nonmetallic pipe within a 1-hour fire resistance-rated assembly will insure the integrity of the piping systems until the sprinkler heads activate.

Submitter Information Verification

Submitter Full Name: Donald Townley

Organization: Lubrizol

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 23 10:45:47 EDT 2016

Public Input No. 420-NFPA 13-2016 [New Section after 6.3.9.6.1]

New Section after 6.3.9.6.1

6.3.9.6.1.1 Nonmetallic pipe listed for light hazard occupancies shall be permitted to be installed in individually controlled garages in residential occupancies where the pipe is concealed within a 1-hour fire resistance-rated assembly.

Statement of Problem and Substantiation for Public Input

Nonmetallic piping installed in these individually controlled garages and concealed within a 1-hour fire resistance-rated assembly should be permitted. The 1-hour layer will adequately protect the pipe.

Submitter Information Verification

Submitter Full Name: Roland Asp

Organization: National Fire Sprinkler Association

Affilliation: NFSA E&S Committee

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 27 21:39:19 EDT 2016

Public Input No. 205-NFPA 13-2016 [Section No. 6.4.1]

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 A234
Steel Pipe Flanges and Flanged Fittings	ASME B16.5
Forged Steel Fittings, Socket Welded and Threaded	ASME B16.11
Rubber Gasketed Fittings for Fire Protection Service	***UL 213***
Copper	
Wrought Copper and Copper Alloy Solder Joint Pressure Fittings	ASME B16.22
Cast Copper Alloy Solder Joint Pressure Fittings	ASME B16.18
Rubber Gasketed Fittings for Fire Protection Service	***UL 213***
CPVC	
Chlorinated Polyvinyl Chloride (CPVC) Specification for Schedule 80 CPVC Threaded Fittings	ASTM F437
Specification for Schedule 40 CPVC Socket Type Fittings	ASTM F438
Specification for Schedule 80 CPVC Socket Type Fittings	ASTM F439
Standard for Thermoplastic Sprinkler Pipe and Fittings For Fire Protection Service	***UL 1821***
Bronze Fittings	
Cast Copper Alloy Threaded Fittings Classes 125 and 250	ASTM B16.15
Stainless Steel	
Specification for Wrought Austenitic Stainless Steel Pipe Fittings	ASTM A403/A403M
Rubber Gasketed Fittings for Fire Protection Service	***UL 213***

Statement of Problem and Substantiation for Public Input

UL 213 is currently not referenced by NFPA 13. UL 213 is a widely used standard for Rubber Gasketed Fittings for Fire Protection Service for Steel, Stainless Steel and Copper fittings.. Many manufacturers are listed to UL 213 and having a reference in the code will help to identify the correct standard for building officials as well as sprinkler designers. As more manufacturers produce press-connect and similar type fittings, this addition will help to guide them to a standard that meets NFPA 13 requirements.

UL 1821 standard is a widely used standard for Plastic Pipe and Fittings for Fire Protection Service. Currently this standard is not mentioned as a referenced standard in the pipe or fittings table. The addition of the standard will also be consistent with referenced standards in the ICC Fire Code TABLE AG101.1 and Section AG102 and will help to prevent confusion within the industry. This addition will guide manufacturers, designers and installers to the correct standards that comply with NFPA 13, 13R and 13D requirements which these same changes have been proposed.

UL 1821 has additional performance standards above and beyond the other non-metallic pipe standards listed in the table and should be added.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 192-NFPA 13-2016 [Section No. 2.3.8]	Reference Publications Additions
Public Input No. 204-NFPA 13-2016 [Section No. 6.3.1.1 [Excluding any Sub-Sections]]	Refernce in the Pipe Table

Submitter Information Verification

Submitter Full Name: Mark Fasel
Organization: Viega Llc
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 09 12:06:35 EDT 2016

Public Input No. 585-NFPA 13-2016 [Section No. 6.4.1]

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 A234
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
Copper and Copper Alloy Press-Connect Pressure Fittings	ASME B16.51
CPVC	
Chlorinated Polyvinyl Chloride (CPVC) Specification for Schedule 80 CPVC Threaded Fittings	ASTM F437
Specification for Schedule 40 CPVC Socket Type Fittings	ASTM F438
Specification for Schedule 80 CPVC Socket Type Fittings	ASTM F439
Bronze Fittings	
Cast Copper Alloy Threaded Fittings Classes 125 and 250	ASTM B16.15
Stainless Steel	
Specification for Wrought Austenitic Stainless Steel Pipe Fittings	ASTM A403/A403M

Statement of Problem and Substantiation for Public Input

Currently NFPA 13 does not currently reference ASME B16.51 This Standard establishes requirements for cast copper alloy, wrought copper, and wrought copper alloy, press-connect pressure fittings for use with hard drawn seamless copper water tube conforming to ASTM B88 for piping systems conveying water. The press-connect system (tube, fitting, and joint) conforming to this Standard is for use at a maximum pressure of 1 380 kPa (200 psi) over the temperature range from 0°C to 93°C (32°F to 200°F).

This Standard provides requirements for fittings suitable for press-connect joining and covers the following:
(a) size designations
(b) pressure–temperature ratings
(c) terminology
(d) dimensions and tolerances

(e) materials
(f) design qualification
(g) required installation instructions
(h) markings

By adding this standard, this will direct users to the correct design and material dimensions for copper press-connect fittings.

Submitter Information Verification

Submitter Full Name: Mark Fasel
Organization: Viega Llc
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jun 29 14:44:43 EDT 2016

Public Input No. 567-NFPA 13-2016 [Section No. 6.5.2.4.8]

6.5.2.4.8

When welding is performed, the following shall apply:

(1) Holes in piping for outlets shall be cut to the full inside diameter of fittings prior to welding in place of the fittings.

(2) Discs shall be retrieved.

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

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

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

(6) ~~Fittings~~ Listed fittings shall not be modified by anyone except the manufacturer .

(7) 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 .

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

(9) Completed circumferential butt weld reinforcement shall not exceed $\frac{3}{32}$ in. (2.4 mm).

Statement of Problem and Substantiation for Public Input

Many times a listed fitting is modified by welding an outlet onto the fitting. This practice violates the listing and can lead to quality control issues.

Submitter Information Verification

Submitter Full Name: John Denhardt

Organization: Strickland Fire Protection In

Affilliation: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 11:52:33 EDT 2016

Public Input No. 215-NFPA 13-2016 [Section No. 6.5.3.1 [Excluding any Sub-Sections]]

Pipe, fittings, valves, and devices to be joined with grooved couplings shall contain cut, rolled, swaged or cast ~~grooves that are dimensionally compatible with the couplings~~ grooves in accordance with standard grooved coupling manufacturer dimensions .

Additional Proposed Changes

File Name	Description	Approved
Wheatland_FM_test_report.pdf	Wheatland supporting FM test document	

Statement of Problem and Substantiation for Public Input

Clarification of "roll groove" as a dimension/performance requirement rather than a type of manufacturing process.

Swage grooving is a method by which to deform the pipe ends during the pipe manufacturing process. It produces a groove keyway that meets dimensional and performance requirements of grooved fitting/coupling manufacturers. The swage groove was independently tested by Factory Mutual to meet all performance requirements including roll groove dimension, bending moment, hydrostatic and vibration testing. FM Swage groove listing and full report has been submitted electronically.

Submitter Information Verification

Submitter Full Name: Robert Bussiere
Organization: Wheatland Tube Co
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 15 08:37:23 EDT 2016

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APPROVAL REPORT

Project No:	3053398
Class:	1630
Product Type:	Non-Threadable Lightwall and Schedule 10 Steel Aboveground Sprinkler Pipe
Product Name:	1-1/4 through 4 inch Mega-Flow Non-Threadable Lightwall and ASTM A135 Schedule 10 Steel Aboveground Sprinkler Pipe with Swaged Groove End Connections with a Rated Working Pressure of 300 PSI (2070 kPa)
Name of Report Holder:	Wheatland Tube Co.
Address of Report Holder:	1 Council Ave. Wheatland, PA 16161 United States
Customer ID:	1000003657

Prepared by

Robert J. Masinda, E.I.T.
Engineer
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Richard B. Dunne
Manager
Fire Protection

December 9, 2014
Date of Approval

FM Approvals
1151 Boston-Providence Turnpike
PO Box 9102
Norwood, MA 02062

1 INTRODUCTION

1.1 Wheatland Tube Co requested an FM Approval examination of their 1-1/4 through 4 inch NPS Mega-Flow non-threadable lightwall steel aboveground sprinkler pipe with swaged grooved end connections for compliance with the standard listed in Section 1.4.

1.2 Wheatland Tube Co requested an FM Approval examination of their 1-1/4 through 4 inch NPS ASTM A135 Schedule 10 steel aboveground sprinkler pipe with swaged grooved end connections for compliance with the standard listed in Section 1.4.

1.3 This Report may be freely reproduced only in its entirety and without modification.

1.4 Standards

1.4.1 FM Approvals Standards

Title	Number	Issue Date
Steel Pipe for Automatic Fire Sprinkler Systems	1630	November, 2013

1.5 Listing

The Products will be updated in the Approval Guide, an on-line resource of FM Approvals, as detailed as an attachment at the end of this Report. Deletions from any current product listing are shown with strikethroughs and additions to the Approval listing are shown in red text.

2 DESCRIPTION

2.1 <u>Design</u>

2.1.1 <u>Mega-Flow Non-Threadable Lightwall Steel Aboveground Sprinkler Pipe</u>

2.1.1.1 The 1-1/4 through 4 inch NPS Mega-Flow non-threadable lightwall steel sprinkler pipe described in this Report is nearly identical to Wheatland Tube Co.'s Mega-Flow product line most recently Approved as part of project identification numbers 3022375, dated July 19, 2005 and 3031147, dated January 3, 2008. The only difference between the sprinkler pipe discussed in this Report and the sprinkler pipe detailed in the aforementioned projects is that the pipe discussed in this Report is available with mechanically swaged groove end connections. The swaged groove end connections are similar to rolled groove end connections except the swaged grooves are applied to the steel pipe during the manufacturing process instead of during the installation process as rolled grooves are applied.

2.1.1.2 The pipe described below is designated and manufactured in conformance to American Society for Testing and Materials (ASTM) Standards, see Table 2.1.1.2 below.

<u>Table 2.1.1.2</u>

ASTM Specification	Nominal Size (inch)	Min. O.D. (inch)	Nom. O.D. (inch)	Max O.D. (inch)	Minimum Wall Thickness (inch)	Nominal Wall Thickness (inch)	Maximum Wall Thickness (inch)
A795	1-1/4	1.644	1.660	1.6763	0.062	0.065	0.068

ASTM Specification	Nominal Size (inch)	Min. O.D. (inch)	Nom. O.D. (inch)	Max O.D. (inch)	Minimum Wall Thickness (inch)	Nominal Wall Thickness (inch)	Maximum Wall Thickness (inch)
A795	1-1/2	1.884	1.900	1.916	0.076	0.08	0.084
A795	2	2.351	2.375	2.399	0.076	0.08	0.084
A795	2-1/2	2.846	2.875	2.904	0.080	0.084	0.088
A795	3	3.465	3.500	3.535	0.087	0.092	0.097
A795	4	4.55	4.500	4.545	0.087	0.092	0.097

2.1.2 ASTM A135 Schedule 10 steel aboveground sprinkler pipe

2.1.2.1 The 1-1/4 through 4 inch NPS ASTM A135 Schedule 10 steel sprinkler pipe described in this Report is nearly identical to Wheatland Tube Co.'s Schedule 10 product line most recently Approved as part of project identification numbers 3022175, dated January 31, 2005 and 3022375, dated July 19, 2005. The only difference between the sprinkler pipe discussed in this Report and the sprinkler pipe detailed in the aforementioned projects is that the pipe discussed in this Report is available with mechanically swaged groove end connections. The swaged groove end connections are similar to rolled groove end connections except the swaged grooves are applied to the steel pipe during the manufacturing process instead of during the installation process as rolled grooves are applied.

2.1.2.2 The pipe described below is designated and manufactured in conformance to American Society for Testing and Materials (ASTM) Standards, see Table 2.1.2.2 below.

Table 2.1.2.2

Schedule	ASTM Specification	Nominal Size (inch)	Minimum O.D. (inch)	Nominal O.D. (inch)	Maximum O.D. (inch)	Minimum Wall Thickness (inch)	Nominal Wall Thickness (inch)	Maximum Wall Thickness (inch)
10	A135	1-1/4	1.644	1.660	1.676	0.095	0.109	0.114
10	A135	1-1/2	1.884	1.900	1.916	0.095	0.109	0.114
10	A135	2	2.351	2.375	2.399	0.095	0.109	0.120
10	A135	2-1/2	2.846	2.875	2.904	0.105	0.120	0.132
10	A135	3	3.465	3.500	3.535	0.105	0.120	0.132
10	A135	4	4.455	4.500	4.545	0.105	0.120	0.132

2.2 Rated Working Pressure

2.2.1 The rated working pressure of the 1-1/4 through 4 inch NPS Mega-Flow non-threadable lightwall steel aboveground sprinkler pipe with swaged grooved end connections discussed in this Report is 300 psi (2070 kPa).

2.2.2 The rated working pressure of the 1-1/4 through 4 inch NPS ASTM A135 Schedule 10 steel aboveground sprinkler pipe with swaged grooved end connections discussed in this Report is 300 psi (2070 kPa).

3 EXAMINATIONS AND TESTS

3.1 Samples were submitted for examination and testing. The samples were considered to be representative of the product line and were examined, tested, and compared to the manufacturer's drawings. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

3.2 All testing and analysis considered appropriate was conducted and verified to be in compliance with the standards defined in Section 1.3.

3.3 Detailed analysis can be found as an attachment at the end of this Report.

4 MARKING

4.1 Each length of pipe shall be permanently and continuously marked with the following minimum information:

- Manufacturer's name or trademark;
- Nominal pipe size and length;
- Schedule or model reference;
- Rated working pressure;
- National or International standard (including grade reference) to which the pipe was manufactured;
- Manufacturing Source code;
- Production test reference;
- Heat number or Run number; and,
- The FM Approvals Certification Mark.

4.2 Markings shall be painted, inked or laser printed on the outside surface of each length of pipe at regular intervals. The spacing between the end of one complete marking and the start of the next shall not exceed 12 inches (300 mm).

4.3 Each marking described in Section 4.1 shall be legible and durable and shall be applied in any of, or any combination of, the above methods.

5 REMARKS

5.1 The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing this product.

5.2 Installations shall comply with the latest edition of the manufacturer's instruction manual.

6 SURVEILLANCE AUDIT

The design and manufacturing facilities at the following locations are subject to follow-up audit inspections. The facilities and quality control procedures in place have been found to be satisfactory to manufacture product identical to that examined and tested as described in this Report. A Form 797 shall be submitted to FM Approvals for requesting any additional manufacturing facilities which are not listed below. The Products discussed in this Report are FM Approved only when designed and manufactured in the following facilities:

Design	**Manufacturing**
Wheatland Tube Co. 1 Council Ave. Wheatland, PA 16161 United States	Wheatland Tube Co. 901 Dietz Road NE Warren, OH 44483 United States

7 MANUFACTURER'S RESPONSIBILITIES

7.1 Documentation considered critical to this Approval is on file at FM Approvals and is listed in the Documentation File, Section 8, of this Report. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The FM Approved Product Revision Report, Form 797, shall be forwarded to FM Approvals as notice of proposed changes.

7.2 The manufacturer is responsible for control of the product marking and installation instructions for the product.

7.3 The manufacturer shall provide installation, operating, and maintenance manual(s) with each system.

7.4 Test Requirement No. 1 – Hydrostatic Test

The manufacturer shall perform hydrostatic pressure testing on 100 percent of production pipe that bears the FM Approval Mark. Lengths of pipe that fail testing shall be suitably marked as scrap and segregated from satisfactory material. Where the national or international standard used in the manufacturing of steel sprinkler pipe permits an alternate method of testing, such as eddy current inspection of the weld area, in lieu of hydrostatic pressure testing, acceptance of the alternate test method is at the discretion of FM Approvals. The manufacturer shall have a controlled procedure on file for conducting this test, calibration records for the equipment used, a controlled set of calibration test samples, and a disposition procedure of the rejected material.

7.5 Test Requirement No. 2 – Flattening Test

The manufacturer shall perform flattening tests as required by the manufacturing specification that is used to produce the pipe. The manufacturer shall have a controlled procedure on file for conducting this test, recording the data and facilities for storing the data for recall as necessary.

8 DOCUMENTATION FILE

All pertinent Report documents are outlined in the ATTACHMENTS list below.

9 CONCLUSION

The Products described in Sections 1.1 and 1.2 of this Approval Report meet FM Approvals requirements. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

PROJECT DATA RECORD: 3053398

ATTACHMENTS:
Approval Guide Listing "Mega-Flow"
Approval Guide Listing Schedule 10
Detailed Analysis

APPROVAL GUIDE LISTING FOR MEGA-FLOW

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Pipe Fittings – Steel Pipe – Lightwall Pipe - Non-threadable Non-schedule-Normal connections welded, rolled groove or plain end

Wheatland Tube Co
1 Council Ave, Wheatland, Pennsylvania 16161, USA

Product		Listing Country	Nominal Pipe Size, in.	Rated Working Pressure, psi	Rated Working Pressure, kPa	Certification Type
Mega-Flow [a, c, g, h, m, n, o]		United States of America	1 1⁄4, 1 1⁄2, 2	175	1205	FM Approved
Mega-Flow [a, c, h, m, n, o]		United States of America	1 1⁄4, 1 1⁄2, 2, 2 1⁄2, 3, 4, 6	300	2070	FM Approved
Mega-Flow [a, c, h, m, n, o, q]		United States of America	1 1⁄4, 1 1⁄2, 2, 2 1⁄2, 3, 4	300	2070	FM Approved

a -FM Approved for use with FM Approved pipe couplings on rolled grooves.
c -FM Approved for use in welded systems when supplied with standard bevel on ends.
g -FM Approved for use with plain-end fittings.
h -FM Approved for use when the listings of the couplings or fittings make specific mention of their suitability with this sprinkler pipe.
m -FM Approved for use in all steel sprinkler systems composed of uncoated or coated (MIC Shield) steel pipe.
n -FM Approved for use in hybrid sprinkler systems composed of uncoated steel and plastic piping.
o -FM Approved for use in hybrid sprinkler systems composed of coated (MIC Shield) steel and CVPC plastic piping.
q – FM Approved for use with swaged groove end connections

APPROVAL GUIDE LISTING FOR SCHEDULE 10

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Pipe Fittings – Steel Pipe – Schedule 10 -Normal connections are welded, rolled groove or plain end

Wheatland Tube Co
1 Council Ave, Wheatland, Pennsylvania 16161, USA

Product		Listing Country	Nominal Pipe Size, in.	Rated Working Pressure, psi	Rated Working Pressure, kPa	Certification Type
Schedule 10 [a, c, d, g, m, n, o]		United States of America	1 1⁄4, 1 1⁄2, 2	175	1205	FM Approved
Schedule 10 [a, c, d, m, n, o]		United States of America	1 1⁄4, 1 1⁄2, 2, 2 1⁄2, 3, 4, 5, 6, 8	300	2070	FM Approved
Schedule 10 [d, m, n, o, q]		United States of America	1 1⁄4, 1 1⁄2, 2, 2 1⁄2, 3, 4	300	2070	FM Approved

a – FM Approved for use with FM Approved pipe couplings on rolled grooves.
c – FM Approved for use in welded systems when supplied with standard bevel on ends.
d – When hot dip galvanized by factory, the sprinkler pipe is FM Approved for dry systems.
g – FM Approved for use with plain-end fittings.
h – FM Approved for use when the listings of the couplings or fittings make specific mention of their suitability with this sprinkler pipe.
m – FM Approved for use in all steel sprinkler systems composed of uncoated or coated (MIC Shield) steel pipe.
n – FM Approved for use in hybrid sprinkler systems composed of uncoated steel and plastic piping.
o – FM Approved for use in hybrid sprinkler systems composed of coated (MIC Shield) steel and CVPC plastic piping.
q – FM Approved for use with swaged groove end connections

DETAILED ANALYSIS

1. Examination

The manufacturer provided samples of their Mega-Flow non-threadable lightwall and ASTM A135 Schedule 10 steel aboveground sprinkler pipe as detailed below for examination and testing. The samples were considered to be representative of the product line and were examined, tested, and compared to the manufacturer's drawings. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

2. Tests Performed

2.1 Hydrostatic Strength

2.1.1 Mega-Flow Non-Threadable Lightwall Steel Aboveground Sprinkler Pipe

Sample Mega-Flow non-threadable lightwall steel aboveground sprinkler pipe, detailed below, were assembled to two short lengths of roll grooved Standard 30 steel sprinkler pipe and were subjected to hydrostatic strength testing. With all ends capped, the assembly was filled with water, making sure all air was vented out of the assembly and subjected to 4 times their rated working pressure for 5 minutes. There were no signs of cracking or permanent distortion of any of the assemblies as a result of this test. Satisfactory results are detailed in Table 2.1.1 below.

Table 2.1.1

Size Coupling (inch NPS)	Pipe Used	Coupling Manufacturer and Model	Rated Working Pressure psi (kPa)	Test Pressure psi (kPa)
1-1/4	Mega-Flow	Victaulic 009	300 (2070)	1200 (8275)
1-1/4	Mega-Flow	Tyco 772	300 (2070)	1200 (8275)
2	Mega-Flow	Victaulic 009	300 (2070)	1200 (8275)
2	Mega-Flow	Victaulic 75	300 (2070)	1200 (8275)
3	Mega-Flow	Tyco 772	300 (2070)	1200 (8275)
4	Mega-Flow	Victaulic 005H	300 (2070)	1200 (8275)
4	Mega-Flow	Victaulic 005H	300 (2070)	1200 (8275)
4	Mega-Flow	Grinnell 707	300 (2070)	1200 (8275)
4	Mega-Flow	Grinnell 707	300 (2070)	1200 (8275)

2.1.2 ASTM A135 Schedule 10 Steel Aboveground Sprinkler Pipe

Sample ASTM A135 Schedule 10 steel aboveground sprinkler pipe, detailed below, were assembled to two short lengths of roll grooved Standard 30 steel sprinkler pipe and were subjected to hydrostatic strength testing. With all ends capped, the assembly was filled with water, making sure all air was vented out of the assembly and subjected to 4 times their rated working pressure for 5 minutes. There were no signs of cracking or permanent distortion of any of the assemblies as a result of this test. Satisfactory results are detailed in Table 2.1.2 below.

Table 2.1.2

Size Coupling (inch NPS)	Pipe Used	Coupling Manufacturer and Model	Rated Working Pressure psi (kPa)	Test Pressure psi (kPa)
1-1/4	Schedule 10	Victaulic 75	300 (2070)	1200 (8275)
1-1/4	Schedule 10	Victaulic 009	300 (2070)	1200 (8275)
1-1/4	Schedule 10	Tyco 772	300 (2070)	1200 (8275)
1-1/2	Schedule 10	Victaulic 009	300 (2070)	1200 (8275)
1-1/2	Schedule 10	Victaulic 77	300 (2070)	1200 (8275)
1-1/2	Schedule 10	Anvil 7400	300 (2070)	1200 (8275)
2	Schedule 10	Victaulic 009	300 (2070)	1200 (8275)
2	Schedule 10	Victaulic 75	300 (2070)	1200 (8275)
2	Schedule 10	Tyco 705	300 (2070)	1200 (8275)
2-1/2	Schedule 10	Victaulic 009	300 (2070)	1200 (8275)
2-1/2	Schedule 10	Victaulic 75	300 (2070)	1200 (8275)
2-1/2	Schedule 10	Anvil 7400	300 (2070)	1200 (8275)
3	Schedule 10	Victaulic 009	300 (2070)	1200 (8275)
3	Schedule 10	Victaulic 75	300 (2070)	1200 (8275)
3	Schedule 10	Anvil 7400	300 (2070)	1200 (8275)
4	Schedule 10	Victaulic 009	300 (2070)	1200 (8275)
4	Schedule 10	Victaulic 75	300 (2070)	1200 (8275)
4	Schedule 10	Tyco 772	300 (2070)	1200 (8275)

2.2 Bending Moment Resistance

2.2.1 Mega-Flow Non-Threadable Lightwall Steel Aboveground Sprinkler Pipe

The assemblies, detailed in Table 2.1.1, were filled with water and subjected to their rated working pressure. The assemblies were placed in a fixture that provided support at a spacing of 24 inches (0.6 m) and was positioned so that the test couplings were centered between the supports. The required bending moment is detailed in Table 2.2.1. There was no leaking or evidence of failure observed in any of the test samples at the required bending moments.

The required moment was calculated based upon a hanger spacing of 15 ft. (4.57 m), assumption of a missing hanger and a safety factor of two. The pipe weights were used in the calculation of these values were that of water-filled schedule 40 pipe to simulate a worst case condition of a system incorporating a non-homogeneous selection of pipe. These test results are considered satisfactory.

Table 2.2.1

Size Coupling (inch NPS)	Pipe Used	Coupling Manufacturer and Model	Rated Working Pressure psi (kPa)	Required Bending Moment lb-ft (N-m)
1-1/4	Mega-Flow	Victaulic 009	300	420 (570)
1-1/4	Mega-Flow	Tyco 772	300	420 (570)
2	Mega-Flow	Victaulic 009	300	1150 (1560)
2	Mega-Flow	Victaulic 75	300	1150 (1560)
3	Mega-Flow	Tyco 772	300	2425 (3290)
4	Mega-Flow	Victaulic 005H	300	3670 (4975)
4	Mega-Flow	Victaulic 005H	300	3670 (4975)
4	Mega-Flow	Grinnell 707	300	3670 (4975)
4	Mega-Flow	Grinnell 707	300	3670 (4975)

2.2.2 ASTM A135 Schedule 10 Steel Aboveground Sprinkler Pipe

The assemblies, detailed in Table 2.2.2, were filled with water and subjected to their rated working pressure. The assemblies were placed in a fixture that provided support at a spacing of 24 inches (0.6 m) and was positioned so that the test couplings were centered between the supports. The required bending moment is detailed in Table 2.2.2. There was no leaking or evidence of failure observed in any of the test samples at the required bending moments.

The required moment was calculated based upon a hanger spacing of 15 ft. (4.57 m), assumption of a missing hanger and a safety factor of two. The pipe weights were used in the calculation of these values were that of water-filled schedule 40 pipe to simulate a worst case condition of a system incorporating a non-homogeneous selection of pipe. These test results are considered satisfactory.

Table 2.2.2

Size Coupling (inch NPS)	Pipe Used	Coupling Manufacturer and Model	Rated Working Pressure psi (kPa)	Required Bending Moment lb-ft (N-m)
1-1/4	Schedule 10	Victaulic 75	300	420 (570)
1-1/4	Schedule 10	Victaulic 009	300	420 (570)
1-1/4	Schedule 10	Tyco 772	300	420 (570)
1-1/2	Schedule 10	Victaulic 009	300	810 (1100)
1-1/2	Schedule 10	Victaulic 77	300	810 (1100)
1-1/2	Schedule 10	Anvil 7400	300	810 (1100)
2	Schedule 10	Victaulic 009	300	1150 (1560)
2	Schedule 10	Victaulic 75	300	1150 (1560)
2	Schedule 10	Tyco 705	300	1150 (1560)
2-1/2	Schedule 10	Victaulic 009	300	1770 (2400)
2-1/2	Schedule 10	Victaulic 75	300	1770 (2400)
2-1/2	Schedule 10	Anvil 7400	300	1770 (2400)
3	Schedule 10	Victaulic 009	300	2425 (3290)
3	Schedule 10	Victaulic 75	300	2425 (3290)
3	Schedule 10	Anvil 7400	300	2425 (3290)
4	Schedule 10	Victaulic 009	300	3670 (4975)
4	Schedule 10	Victaulic 75	300	3670 (4975)
4	Schedule 10	Tyco 772	300	3670 (4975)

2.3 Vibration Resistance

The sample detailed below was subjected to vibration testing. The sample was filled with water making sure to remove all trapped air within the sample. Prior to the start of the vibration test, the sample was subjected to an internal pressure of twice the rated working pressure for a duration of five minutes. After this test, the sample was mounted to a vibration table and subjected to an internal pressure of 80 psi (550 kPa) which was maintained throughout the vibration test sequence.

Size Coupling (inch NPS)	Pipe Used	Coupling Manufacturer and Model	Rated Working Pressure psi (kPa)	Test Pressure psi (kPa)
1-1/4	Mega-Flow	Victaulic 005H	300 (2070)	600 (4135)
1-1/4	Mega-Flow	Grinnell 707	300 (2070)	600 (4135)
2	Mega-Flow	Victaulic 005H	300 (2070)	600 (4135)
2	Mega-Flow	Grinnell 707	300 (2070)	600 (4135)
4	Mega-Flow	Victaulic 005H	300 (2070)	600 (4135)
4	Mega-Flow	Grinnell 707	300 (2070)	600 (4135)

The test assemblies detailed above were subjected to the following vibration settings:

Amplitude, inch (mm)	Total Displacement, inch (mm)	Frequency, Hz	Time, hours
0.020 (0.51)	0.040 (1.02)	18 – 37 (Variable)	5
0.035 (0.90)	0.070 (1.78)	18 – 37 (Variable)	5
0.010 (0.25)	0.020 (0.51)	28	5
0.020 (0.51)	0.040 (1.02)	28	5
0.075 (1.91)	0.150 (3.81)	28	5

After the completion of all vibration cycles, the samples were subjected to a hydrostatic pressure equal to four times the rated working pressure. There was no observed evidence of leakage as a result of this test. This result is considered satisfactory.

Size Coupling (inch NPS)	Pipe Used	Coupling Manufacturer and Model	Rated Working Pressure psi (kPa)	Test Pressure psi (kPa)
1-1/4	Mega-Flow	Victaulic 005H	300 (2070)	1200 (8275)
1-1/4	Mega-Flow	Grinnell 707	300 (2070)	1200 (8275)
2	Mega-Flow	Victaulic 005H	300 (2070)	1200 (8275)
2	Mega-Flow	Grinnell 707	300 (2070)	1200 (8275)
4	Mega-Flow	Victaulic 005H	300 (2070)	1200 (8275)
4	Mega-Flow	Grinnell 707	300 (2070)	1200 (8275)

3. Conclusion

Based on the above results, no additional tests were deemed necessary.

Public Input No. 351-NFPA 13-2016 [Section No. 6.5.3.1 [Excluding any Sub-Sections]]

Pipe, fittings, valves, and devices to be joined with grooved couplings shall contain grooves cut ~~, rolled, or cast~~ or formed by a manufacuring method results in grooves that ~~are dimensionally~~ are dimensionally compatible with the couplings.

Statement of Problem and Substantiation for Public Input

“Roll” is a manufacturing method by which a keyway is formed on pipe ends in order for mechanical grooved couplings/fittings to be installed. The deformation of the pipe end can be made by several mechanical manufacturing methods (roll, swage or cut whereby removing pipe wall) In either case, the pipe deformation is consistent with the manufacturers dimensional requirements.

Submitter Information Verification

Submitter Full Name: Greg Maurer

Organization: Wheatland Tube Co

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Zip:

Submittal Date: Fri Jun 24 09:14:49 EDT 2016

Public Input No. 190-NFPA 13-2016 [Section No. 6.5.4]

6.5.4 * Brazed, Soldered and ~~Soldered~~ ***Press-Connect*** Joints.

6.5.4.1

Solder joints, where permitted, shall be fabricated in accordance with the methods and procedures listed in ASTM B828, *Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings.*

6.5.4.2

Unless the requirements of 6.5.4.3 or 6.5.4.4 are met, joints for the connection of copper tube shall be brazed or ***Press-Connect*** .

6.5.4.3

Solder joints shall be permitted for exposed wet pipe systems in light hazard occupancies where the temperature classification of the installed sprinklers is of the ordinary- or intermediate-temperature classification.

6.5.4.4

Solder joints shall be permitted for wet pipe systems in light hazard and ordinary hazard (Group 1) occupancies where the piping is concealed, irrespective of sprinkler temperature ratings.

6.5.4.5 *

Soldering fluxes shall be in accordance with Table 6.3.1.1.

6.5.4.6

Brazing fluxes, if used, shall not be of a highly corrosive type.

Statement of Problem and Substantiation for Public Input

Current language only permits brazing in lieu of soldering. Press-Connect fittings are listed to UL 213 and are not prohibited from being installed in concealed locations. Adding this language will prevent confusion in the industry of the allowable use of Press-Connect fittings for copper pipe joining in concealed locations.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 188-NFPA 13-2016 [New Section after 3.5.8]	

Submitter Information Verification

Submitter Full Name: Mark Fasel
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Submittal Date: Mon Jun 06 16:09:36 EDT 2016

Public Input No. 602-NFPA 13-2016 [Section No. 6.5.5.1]

6.5.5.1

Other joining methods investigated for suitability in ~~automatic~~ sprinkler installations and listed for this service shall be permitted where installed in accordance with their listing limitations, including installation instructions.

Statement of Problem and Substantiation for Public Input

This deleted text is not necessary.

Submitter Information Verification

Submitter Full Name:	John Denhardt
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Affilliation:	American Fire Sprinkler Association
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City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 16:41:54 EDT 2016

Public Input No. 472-NFPA 13-2016 [New Section after 6.6.1.2]

TITLE OF NEW CONTENT

6.6.1.2.1 Valves with an automatic means to operate the valve shall not close in less than 5 seconds when operated at maximum possible speed from the fully open position.

Statement of Problem and Substantiation for Public Input

Technology now allows for automated valves to be used in systems. These valves must have the same restrictions on closing time to avoid water hammer and damage to the system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 473-NFPA 13-2016 [New Section after 6.6.1.3.3]	

Submitter Information Verification

Submitter Full Name: Terry Victor

Organization: Tyco Simplex Grinnell

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 11:01:38 EDT 2016

Public Input No. 473-NFPA 13-2016 [New Section after 6.6.1.3.3]

6.6.2 Automated Valves. _ A listed indicating valve with automated controls shall be permitted.

6.6.2.1 A listed automated water control valve assembly with a reliable position indication connected to a remote supervisory station shall be permitted.

6.6.2.2 An automated water control valve shall be able to be operated manually as well as automatically.

Statement of Problem and Substantiation for Public Input

Technology now allows for automated valves to be used in systems. These requirements for these valves need to be included in this section. The valve must indicate whether it's open or closed, or a means of supervision that indicates its position must be provided just like a standard control valve. If an automated valve is provided it still needs to be able to be opened and closed manually.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 472-NFPA 13-2016 [New Section after 6.6.1.2]	

Submitter Information Verification

Submitter Full Name: Terry Victor
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Submittal Date: Tue Jun 28 11:04:49 EDT 2016

Public Input No. 55-NFPA 13-2016 [Section No. 6.8.1]

6.8.1 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~~ less than that from a single automatic sprinkler, located on the end of the most distant sprinkler pipe in the upper story, and of the smallest K-factor installed on the system will result in an audible alarm on the premises within 5 minutes after such flow begins and until such flow stops.

Statement of Problem and Substantiation for Public Input

To correlate with new proposed section 8.17.4.1.5.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 54-NFPA 13-2016 [New Section after 8.17.4.1.4]	

Submitter Information Verification

Submitter Full Name: James Richardson

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Submittal Date: Thu Feb 18 17:41:22 EST 2016

Public Input No. 616-NFPA 13-2016 [Section No. 7.1.1.2]

7.1.1.2

Pressure gauges shall be installed above and below each alarm check valve or ~~system~~ system ~~riser~~ ~~check~~ check valve where such devices are present.

7.1.1.2.1

~~Pressure gauges below check valves required by 8.17.5.2.2 (1) shall not be required .~~ Pressure gauges required by 7.1.1.2 are not required for check valves for fire department connections or valve trim check valves.

Add a new Annex Section:

A.7.1.1.2 Pressure gauges installed on both sides of a check valve are necessary for several reasons. They can quickly indicate an abnormal condition such as a closed valve or an inoperable check valve. If the pressure on the downstream side of a check valve is less than the pressure on the upstream side, either the pressure gauges are faulty or the check valve is inoperable. If the pressure on the upstream side of a check valve is less than the pressure on the downstream side, the pressure is trapped indicating a higher than normal pressure. This erroneous pressure will then be part of a main drain test. If a pressure gauge is installed only on the downstream side of the check valve a pressure would be indicated but the pressure on the upstream side could be 0.0 psi indicating a severe problem.

Statement of Problem and Substantiation for Public Input

The deletion of the word "riser" is to avoid confusion and ensure that all system check valves are provided with pressure gauges. The justification for this proposal is provided in the proposed A.7.1.1.2. Check valves that do not require pressure gauges are addressed in the proposed 7.1.1.2.1.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 619-NFPA 13-2016 [Section No. A.8.17.5.2.2]	

Submitter Information Verification

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Submittal Date: Wed Jun 29 20:27:13 EDT 2016

Public Input No. 371-NFPA 13-2016 [Section No. 7.1.1.2 [Excluding any Sub-Sections]]

Pressure gauges shall be installed above and below each alarm check valve or system riser check valve where such devices are present. A single pressure gauge shall be permitted to be installed on a manifold below multiple riser check valves or alarm check valves.

Statement of Problem and Substantiation for Public Input

The current text can be interpreted as requiring a gauge under each riser check even if installed on a manifold.

Submitter Information Verification

Submitter Full Name: Jason Gill

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Affilliation: AFSA

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Submittal Date: Sat Jun 25 12:39:20 EDT 2016

Public Input No. 417-NFPA 13-2016 [New Section after 7.2.6.3.2]

Air Supply Compatibility

The air supply shall be compatible with all components used in a sprinkler system.

Annex - For example, when an air supply is being provided by an oil-lubricated type air compressor, preventive measures should be provided to ensure that the air supply is not contaminated with oil vapors since most grooved gaskets require "oil-free" air. Most oil-lubricated air compressors do not produce "oil-free" air.

Statement of Problem and Substantiation for Public Input

In reading literature from and in discussion with air compressor manufacturer, their oil lubricated air compressors are not to be considered oil free. In similar discussions with gasket manufacturers, their warranty and listing are voided with air that is not oil free. This is also stated in the published literature. In general, our industry is unaware of this issue. We have been installing filters to make sure the air is oil free with great sucess.

Submitter Information Verification

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Submittal Date:	Mon Jun 27 17:37:42 EDT 2016

Public Input No. 451-NFPA 13-2016 [Section No. 7.2.6.4.1]

7.2.6.4.1

~~Connection pipe~~ The connection from the air supply to the dry pipe valve shall not be less than ½ in. (15 mm) in diameter and shall enter the system above the priming water level of the dry pipe valve.

Statement of Problem and Substantiation for Public Input

The language of "connection pipe" has brought into question whether a flexible "hose" connection would not be an acceptable connection means, even though it is commonly supplied by manufacturers. As this section's purpose is to address the connection diameter and point of the connection with the dry pipe valve, the word "pipe" is not necessary. In conjunction with the removal of the word "pipe" annex language is then proposed to indicate that the type of connection is recommended by the manufacturer of the air compressor and approved by the authority having jurisdiction. The recommended connection takes into account the pressures, temperatures and vibrations that the connection will undergo.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 455-NFPA 13-2016 [New Section after A.7.2.6.3.2]	

Submitter Information Verification

Submitter Full Name: Louis Guerrazzi
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Submittal Date: Tue Jun 28 09:19:37 EDT 2016

Public Input No. 393-NFPA 13-2016 [Section No. 7.2.6.4.2]

7.2.6.4.2

A check valve shall be installed in the air filling connection. For systems that are filled manually , ~~and~~ a listed or approved shutoff valve of either the renewable disc or ball valve type shall be installed on the supply side of this check valve and shall remain closed unless filling the system.

Statement of Problem and Substantiation for Public Input

Current wording appears to be legacy language for systems that utilize a non-automatic air/nitrogen source; however, without clarification this section conflicts with requirements for (most) systems that utilize an automatic pneumatic source.

Submitter Information Verification

Submitter Full Name: Cary Webber
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City:
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Submittal Date: Mon Jun 27 11:04:16 EDT 2016

Public Input No. 458-NFPA 13-2016 [Section No. 7.2.6.5]

~~7.2.6.5 Relief Valve.~~

~~An approved relief valve shall be provided between the air supply and the shutoff valve and shall be set to relieve pressure no less than 10 psi (0.7 bar) in excess of system air pressure provided in 7.2.6.7.1 and shall not exceed the manufacturer's limitations.~~

Statement of Problem and Substantiation for Public Input

Delete section 7.2.6.5 on the basis that a relief valve on manually operated systems are needed but are not needed on systems that have automatic air maintenance. Relief valves can have the tendency to stay stuck open and thus not allow the air supply to continually feed the dry pipe valve. This can result in false trips of systems. Additionally, there is no requirement in NFPA 25 that currently addresses relief valves in the trim of dry, preaction/deluge systems.

Submitter Information Verification

Submitter Full Name: Ahmed Saleh
Organization: Victaulic Company of America
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City:
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Submittal Date: Tue Jun 28 09:31:06 EDT 2016

Public Input No. 264-NFPA 13-2016 [New Section after 7.2.6.6]

7.2.6.6.5

Where an air compressor is the dedicated air supply, it shall be installed in accordance with NFPA 70, Article 430 .

7.2.6.6.5.1

The disconnecting means for an automatic air compressor shall not be a general-use light switch or a cord-and-plug connected motor.

Statement of Problem and Substantiation for Public Input

NFPA 70, article 430 provides requirements for general use motors, motor circuits and controllers. Section 430.109 provides requirements for disconnecting means and requires you to meet 430.109(A) unless certain provisions are met to meet the disconnecting means of 430.109(B)-(G). The use of a general-use light switch and cord-and-plug connected air supplies is bad practice even though NFPA 70 permits general use light switches (NEC 430.109(C) (1)) and cord-and-plug-connected motors (NEC 430.109 (F)). Field service shows that many false trips are due to a general-use light switch disconnecting the air compressor or a cord-and-plug being disconnected. The equipment called out by way of the term “general use light switch” is too broad, most general use light switches do not have the capability to handle the amp load of an industrial air compressor regardless of motor horsepower. Furthermore, cord-and-plug does not fit within the definition of a permanently installed air supply from an electrical perspective. The disconnecting means must also have the capacity to be locked and tagged both according to the NEC’s definition of system isolation equipment for motors, motor circuits, and controllers (430.2) and according to OSHA’s standard for The Control of Hazardous Energy, Title 29 (29 CFR 1910.147, CFR 1910.333)

- There is precedent for referencing electrical requirements in NFPA 13 – NFPA 13.6.8.4.2 refers to NFPA 70 as well as 13.2.4 Reference in Mandatory Sections
- The best practice for the electrical installation of an air supply is to hardwire the air compressor to an industrial disconnect switch located within 6 feet of the unit as shown below.
- While the air compressor does not need to be a listed component, poor installation practices lead to increased failures of a system. A higher level on installation should be required similarly to the requirements a pump for an NFPA 13D system, which is also not required to be listed.

Submitter Information Verification

Submitter Full Name: Raymond M Fremont

Organization: General Air Products, Inc.

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 23 14:37:35 EDT 2016

Public Input No. 409-NFPA 13-2016 [New Section after 7.2.6.6]

7.2.6.6.5 A high/low pressure supervisory signal to a constantly attended location shall be installed.

Statement of Problem and Substantiation for Public Input

Most dry pipe systems have use high/low pressure switches. NFPA 72 still maintains the requirements for how to install such switches. However, the base NFPA 13 code does not clearly require the installation of such a switch. This change adds this requirement. For areas subject to freezing, this switch can prevent accidental filling of pipe and possible freezing of pipe. Further, this switch will help to avoid high air pressure within dry pipe systems, which can lead to longer delays in water delivery to a fire.

Submitter Information Verification

Submitter Full Name: Lynn Nielson

Organization: City Of Henderson

Affilliation: Self

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 27 16:16:48 EDT 2016

Public Input No. 42-NFPA 13-2016 [New Section after 7.2.6.7]

TITLE OF NEW CONTENT Hi/Low Air Pressure Alarm

Type your content here ...A Hi/Low Air Pressure Alarm shall be be provided between the Isolation valve and check valve on the air line.

Statement of Problem and Substantiation for Public Input

While Hi/Low supervisory alarm pressure switches are commonly used they are still quite often omitted from new installations. The 2016 edition of NFPA 13 section 7.2.6.8.3 does require that a Low Pressure Alarm be installed for "gas storage containers to notify the need for refilling.", but there is no other requirement to alarm or monitor for abnormal hi or low pressure. The loss of an automatic air/nitrogen supply for a dry fire sprinkler system can in some circumstances have catastrophic consequences. Entire dry systems have needed to be removed and replaced or left out of service for months due to false trips due to loss of pressure in cold weather months and could be prevented by the installation and monitoring of this relatively inexpensive alarm attachment. I propose this be added to this section as 7.2.6.7.3 and if accepted I would also suggest to include a low air alarm pressure test as a required field on the contractors Material & Test Certificate for Above Ground Pipe in Figure 25.1 (p.1 of 3)

Submitter Information Verification

Submitter Full Name: David Baron
Organization: Global Fire Protection Company
Street Address:
City:
State:
Zip:
Submittal Date: Thu Feb 11 11:52:38 EST 2016

Public Input No. 214-NFPA 13-2016 [Section No. 7.2.6.8]

7.2.6.8 Nitrogen or Other Approved Gas.

7.2.6.8.1*

Where nitrogen or other approved gas is used, the supply shall be from a reliable source.

7.2.6.8.2

Where stored nitrogen or other approved gas is used, the gas shall be introduced through a pressure regulator and shall be in accordance with 7.2.6.6.

7.2.6.8.3

A low pressure alarm shall be provided on gas storage containers to notify the need for refilling.

7.2.6.8.4*

When nitrogen or other approved gas is the only source of gas for pressurizing a system it shall shall have a capacity capable of restoring normal gas pressure in the system within 30 minutes.

A.7.2.6..8.3.When a single nitrogen or other approved gas source serves multiple dry pipe systems, the 30-minute fill time is based on the single largest system.

Statement of Problem and Substantiation for Public Input

The addition of this section and annex material matches for nitrogen or other approved gas match the same existing requirement for any air supply in section 7.2.6.3.2. If restoring normal pressure in 30 minutes is required for air it should also be required for nitrogen or other approved gas.

Submitter Information Verification

Submitter Full Name: John Deutsch

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Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 14 13:23:07 EDT 2016

Public Input No. 262-NFPA 13-2016 [New Section after 7.3.1.2]

7.3.1.2.1 Actuator Supervision

Removal of an electric actuator from the pre-action or deluge valve that it controls shall result in an audible and visual indication of system impairment at the system releasing control panel.

Statement of Problem and Substantiation for Public Input

Currently is a solenoid coil is removed from a pre-action or deluge system, there is no indication at the releasing control panel that the system will not work if smoke or heat is detected.

If this is not the correct location for this, please move it to the appropriate location.

Submitter Information Verification

Submitter Full Name: Kevin Murray
Organization: Siemens Industry, Inc.
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City:
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Submittal Date: Thu Jun 23 14:13:27 EDT 2016

Public Input No. 69-NFPA 13-2016 [New Section after 7.3.2.2]

TITLE OF NEW CONTENT

Type your content here ...Add what course of action should be taken e.g. add another preaction system, How to calculate do we take two sprinkler zones?

Statement of Problem and Substantiation for Public Input

The problem of an area that has to be served by a preaction system and more than 1000 sprinklers are required has to addressed

Submitter Information Verification

Submitter Full Name: Sami Najjar

Organization: Stis

Street Address:

City:

State:

Zip:

Submittal Date: Tue Mar 08 15:08:12 EST 2016

Public Input No. 143-NFPA 13-2016 [Section No. 7.3.2.3.1 [Excluding any Sub-Sections]]

The system size controlled by a double interlock preaction valve shall be determined by either 7.3.2.3.1.1, 7.3.2.3.1.2, 7.3.2.3.1.3, ~~and~~ or 7.3.2.3.1.4.

Statement of Problem and Substantiation for Public Input

By using the word "and" the document implies that all of the rules need to be met. In fact, the user only needs to comply with one of the rules, and may not be able to comply with all four paragraphs. Note that this change makes the section parallel to section 7.2.3.1 for dry-pipe systems.

Submitter Information Verification

Submitter Full Name: Kenneth Isman

Organization: University of Maryland

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Zip:

Submittal Date: Wed May 25 14:58:10 EDT 2016

Public Input No. 58-NFPA 13-2016 [Section No. 7.3.2.3.1 [Excluding any Sub-Sections]]

The system size controlled by a double interlock preaction valve shall be determined by either 7.3.2.3.1.1, 7.3.2.3.1.2, 7.3.2.3.1.3, ~~and~~ or 7.3.2.3.1.4.

Statement of Problem and Substantiation for Public Input

This should read or verses and.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Tue Feb 23 09:15:23 EST 2016

Public Input No. 361-NFPA 13-2016 [Section No. 7.6.3.2 [Excluding any Sub-Sections]]

Where the connection between the antifreeze system and the ~~wet pipe system~~ supply piping 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.

Statement of Problem and Substantiation for Public Input

The wording in the existing language for 7.6.3.2 implies that the required arrangement would only be applicable to an auxiliary antifreeze system that is fed from a wet pipe system. The proposed language would include the requirements of 7.6.3.2 to apply to a stand-alone antifreeze system as well.

Submitter Information Verification

Submitter Full Name: e Parks Moore
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City:
State:
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Submittal Date: Fri Jun 24 14:41:09 EDT 2016

Public Input No. 440-NFPA 13-2016 [Section No. 7.7.7]

7.7.7 Gauge Connections.

~~A listed~~ An approved pressure gauge ~~conforming with~~ conforming to 8.17.3 shall be installed immediately below the control valve of each system.

Statement of Problem and Substantiation for Public Input

During the cycle leading up to the 2013 edition of the standard, Comment 13-87 was accepted to change the requirement for pressure gauges to be “listed” to be “approved” instead. In consequence, sections such as: 7.1.1, 7.2.1, 7.3.1.3, and 8.17.3.3 were revised accordingly. However, the requirement for gauges on exposure protection sprinkler systems was overlooked. To accord with the other gauge requirements within NFPA 13, that omission should be rectified now.

Additionally, the term “conforming with” is suggested to be altered to say “conforming to” as a grammatical correction and to align with the verbiage of Section 7.1.1.1.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: PLC Fire Safety Solutions
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Zip:
Submittal Date: Tue Jun 28 07:35:37 EDT 2016

Public Input No. 147-NFPA 13-2016 [Section No. 7.8.2.1.1]

7.8.2.1.1

Where sprinkler pipe passes through a wall or floor into the refrigerated space, a section of pipe arranged for removal shall be provided immediately inside the space except where permitted by 7 .8.2.1.3.

Statement of Problem and Substantiation for Public Input

This section requires a piece of removable pipe for all situations including dry-pendent and dry-sidewall sprinklers. Such sprinklers do not have removable sections of pipe and cannot comply with this section. An exception needs to be added.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 148-NFPA 13-2016 [New Section after 7.8.2.1.2]	

Submitter Information Verification

Submitter Full Name: Kenneth Isman

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State:

Zip:

Submittal Date: Wed May 25 15:32:15 EDT 2016

Public Input No. 148-NFPA 13-2016 [New Section after 7.8.2.1.2]

7.8.2.1.3 Dry-type sprinklers shall not be required to have a removable section of pipe.

Statement of Problem and Substantiation for Public Input

This section requires a piece of removable pipe for all situations including dry-pendent and dry-sidewall sprinklers. Such sprinklers do not have removable sections of pipe and cannot comply with this section. An exception needs to be added.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 147-NFPA 13-2016 [Section No. 7.8.2.1.1]	

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 25 15:34:58 EDT 2016

Public Input No. 588-NFPA 13-2016 [Sections 7.9.2.1, 7.9.2.2]

Sections 7.9.2.1, 7.9.2.2

7.9.2.1

~~Unless the requirements of 7.9.2.2 are met, standard~~ Standard sprinklers or automatic spray nozzles shall be so located as to provide for the protection of exhaust ducts, hood exhaust duct collars, and hood exhaust plenum chambers.

~~7.9.2.2~~

~~Sprinklers or automatic spray nozzles in ducts, duct collars, and plenum chambers shall not be required where all cooking equipment is served by listed grease extractors.~~

Statement of Problem and Substantiation for Public Input

7.9.2.2 is an exception to the requirement for protection of commercial cooking equipment exhaust ducts, hood exhaust ducts, and hood exhaust plenum chambers, provided that the cooking equipment is served by “listed grease extractors”. However, the term “listed grease extractors” is today associated with listed grease filters, and the NFPA Committee on Venting Systems for Cooking Appliances that writes NFPA 96 does not recognize such filters to substitute for a fire extinguishing system.

This section originally appeared as an exception to the base requirement in the 1987 edition of NFPA 13, when a full rewrite of commercial cooking equipment protection took place. As originally proposed, this allowance was only to be given by special permission of the authority having jurisdiction. That condition was dropped during the public comment stage without explanation.

Commentary following this exception in the 1987 Automatic Sprinkler Systems Handbook gives some indication of the original intent: “Subject to acceptance by the authority having jurisdiction, if all cooking equipment is served by listed grease extractors, the sprinkler protection may be limited to the cooking surfaces. Some manufacturers of exhaust systems incorporating listed grease extractors provide listed built-in water spray fire protection for cooking surfaces in a preengineered package ready for connection to the sprinkler system.” As such, there may have been some confusion with the development of what are now being termed “water-wash systems” or, if listed for the application, “water-wash extinguishing systems.”

This change took place in a day prior to the development of UL 300 to address the hazard of vegetable-based cooking oils, and the resulting use of wet chemical systems instead of dry chemical systems. The use of the UL-300 compliant wet chemical systems to protect the hood and ducts up to 75 ft in length continues to be acknowledged in Sections 7.9.2.4, 7.9.2.5, and 7.9.3.4.1 of NFPA 13. However, the NFPA 96 committee does not recognize the ability of listed grease extraction devices to substitute for fire-extinguishing equipment, and neither should NFPA 13.

The submitter serves as a liaison from the NFPA Sprinkler Project to the Committee on Venting Systems for Cooking Appliances.

Submitter Information Verification

Submitter Full Name: Russell Fleming
Organization: International Fire Sprinkler Assn / NFSA
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 15:21:02 EDT 2016

Public Input No. 44-NFPA 13-2016 [Sections 7.10.1, 7.10.2]

Sections 7.10.1, 7.10.2

7.10.1

Additives to the water supply intended for control of microbiological or other corrosion shall be ~~listed~~ installed in accordance with material compatibility information that is available as a part of a listing or manufactures published compatibility information for use within fire sprinkler systems.

7.10.2

Internal pipe coatings, excluding galvanizing, intended for control of microbiological or other corrosion shall be ~~listed~~ installed in accordance with material compatibility information that is available as a part of a listing or manufactures published compatibility information for use within fire sprinkler systems.

Statement of Problem and Substantiation for Public Input

A listing does not exist with UL for compatibility testing of inhibitors and biocides. The proposed change would still allow for a listing if one was ever developed, but also allows the company selling the product to due internal testing to verify compatibility.

Submitter Information Verification

Submitter Full Name: Tim O'Leary
Organization: Huguenot Laboratories
Affilliation: I'am President and CEO of the company
Street Address:
City:
State:
Zip:
Submittal Date: Fri Feb 12 15:03:43 EST 2016

Public Input No. 595-NFPA 13-2016 [Section No. 8.2.1]

~~8.2.1~~ –

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

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

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

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

(4) ~~Storage — High-piled storage (as defined in 3.9.1.16) and storage covered by other NFPA standards — 40,000 ft^2 (3720 m^2)~~

Statement of Problem and Substantiation for Public Input

Research and Experience has indicated that closed valves are the number one reason for system failures. If we did not limit the size of a single system, then there would be a lesser chance of forgetting to open a second or third (or more) valves.

Submitter Information Verification

Submitter Full Name: Cecil Bilbo
Organization: Academy of Fire Sprinkler Tech
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 16:22:18 EDT 2016

Public Input No. 176-NFPA 13-2016 [Section No. 8.2.2]

8.2.2

The floor area occupied by mezzanines shall comply with 8.2.2.1 or 8.2.2.2 or 8.2.2.3

8.2.2.1 In a building with only one system the floor area occupied by mezzanines shall not be included in the area limits of 8.2.1 .

8.2.2.2 In a building with more than one system if a mezzanine located is entirely within a single system boundary the floor area occupied by mezzanines shall not be included in the area limits of 8.2.1.

8.2.2.3 In a building with more than one system and any portion of the mezzanine floor area which is located outside of the system boundary shall be additive to the system total area from which it is supplied and the total system area shall meet the limits of 8.2.1

Statement of Problem and Substantiation for Public Input

Without the acceptance of this proposal in a large multi-system building it is possible to have a single riser supplying a system of up to 52,000 sqft and also supply a mezzanine of unlimited size. It is not the intent to allow a single system riser to control an unlimited area.

Submitter Information Verification

Submitter Full Name: John Deutsch
Organization: VFS Fire & Security Services
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 04 15:10:42 EDT 2016

Public Input No. 441-NFPA 13-2016 [Section No. 8.2.4.2]

~~8.2.4.2~~

~~The floor control valve, check valve, main drain valve, and flow switch required by 8.2.4.1 shall not be required where sprinklers on the top level of a multistory building are supplied by piping on the floor below.~~

Statement of Problem and Substantiation for Public Input

When the requirement for floor control valves in multi-storey buildings was initially proposed for inclusion into the 2013 edition of NFPA 13, the substantiation was that floor controls are needed in the interest of water conservation and good practices to keep areas of the building in service while performing improvements or repairs on other floor levels. This concept is contrary to Section 8.2.4.2, which allows the top two floors to be controlled by just one valve station. In a six storey building, why should Floors 1 through 4 be required to be individually valved while Floors 5 and 6 can be combined? This provision is not logical and it is contrary to good practice, so it should be deleted.

Additionally, it should be noted that the term “multi- storey building” encompasses high rise buildings and allowing the top two levels to be served by one valve station is contrary to NFPA 101, Section 11.8.3.1, which states that: “A sprinkler control valve and a water flow device shall be provided for each floor.”

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: PLC Fire Safety Solutions
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 07:38:36 EDT 2016

Public Input No. 59-NFPA 13-2016 [Section No. 8.3.1.2]

8.3.1.2

~~The~~ Where no sprinklers are specifically listed for construction features or other special situations that require unusual water distribution, the requirements of 8.3.1.1 shall not apply ~~where construction features or other special situations require unusual water distribution,~~ and listed sprinklers shall be permitted to be installed in positions other than anticipated by their listing to achieve specific results.

Statement of Problem and Substantiation for Public Input

This section currently would allow the user to use a sprinkler not listed for a situation even if other listed sprinklers were available.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Tue Feb 23 09:21:33 EST 2016

Public Input No. 68-NFPA 13-2016 [Section No. 8.3.2.1]

8.3.2.1*

Unless the requirements of 8.3.2.2, 8.3.2.3, 8.3.2.4, or 8.3.2.5 are met, ordinary- and intermediate-temperature sprinklers shall be used throughout buildings for light hazard occupancy and for ordinary occupancy when using quick response sprinklers only .

Note: the use of intermediate temperature sprinklers negates the use of 11.2.3.2.3.1.

Statement of Problem and Substantiation for Public Input

THE REASON FOR ALLOWING THE USE OF INTERMEDIATE TEMPERATURE SPRINKLERS (2010 ed.) REMOVES THE REASONING OF USING QUICK RESPONSE SPRINKLERS IN LIGHT HAZARD. IT ALSO ALLOWS THE USE OF STANDARD RESPONSE INTERMEDIATE SPRINKLERS IN ORDINARY HAZARD WITH THE HIGHER RESPONSE TIME WHERE THE CODE HAS PUSHED FOR FASTER RESPONSE. IT ALSO ALLOWS ONE TO USE 11.2.3.2.3.1 WITH INTERMEDIATE TEMPERATURE (THAT EQUAL TO ORDINARY TEMPERATURE STANDARD RESPONSE) BUT DOES NOT ALLOW STANDARD RESPONSE SPRINKLERS OF ANY KIND.

Submitter Information Verification

Submitter Full Name: Donald Fleenor

Organization: Fleenor Automatic Sprink Tech

Street Address:

City:

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Submittal Date: Tue Mar 08 14:24:44 EST 2016

Public Input No. 591-NFPA 13-2016 [New Section after 8.3.2.5]

TITLE OF NEW CONTENT

Type your content here ...

8.3.2.5 (11) Sprinklers in closets containing ventless clothes dryers shall be of the intermediate-temperature clssification or higher.

Statement of Problem and Substantiation for Public Input

Ventless clothes dryers placed within closets have the potential to raise ceiling temperatures above 100 F (38 C) for sustained periods of time, potentially weakening the operating mechanisms of ordinary temperature rated fire sprinklers over months or years of use, leading to inadvertent operations. While ventless clothes dryers have been used in Europe for many years, they are fairly new to the North American market, where vented clothes dryers have been the norm. More expensive than vented dryers, they generally incorporate condensers in a "two-loop" system to first heat some incoming air, allowing it to absorb moisture from the damp clothes, then continually condense the heated moist air to release the water before recirculating the resulting dry air within the clothes dryer. Unlike vented dryers, where moist heated air is exhausted to the building exterior, these devices capture the water to a drain or pan, while the heat from the condensing cycle is exhausted into the immediate area.

The condensers in combination machines that both wash and dry the clothes are generally water-cooled, such that quantities of cold water are used to condense the moisture evaporated from the clothes during the drying cycle, and pumped away through the drain line. But the standalone dryer units are air-cooled, using the ambient air as a heat sink. While this heat can be dissipated in a large laundry room, it can be expected to raise the temperatures within a laundry closet to levels unacceptable for ordinary temperature rated sprinklers. All standalone ventless dryers in the market are reportedly of this type.

Submitter Information Verification

Submitter Full Name: Russell Fleming

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Street Address:

City:

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Submittal Date: Wed Jun 29 15:45:07 EDT 2016

Public Input No. 139-NFPA 13-2016 [Section No. 8.3.2.5]

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), Table 8.3.2.5(c), 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. (300 mm) to one side or 30 in. (750 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 7.9.6.)*

(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) or Table 8 . 3.2.5(c) .

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

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. (750 mm)	2 ft 6 in. or less (750 mm)	
(b) Side and below	More than 1 ft 0 in. (300 mm)	1 ft 0 in. or less (300 mm)	
(c) Diffuser	Any distance except as shown under Intermediate-Temperature Rating column	*Downward discharge:* Cylinder with 1 ft 0 in. (300 mm) radius from edge extending 1 ft 0 in. below and 2 ft 6 in. (750 mm) above	
		Horizontal discharge: Semicylinder or cylinder with 2 ft 6 in. (750 mm) radius in direction of flow extending 1 ft 0 in. (300 mm) below and 2 ft 6 in. (750 mm) above	
(2) Unit heater			
(a) Horizontal discharge		*Discharge side:* 7 ft 0 in. (2.1 m) to 20 ft 0 in. (6.1 m) radius pie-shaped cylinder *(see Figure 8.3.2.5)* extending 7 ft 0 in. (2.1 m) above and 2 ft 0 (600 mm) in. below heater; also 7 ft 0 in. (2.1 m) radius cylinder more than 7 ft 0 in. (2.1 m) above	7 ft 0 in. (2.1 m) radius cylinder extending 7 ft 0 (2.1 m) in. above and 2 ft 0 (600 mm) in. below unit heater

Type of Heat Condition	Ordinary-Temperature Rating	Intermediate-Temperature Rating	High-Temperature Rating
		unit heater	
(b) Vertical downward discharge *(for sprinklers below unit heater, see Figure 8.3.2.5)*		7 ft 0 in. (2.1 m) radius cylinder extending upward from an elevation 7 ft 0 in. (2.1 m) above unit heater	7 ft 0 in. (2.1 m) radius cylinder extending from the top of the unit heater to an elevation 7 ft 0 in. (2.1 m) above unit heater
(3) Steam mains (uncovered)			
(a) Above	More than 2 ft 6 in. (750 mm)	2 ft 6 in. or less (750 mm)	
(b) Side and below	More than 1 ft 0 in. (300 mm)	1 ft 0 in. or less (300 mm)	
(c) Blowoff valve	More than 7 ft 0 in. (2.1 m)		7 ft 0 in. or less (2.1 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	

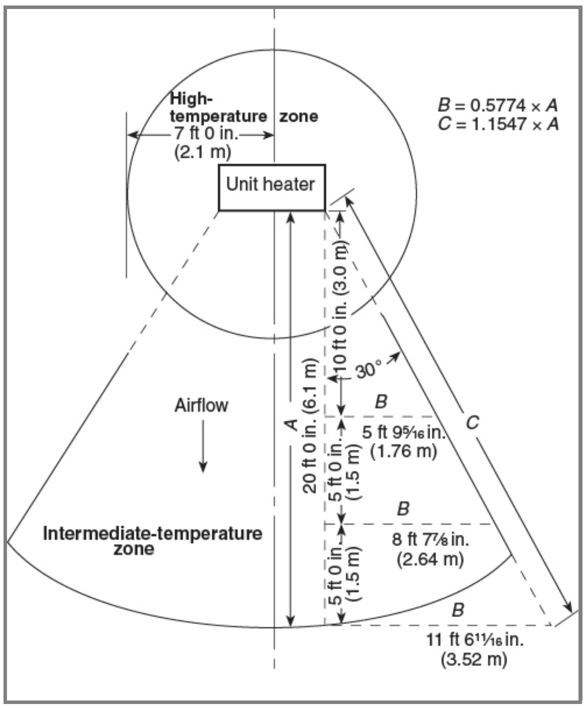
Note: A check of job condition by means of thermometers might be necessary.

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	915	12	300
Front of recessed fireplace	60	1525	36	915
Coal- or wood-burning stove	42	1070	12	305
Kitchen range	18	460	9	230
Wall oven	18	460	9	230
Hot air flues	18	460	9	230
Uninsulated heat ducts	18	460	9	230

Heat Source	Minimum Distance from Edge of Source to Ordinary-Temperature Sprinkler in.	mm	Minimum Distance from Edge of Source to Intermediate-Temperature Sprinkler in.	mm
Uninsulated hot water pipes	12	305	6	155
Side of ceiling- or wall-mounted hot air diffusers	24	610	12	305
Front of wall-mounted hot air diffusers	36	915	18	460
Hot water heater or furnace	6	155	3	75
Light fixture:				
0 W–250 W	6	155	3	75
250 W–499 W	12	305	6	155

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



Statement of Problem and Substantiation for Public Input

Air discharging from a register or diffuser at less than 100F should have the same effect on a sprinkler, whether or not that sprinkler is located in a residential occupancy. This change adds a reference to the specific table for residential occupancies, so that the same consideration of air stream temperature can be applied regardless of occupancy.

Submitter Information Verification

Submitter Full Name: Chris Born
Organization: Clark Nexsen Inc
Street Address:
City:
State:
Zip:

Submittal Date: Tue May 24 13:24:09 EDT 2016

Public Input No. 474-NFPA 13-2016 [Section No. 8.3.2.5]

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), Table 8.3.2.5(c), 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. (300 mm) to one side or 30 in. (750 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 7.9.6.)*

(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~~ c).

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

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. (750 mm)	2 ft 6 in. or less (750 mm)	
(b) Side and below	More than 1 ft 0 in. (300 mm)	1 ft 0 in. or less (300 mm)	
(c) Diffuser	Any distance except as shown under Intermediate-Temperature Rating column	*Downward discharge:* Cylinder with 1 ft 0 in. (300 mm) radius from edge extending 1 ft 0 in. below and 2 ft 6 in. (750 mm) above *Horizontal discharge:* Semicylinder or cylinder with 2 ft 6 in. (750 mm) radius in direction of flow extending 1 ft 0 in. (300 mm) below and 2 ft 6 in. (750 mm) above	
(2) Unit heater			
(a) Horizontal discharge		*Discharge side:* 7 ft 0 in. (2.1 m) to 20 ft 0 in. (6.1 m) radius pie-shaped cylinder *(see Figure 8.3.2.5)* extending 7 ft 0 in. (2.1 m) above and 2 ft 0 (600 mm) in. below heater; also 7 ft 0 in. (2.1 m) radius cylinder more than 7 ft 0 in. (2.1 m) above unit heater	7 ft 0 in. (2.1 m) radius cylinder extending 7 ft 0 (2.1 m) in. above and 2 ft 0 (600 mm) in. below unit heater

Type of Heat Condition	Ordinary-Temperature Rating	Intermediate-Temperature Rating	High-Temperature Rating
(b) Vertical downward discharge *(for sprinklers below unit heater, see Figure 8.3.2.5)*		7 ft 0 in. (2.1 m) radius cylinder extending upward from an elevation 7 ft 0 in. (2.1 m) above unit heater	7 ft 0 in. (2.1 m) radius cylinder extending from the top of the unit heater to an elevation 7 ft 0 in. (2.1 m) above unit heater
(3) Steam mains (uncovered)			
(a) Above	More than 2 ft 6 in. (750 mm)	2 ft 6 in. or less (750 mm)	
(b) Side and below	More than 1 ft 0 in. (300 mm)	1 ft 0 in. or less (300 mm)	
(c) Blowoff valve	More than 7 ft 0 in. (2.1 m)		7 ft 0 in. or less (2.1 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	

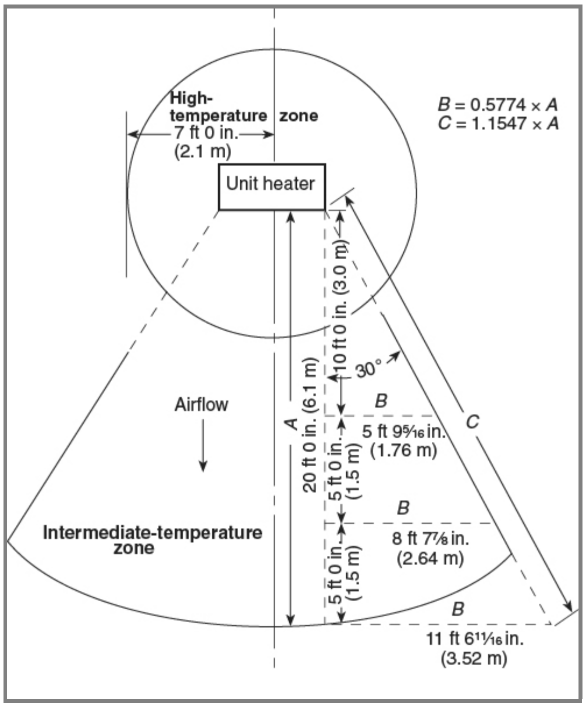
Note: A check of job condition by means of thermometers might be necessary.

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

	Minimum Distance from Edge of Source to Ordinary-Temperature Sprinkler		Minimum Distance from Edge of Source to Intermediate-Temperature Sprinkler	
Heat Source	in.	mm	in.	mm
Side of open or recessed fireplace	36	915	12	300
Front of recessed fireplace	60	1525	36	915
Coal- or wood-burning stove	42	1070	12	305
Kitchen range	18	460	9	230
Wall oven	18	460	9	230
Hot air flues	18	460	9	230
Uninsulated heat ducts	18	460	9	230
Uninsulated hot water pipes	12	305	6	155

Heat Source	Minimum Distance from Edge of Source to Ordinary-Temperature Sprinkler in.	mm	Minimum Distance from Edge of Source to Intermediate-Temperature Sprinkler in.	mm
Side of ceiling- or wall-mounted hot air diffusers	24	610	12	305
Front of wall-mounted hot air diffusers	36	915	18	460
Hot water heater or furnace	6	155	3	75
Light fixture:				
0 W–250 W	6	155	3	75
250 W–499 W	12	305	6	155

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



Statement of Problem and Substantiation for Public Input

Changed the reference in 8.3.2.5 (9) to the table from a to c. The diffuser is where the air discharges verses the duct

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 11:25:28 EDT 2016

Public Input No. 550-NFPA 13-2016 [Section No. 8.3.2.5]

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), Table 8.3.2.5(c), 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. (300 mm) to one side or 30 in. (750 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 7.9.6.)*

(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.

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. (750 mm)	2 ft 6 in. or less (750 mm)	
(b) Side and below	More than 1 ft 0 in. (300 mm)	1 ft 0 in. or less (300 mm)	
(c) Diffuser	Any distance except as shown under Intermediate-Temperature Rating column	*Downward discharge:* Cylinder with 1 ft 0 in. (300 mm) radius from edge extending 1 ft 0 in. below and 2 ft 6 in. (750 mm) above *Horizontal discharge:* Semicylinder or cylinder with 2 ft 6 in. (750 mm) radius in direction of flow extending 1 ft 0 in. (300 mm) below and 2 ft 6 in. (750 mm) above	
(2) Unit heater			
(a) Horizontal discharge		*Discharge side:* 7 ft 0 in. (2.1 m) to 20 ft 0 in. (6.1 m) radius pie-shaped cylinder *(see Figure 8.3.2.5)* extending 7 ft 0 in. (2.1 m) above and 2 ft 0 (600 mm) in. below heater; also 7 ft 0 in. (2.1 m) radius cylinder more than 7 ft 0 in. (2.1 m) above unit heater	7 ft 0 in. (2.1 m) radius cylinder extending 7 ft 0 (2.1 m) in. above and 2 ft 0 (600 mm) in. below unit heater

Type of Heat Condition	Ordinary-Temperature Rating	Intermediate-Temperature Rating	High-Temperature Rating
(b) Vertical downward discharge *(for sprinklers below unit heater, see Figure 8.3.2.5)*		7 ft 0 in. (2.1 m) radius cylinder extending upward from an elevation 7 ft 0 in. (2.1 m) above unit heater	7 ft 0 in. (2.1 m) radius cylinder extending from the top of the unit heater to an elevation 7 ft 0 in. (2.1 m) above unit heater
(3) Steam mains (uncovered)			
(a) Above	More than 2 ft 6 in. (750 mm)	2 ft 6 in. or less (750 mm)	
(b) Side and below	More than 1 ft 0 in. (300 mm)	1 ft 0 in. or less (300 mm)	
(c) Blowoff valve	More than 7 ft 0 in. (2.1 m)		7 ft 0 in. or less (2.1 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	

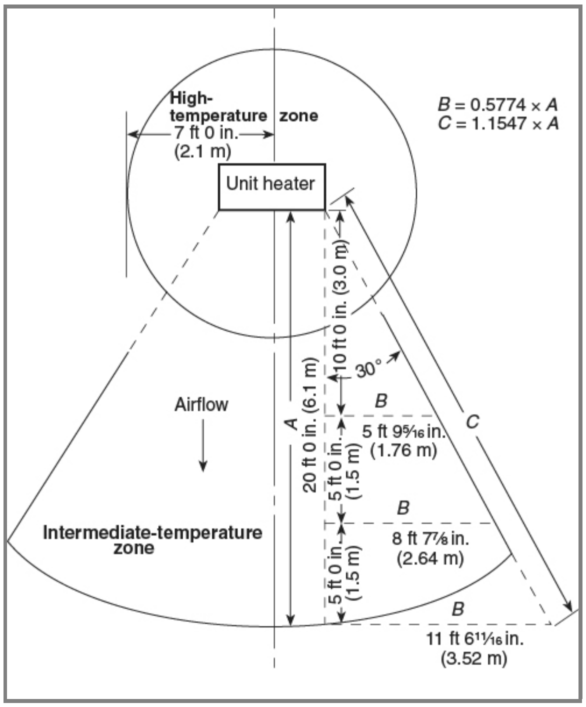
Note: A check of job condition by means of thermometers might be necessary.

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	915	12	300
Front of recessed fireplace	60	1525	36	915
Coal- or wood-burning stove	42	1070	12	305
Kitchen range	18	460	9	230
Wall oven	18	460	9	230
Hot air flues	18	460	9	230
Uninsulated heat ducts	18	460	9	230
Uninsulated hot water pipes	12	305	6	155

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 ceiling- or wall-mounted hot air diffusers	24	610	12	305
Front of wall-mounted hot air diffusers	36	915	18	460
Hot water heater or furnace	6	155	3	75
Light fixture:				
0 W–250 W	6	155	3	75
250 W–499 W	12	305	6	155

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



Additional Proposed Changes

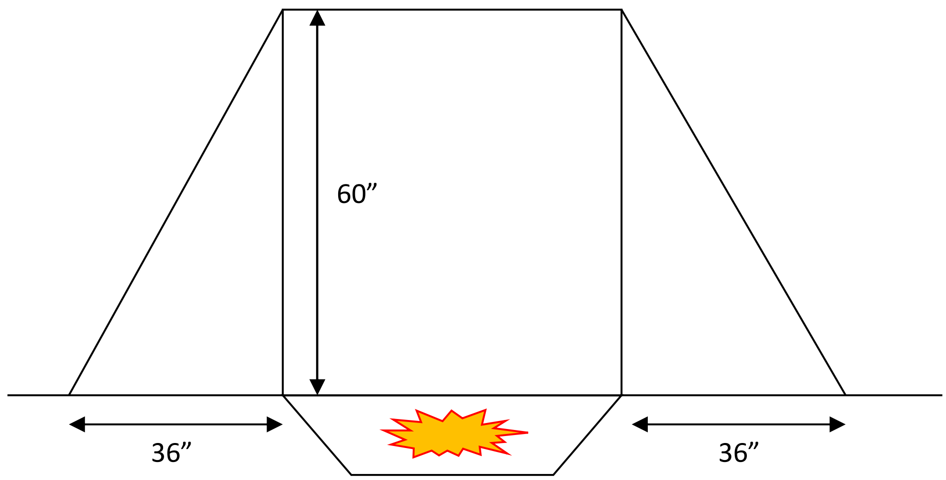
File Name	Description	Approved
Fireplace2.pdf	Suggested Annex diagrams to clarify fireplace spacing requirements in Table 8.3.2.5(c)	

Statement of Problem and Substantiation for Public Input

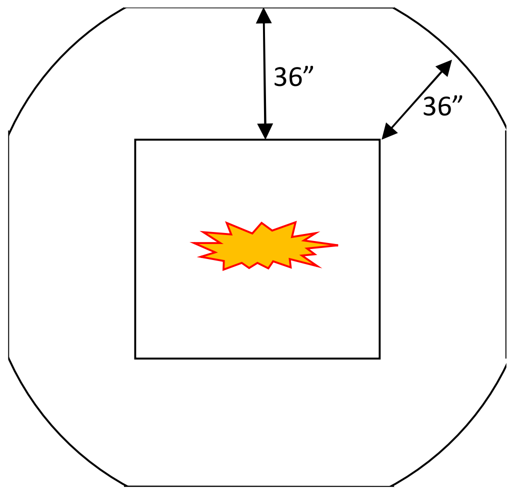
The language provided in the table provides ambiguous information about spacing sprinklers with regard to fireplaces. These diagrams provide additional clarification. Alternatively, the Annex comment could be attached to 8.3.2.5(8).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 553-NFPA 13-2016 [New Section after A.8.3.2.5(1)]	



Recessed Fireplace: 60” from open face, 36” from sides of opening



Open Fireplace: 36” from faces with radiused corners

Submitter Information Verification

Submitter Full Name:	Robert Upson
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA Engineering and Standards Committee
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 09:51:29 EDT 2016

Public Input No. 554-NFPA 13-2016 [Section No. 8.3.2.5]

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), Table 8.3.2.5(c), 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. (300 mm) to one side or 30 in. (750 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 7.9.6.)*

(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.

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. (750 mm)	2 ft 6 in. or less (750 mm)	
(b) Side and below	More than 1 ft 0 in. (300 mm)	1 ft 0 in. or less (300 mm)	
(c) Diffuser	Any distance except as shown under Intermediate-Temperature Rating column	*Downward discharge:* Cylinder with 1 ft 0 in. (300 mm) radius from edge extending 1 ft 0 in. below and 2 ft 6 in. (750 mm) above *Horizontal discharge:* Semicylinder or cylinder with 2 ft 6 in. (750 mm) radius in direction of flow extending 1 ft 0 in. (300 mm) below and 2 ft 6 in. (750 mm) above	
(2) Unit heater and radiant heater			
(a) Horizontal discharge		*Discharge side:* 7 ft 0 in. (2.1 m) to 20 ft 0 in. (6.1 m) radius pie-shaped cylinder *(see Figure 8.3.2.5)* extending 7 ft 0 in. (2.1 m) above and 2 ft 0 (600 mm) in. below heater; also 7 ft 0 in. (2.1 m) radius cylinder more than 7 ft 0 in. (2.1 m) above	7 ft 0 in. (2.1 m) radius cylinder extending 7 ft 0 (2.1 m) in. above and 2 ft 0 (600 mm) in. below unit heater

Type of Heat Condition	Ordinary-Temperature Rating	Intermediate-Temperature Rating	High-Temperature Rating
		unit heater	
(b) Vertical downward discharge *(for sprinklers below unit heater, see Figure 8.3.2.5)*		7 ft 0 in. (2.1 m) radius cylinder extending upward from an elevation 7 ft 0 in. (2.1 m) above unit heater	7 ft 0 in. (2.1 m) radius cylinder extending from the top of the unit heater to an elevation 7 ft 0 in. (2.1 m) above unit heater
(3) Steam mains (uncovered)			
(a) Above	More than 2 ft 6 in. (750 mm)	2 ft 6 in. or less (750 mm)	
(b) Side and below	More than 1 ft 0 in. (300 mm)	1 ft 0 in. or less (300 mm)	
(c) Blowoff valve	More than 7 ft 0 in. (2.1 m)		7 ft 0 in. or less (2.1 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	

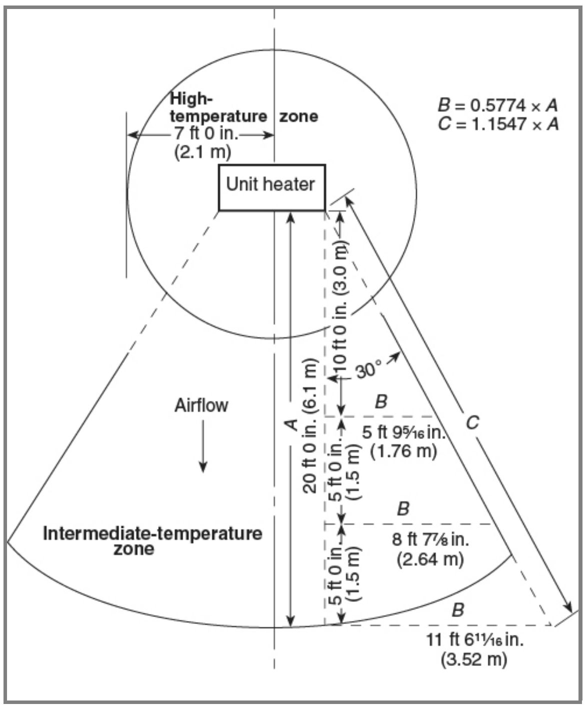
Note: A check of job condition by means of thermometers might be necessary.

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	915	12	300
Front of recessed fireplace	60	1525	36	915
Coal- or wood-burning stove	42	1070	12	305
Kitchen range	18	460	9	230
Wall oven	18	460	9	230
Hot air flues	18	460	9	230
Uninsulated heat ducts	18	460	9	230

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
Uninsulated hot water pipes	12	305	6	155
Side of ceiling- or wall-mounted hot air diffusers	24	610	12	305
Front of wall-mounted hot air diffusers	36	915	18	460
Hot water heater or furnace	6	155	3	75
Light fixture:				
0 W–250 W	6	155	3	75
250 W–499 W	12	305	6	155

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



Statement of Problem and Substantiation for Public Input

There is currently no guidance on what is permissible spacing and temperature ratings for sprinklers close to linear radiant heaters. While this group agrees that radiant heaters would require a lesser minimum distance than directional unit heaters, without sufficient research and investigation there is no clear number to assign to this distance at this time. As such, we propose to include “and radiant heater” in Table 8.3.2.5(a) while investigations into a less conservative dimension can be evaluated.

Submitter Information Verification

Submitter Full Name: Robert Upson

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Submittal Date: Wed Jun 29 10:06:51 EDT 2016

Public Input No. 590-NFPA 13-2016 [Section No. 8.3.3.2]

8.3.3.2

Where quick-response sprinklers are installed, all sprinklers within a compartment shall be ~~quick-~~ of the fast response type unless otherwise permitted in 8.3.3.3, 8.3.3.4, or 8.3.3.5.

Statement of Problem and Substantiation for Public Input

The requirement that all sprinklers in a compartment be of the quick-response type when quick-response sprinklers are installed dates back to the preparation of the 2002 edition of the standard, and is an example of how fairly minor changes can have larger unintended consequences. In a committee statement during the ROP stage (Proposal 13-195), dealing with the use of sprinklers in dry systems, the desirability was mentioned of having restrictions on sprinkler usage all in one place. As a result, a Comment 13-110 was submitted that proposed moving wording from 7-2.3.2.4 of the 1999 edition up to a general section in Chapter 5, which became 8.8.3.2 in the 2002 edition. In the 1999 edition, this dealt only with the conditions under which a reduction in design area could be taken with the use of quick response sprinklers. Since that time, however, it has raised questions as to whether, for example, quick response sprinklers can be used to protect hazards adjacent to those protected by ESFR sprinklers, even with compliance to the adjacent hazard criteria of 11.1.2/12.3. Ironically, committee action on Proposal 13-103 during the same 2002 cycle answered this question clearly when it was proposed that the draft curtain required between areas protected by ESFR and standard response sprinklers be mandated between ESFR and all other types of sprinklers. The committee rejected this proposal, and stated that the basis of the requirement was sensitivity, not type of sprinkler.

This proposed action would correct an error that has existed since the 2002 edition by establishing a rational basis for the requirement, using the broader term of fast response. Section 8.5.5.3.3 as well as the system design criteria will sufficiently prevent the mixing of sprinkler types within a protected area.

Submitter Information Verification

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Submittal Date: Wed Jun 29 15:31:31 EDT 2016

Public Input No. 71-NFPA 13-2016 [Section No. 8.3.3.5]

8.3.3.5

Where a sprinkler carries a listing for ~~both~~ ordinary hazard for both standard-response protection and quick-response protection at different coverage areas, that sprinkler shall be permitted to be installed within ~~a compartment~~ an ordinary hazard compartment at the spacing for both the quick-response and standard-response listings without any separation between the areas so covered.

Statement of Problem and Substantiation for Public Input

When this change occurred, I believe it was the intention of the committee that this was for ordinary hazard. It is possible that there are some larger spacings that are not QR that could be used in light hazard which should be QR.

Submitter Information Verification

Submitter Full Name: Peter Schwab
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Street Address:
City:
State:
Zip:
Submittal Date: Thu Mar 10 11:47:44 EST 2016

Public Input No. 95-NFPA 13-2016 [Section No. 8.3.3.5]

8.3.3.5

~~Where~~ In other than light hazard occupancies, where a sprinkler carries a listing for both standard-response protection and quick-response protection at different coverage areas, that sprinkler shall be permitted to be installed within a compartment at the spacing for both the quick-response and standard-response listings without any separation between the areas so covered.

Statement of Problem and Substantiation for Public Input

8.3.3.1 requires sprinklers installed in light hazard occupancies to be quick-response. The current language in 8.3.3.5 is being interpreted to indicate that extended coverage sprinklers can be installed in a light hazard compartment on a spacing in which they are listed as standard-response, so long as one of the sprinklers has an area of coverage consistent with the quick-response listing. Please see NFSA TechNotes/March 8, 2016 question 8. For example, assume a sprinkler is listed as quick-response up to a 16 ft spacing, and listed as standard-response on 18 ft and 20 ft spacing. If a long corridor (light hazard compartment) is being protected with 15 of these sprinklers, this section is being interpreted to mean that if 1 of these sprinklers is on 16 ft spacing (quick-response) then the other 14 of these sprinklers can be on 20 ft spacing (standard-response).

Submitter Information Verification

Submitter Full Name: James Richardson
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City:
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Submittal Date: Fri Apr 15 15:24:20 EDT 2016

Public Input No. 108-NFPA 13-2016 [Section No. 8.3.4.2]

8.3.4.2

For light hazard occupancies ~~not requiring as much water as is discharged by a sprinkler with a~~ , sprinklers having a nominal K-factor ~~of~~ smaller than K-5.6 (80) ~~operating at 7 psi (0.5 bar), sprinklers having a smaller orifice~~ shall be permitted, subject to the following restrictions:

(1) The system shall be hydraulically calculated.

(2) Sprinklers with nominal K-factors of less than K-5.6 (80) shall be installed only in wet pipe sprinkler systems or in accordance with the limitations of 8.3.4.3 or 8.3.4.4 .

(3) A listed strainer shall be provided on the supply side of sprinklers with nominal K-factors of less than K-2.8 (40).

Statement of Problem and Substantiation for Public Input

This is explanatory information and does not belong in the body of the standard. Additionally, it is being literally interpreted as one of the restrictions whereby a smaller K-factor can not be used if it flows 14.8 gpm or more (the discharge for K-5.6 at 7 psi). This can occur for a area with multiple sprinkler flowing less water but due to spacing issues a single sprinkler must flow more water.

Submitter Information Verification

Submitter Full Name: Roland Huggins
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City:
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Submittal Date: Tue May 03 18:57:15 EDT 2016

Public Input No. 442-NFPA 13-2016 [Section No. 8.4.2]

8.4.2 Sidewall Spray Sprinklers.

Sidewall sprinklers shall only be installed as follows:

(1) Light hazard occupancies with smooth, horizontal or sloped, flat ceilings

(2) Ordinary hazard occupancies with smooth, flat ceilings where specifically listed for such use

(3) To protect areas below overhead doors

(4) At the tops and bottoms of elevator hoistways

(5) For the protection of steel building columns

Statement of Problem and Substantiation for Public Input

This proposal is offered to recognize that the standard also allows the use of sidewall sprinklers to protect the top and the bottom of elevator hoistways, as per Sections 8.15.5.1 and 8.15.5.5 and to protect steel columns as per Sections 12.12.2.2.4.1, 16.1.4, 17.1.4.1 and 18.2.1

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Solutions

Street Address:

City:

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Zip:

Submittal Date: Tue Jun 28 07:41:34 EDT 2016

Public Input No. 294-NFPA 13-2016 [Section No. 8.4.5.1]

8.4.5.1 *

Residential sprinklers shall be permitted in dwelling units and their adjoining corridors, provided they are installed in conformance with their listing and when installed under the following conditions:
(1) A flat, smooth, horizontal ceiling with no beams up to a maximum of 24 ft (7 . 3 m) above the floor.

(2) A flat, horizontal, beamed ceiling, with a maximum ceiling height of 24 ft (7.3 m), with beams up to 14 in. (355 mm) deep with pendent sprinklers under the beams. The compartment containing the beamed ceiling shall be a maximum of 600 ft2 (55 m2) in area. The highest sprinkler in the compartment shall be above all openings from the compartment into any communicating spaces.

(3) A smooth, flat, sloped ceiling with no beams up to a maximum slope of 8 in 12. The highest portion of the ceiling shall not be more than 24 ft (7.3 m) above the floor. The highest sprinkler in the sloped portion of the ceiling shall be above all openings from the compartment containing the sloped ceiling into any communicating spaces.

(4) A sloped ceiling with beams up to 14 in. (355 mm) deep with pendent sprinklers under the beams. The compartment containing the sloped, beamed ceiling shall be a maximum of 600 ft2 (55 m2) in area. The slope of the ceiling shall be between 2 in 12 and 8 in 12. The highest portion of the ceiling shall not be more than 24 ft (7.3 m) above the floor. The highest sprinkler in the sloped portion of the ceiling shall be above all openings from the compartment containing the sloped ceiling into any communicating spaces.

(5) A sloped ceiling with beams of any depth with sidewall or pendent sprinklers in each pocket formed by the beams.

The compartment containing the sloped, beamed ceiling shall be a maximum of 600 ft2 (55 m2) in area. The slope of the ceiling shall be between 2 in 12 and 8 in 12. The highest portion of the ceiling shall not be more than 24 ft (7.3 m) above the floor.

X.X.X.X Where construction features or other special conditions exist that are outside the scope of sprinkler listings, listed sprinklers shall be permitted to be installed beyond their listing limitations when acceptable to the authority having Jurisdiction.

Statement of Problem and Substantiation for Public Input

The NFPA Residential Committee has added guidance on the use of residential sprinklers under sloped ceilings to both 13D & 13R. This change aligns NFPA 13 with those two documents.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 266-NFPA 13-2016 [Section No. 8.10.2.2]	
Public Input No. 296-NFPA 13-2016 [New Section after 8.10.4.1]	

Submitter Information Verification

Submitter Full Name: Mark Fessenden

Organization: Tyco Fire Protection Products

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City:

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Submittal Date: Thu Jun 23 16:58:30 EDT 2016

Public Input No. 445-NFPA 13-2016 [Section No. 8.4.6.1]

8.4.6.1

ESFR sprinklers shall be used only in wet pipe systems unless specifically listed for use in dry systems <u>or preaction systems</u> .

Statement of Problem and Substantiation for Public Input

ESFR sprinklers can be installed in a preaction system, however, the standard does not currently identify this allowance.

This proposal was developed by the NFSA Engineering and Standards Committee.

Submitter Information Verification

Submitter Full Name: Victoria Valentine

Organization: National Fire Sprinkler Assoc

Affilliation: NFSA Engineering and Standards Committee

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City:

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Submittal Date: Tue Jun 28 09:01:19 EDT 2016

Public Input No. 597-NFPA 13-2016 [Section No. 8.4.8.1]

8.4.8.1 *

Special sprinklers that are intended for the protection of specific hazards or construction features shall be permitted ~~where~~ to be used in accordance with the listing where such devices have been evaluated and listed for performance under the following conditions:

(1) Fire tests related to the intended hazard

(2) Distribution of the spray pattern with respect to wetting of floors and walls

(3) Distribution of the spray pattern with respect to obstructions

(4) Evaluation of the thermal sensitivity of the sprinkler

(5) Performance under horizontal or sloped ceilings

(6) Area of design

(7) Allowable clearance to ceilings

Statement of Problem and Substantiation for Public Input

Clarifies that special sprinklers are to be used in accordance with their listing rather than following rules in NFPA 13 that are applicable to other types of sprinklers, with the exception of the special limitations in Section 8.4.8.2.

Submitter Information Verification

Submitter Full Name: Tanya Barlow
Organization: Tyco
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 16:30:10 EDT 2016

Public Input No. 271-NFPA 13-2016 [Section No. 8.4.9.1]

8.4.9.1*

Where dry sprinklers are connected to wet pipe sprinkler systems protecting areas subject to freezing temperatures, the minimum exposed length of the ~~barrel of the~~ dry sprinkler shall be in accordance with Table 8.4.9.1(a) or Table 8.4.9.1(b).

Table 8.4.9.1(a) Exposed ~~Barrel~~ Lengths for Dry Sprinklers (U.S. Customary Units)

Ambient Temperature Exposed to Discharge End of Sprinkler (ºF)	Minimum Exposed ~~Barrel~~ Length when Exposed to 40ºF (in.)	Minimum Exposed ~~Barrel~~ Length when Exposed to 50ºF (in.)	Minimum Exposed ~~Barrel~~ Length when Exposed to 60ºF (in.)
40	0	0	0
30	0	0	0
20	4	0	0
10	8	1	0
0	12	3	0
−10	14	4	1
−20	14	6	3
−30	16	8	4
−40	18	8	4
−50	20	10	6
−60	20	10	6

Table 8.4.9.1(b) Exposed ~~Barrel~~ Lengths for Dry Sprinklers (Metric Units)

Ambient Temperature Exposed to Discharge End of Sprinkler (ºC)	Minimum Exposed ~~Barrel~~ Length when Exposed to 4ºC (mm)	Minimum Exposed ~~Barrel~~ Length when Exposed to 10ºC (mm)	Minimum Exposed ~~Barrel~~ Length when Exposed to 16ºC (mm)
4	0	0	0
−1	0	0	0
−7	100	0	0
−12	200	25	0
−18	300	75	0
−23	350	100	25
−29	350	150	75
−34	400	200	100
−40	450	200	100
−46	500	250	150
−51	500	250	150

Statement of Problem and Substantiation for Public Input

Barrel does not cover all dry sprinklers.

Submitter Information Verification

Submitter Full Name:	Brian Sloan
Organization:	Victaulic
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Thu Jun 23 15:26:20 EDT 2016

Public Input No. 272-NFPA 13-2016 [Section No. 8.4.9.2]

8.4.9.2

The minimum ~~barrel~~ exposed length shall be measured along the length of the dry sprinkler from the face of the fitting to which the dry sprinkler is installed to the inside surface of the insulation, wall, or ceiling leading to the cold space, whichever is closest to the fitting.

Statement of Problem and Substantiation for Public Input

Not all dry sprinklers are straight and barrel can be interpreted as a straight section of pipe.

Submitter Information Verification

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City:

State:

Zip:

Submittal Date: Thu Jun 23 15:32:44 EDT 2016

Public Input No. 443-NFPA 13-2016 [New Section after 8.4.9.3]

8.4.10

Dry sprinklers shall only be installed into fittings as specified by the manufacturer.

A.8.4.10

Generally dry sprinklers are installed into tees. Dry sprinklers should never be installed into 90 degree ells. Some manufactures allow installation of dry sprinklers i nto couplings, CPVC adapters, etc.

Statement of Problem and Substantiation for Public Input

The standard does not address the importance of installing a dry sprinkler into the proper fitting. The manufacturer's data sheets discuss proper installation but the standard should include this reference.

Submitter Information Verification

Submitter Full Name: Peter Schwab

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Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 08:40:15 EDT 2016

Public Input No. 278-NFPA 13-2016 [Section No. 8.4.9.3]

8.4.9.3*

Where dry sprinklers are connected to wet pipe sprinkler systems protecting insulated freezer structures, the clearance space around the sprinkler ~~barrel~~ shall be sealed.

Statement of Problem and Substantiation for Public Input

Barrel can be interpreted as a straight section of pipe.

Submitter Information Verification

Submitter Full Name: Brian Sloan

Organization: Victaulic

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 23 15:48:34 EDT 2016

Public Input No. 112-NFPA 13-2016 [Section No. 8.5.2.1.1]

8.5.2.1.1

The protection area of coverage per sprinkler (A_S) shall be determined as follows:

(1) Along branch lines as follows:

(2) _ Determine distance between sprinklers (or to wall or obstruction in the case of the end sprinkler on the branch line) upstream and downstream

(3) _ Choose the larger of either twice the distance to the wall or the distance to the next sprinkler

(4) _ Define dimension as _S_

(5) Between branch lines as follows:

(6) Determine perpendicular distance

~~to the sprinkler on the~~

(a) to the adjacent branch line (or to a wall or obstruction in the case of the last branch line) on each side of the branch line on which the subject sprinkler is positioned

(b) Choose the larger of either twice the distance to the wall or obstruction or the distance to the next

~~sprinkler~~

(a) branch line

(b) _ Define dimension as _L_

Statement of Problem and Substantiation for Public Input

The current wording applies only to a symmetrical system. If the sprinklers are staggered it is impossible to measure a perpendicular distance between sprinklers on adjacent branch lines.

Note that Terra View has screwed up again. Although it is showing most of the text as underlined, the only new words are "branch line" in 8.5.2.1.1(2)(b) in place of sprinkler.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Fri May 06 10:19:10 EDT 2016

Public Input No. 178-NFPA 13-2016 [New Section after 8.5.4.1.3]

8.5.4.1.3 For ceilings that have insulation installed directly against underside of the ceiling or roof structure, the deflector distance shall be measured from the bottom of the insulation and shall be in accordance with 8.5.4.1.3. ~~1~~ 2 or 8.5.4.1.3. ~~2~~ 3 .

8.5.4.1.3.1

Insulation used to measure sprinkler deflector distance must be batt insulation or some type of insulation which will withstand a 3 pound per square foot uplift force.

Statement of Problem and Substantiation for Public Input

A fire can have a strong uplift force and a surface of unknown strength may not remain intact long enough for timely sprinkler activation. If the heat element of a sprinkler is not close enough to whatever is collecting the heat it will not be as responsive as needed and its operation will be retarded allowing the fire to grow. The use of paper or other such weak materials should not be used to measure sprinkler deflector distances to. The standard should provided some minimum qualification for the surface needed for heat collection and sprinkler activation. The justification for the 3 pounds per square foot is from FM Global data sheet 2-0 which does qualify a performance requirement when a false ceiling is needed for heat collection.

Submitter Information Verification

Submitter Full Name: John Deutsch
Organization: VFS Fire & Security Services
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 04 15:18:20 EDT 2016

Public Input No. 537-NFPA 13-2016 [New Section after 8.5.4.2]

Incorportate information from Fire Protection Research Foundation project on sloped ceilings and storage occupancies. The data is beginning to show a slight advantage for sprinklers oriented parallel to the floor rather than parallel to the ceiling. The information should be incorporated into the earliest possible edition of NFPA 13 and should not have to wait until 2022.

Statement of Problem and Substantiation for Public Input

A research program of the Fire Protection Research Foundation is currently looking at this subject and should conclude before the end of this revision cycle. The information should be incorporated into this edition of NFPA 13.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 536-NFPA 13-2016 [New Section after 12.1.2]	

Submitter Information Verification

Submitter Full Name: Kenneth Isman

Organization: University of Maryland

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 06:25:21 EDT 2016

Public Input No. 495-NFPA 13-2016 [Section No. 8.5.5.3.1]

8.5.5.3.1 * _

Sprinklers shall be installed under fixed obstructions over 4 ft (1.2 m) in width.

8.5.5.3.1.1 _

Open grate flooring over 4 ft (1.2 m) in width shall require sprinkler protection below the grating.

8.5.5.3.1.2 _

Sprinklers shall be located below the obstruction and not more than 3 in. (75 mm) from the outside edge of the obstruction.

8.5.5.3.1. ~~2~~ 3

Where sprinklers are located adjacent to the obstruction, they shall be of the intermediate level rack type.

8.5.5.3.1. ~~3~~ 4

The deflector of automatic sprinklers installed under fixed obstructions shall be positioned no more than 12 in. (300 mm) below the bottom of the obstruction.

8.5.5.3.1. ~~4~~ 5

Sprinklers shall not be required under noncombustible obstructions over 4 ft (1.2 m) wide where the bottom of the obstruction is 24 in. (600 mm) or less above the floor or deck.

Statement of Problem and Substantiation for Public Input

This proposal seeks to rectify a mistake that was made during the First Draft for the 2016 edition of NFPA 13, whereby 8.5.5.3.1.1 was erroneously deleted/overwritten instead of having new text inserted after 8.5.5.3.1.1.

Public Input No. 474 and First Revision No. 90 both called for a “New Section 8.5.5.3.1.1”, but the First Draft Report shows the new verbiage of FR 90 replacing the original text. With this, the provision that requires sprinklers under open grate flooring that is more than 4 ft in width, was lost.

This deletion was inadvertent. None of the public inputs and none of the discussions at the Technical Committee meetings suggested that the text should be deleted. It should therefore be added back in.

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Solutions

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 19:38:12 EDT 2016

Public Input No. 149-NFPA 13-2016 [Section No. 8.5.5.3.1.1]

8.5.5.3.1.1

Sprinklers shall be located directly below the obstruction ~~and~~ or adjacent to the obstruction not more than 3 in. (75 mm) from the outside edge of the obstruction.

Statement of Problem and Substantiation for Public Input

There are two problems with this section as written. The first is that the section uses the term "and" instead of "or". This means that the sprinkler needs to be below the obstruction and within 3 inches of the edge at the same time. This is actually not good fire protection. Ideally, the sprinkler should be centered under the obstruction, which will mean that it is several feet from the edge rather than 3 inches. Inserting the word "directly" and changing the language to an "or" should help this problem.

The second problem is that the word "adjacent" needs to be added to tie together the thought in 8.5.5.3.1.2. Without the word "adjacent" there is no clear link between 8.5.5.3.1.1 and 8.5.5.3.1.2.

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 25 15:39:00 EDT 2016

Public Input No. 328-NFPA 13-2016 [Section No. 8.5.5.3.1.1]

8.5.5.3.1.1

Sprinklers shall be located below the obstruction and ~~not more than~~ shall be at least 3 in. (75 mm) from the outside edge of the obstruction.

Statement of Problem and Substantiation for Public Input

I have had this section be interpreted that the sprinkler under an obstruction must be 3" from the outside edge of the obstruction and would not allow one to provide a sprinkler in the middle of an obstruction. The revised language attempts to allow for sprinklers to be provided anywhere under the obstruction. If the intent was to allow for sprinklers to be not under the obstruction as long as it was within 3 inches of the edge, this is not how it can be interpreted and it is creating a problem in the industry. The requirement is confusing and needs clarification.

Submitter Information Verification

Submitter Full Name: Gerald Schultz

Organization: The FPI Consortium, Inc.

Affilliation: none

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 23 18:11:24 EDT 2016

Public Input No. 556-NFPA 13-2016 [New Section after 8.5.5.3.1.4]

8.5.5.3.1.5

Sprinklers shall be installed under multiple obstructions 4 ft (1.2 m) or less in width if the cumulative obstruction exceeds 50% of the sprinkler's area of operation.

Statement of Problem and Substantiation for Public Input

No guidance is provided for multiple obstructions < 4 ft in width. This percentage allowance is based on the currently allowed "worst reasonable case" obstruction when two 4-foot ducts cross under a sprinkler with a 10 x 13 operating area; ~58%.

It is intended that this would apply to 8.6.5.3.3*, 8.7.5.3.3, 8.8.5.3.2, 8.9.5.3.2, 8.10.6.3.2, and 8.10.7.3.2. The language in those sections should be visited to ensure that the general rule in 8.5.5 is not perceived as less restrictive and therefore unusable in the specific sprinkler type sections.

Submitter Information Verification

Submitter Full Name:	Robert Upson
Organization:	National Fire Sprinkler Association
Affilliation:	NFSA Engineering and Standards Committee
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 10:14:31 EDT 2016

Public Input No. 558-NFPA 13-2016 [Section No. 8.5.5.3.1.4]

8.5.5.3.1.4

Sprinklers shall not be required under noncombustible obstructions over 4 ft (1.2 m) wide where the bottom of the obstruction is 24 in. (600 mm) or less above the floor or deck. This section applies to sections 8.6.5.3.3*, 8.7.5.3.3, 8.8.5.3.2, 8.9.5.3.2, 8.10.6.3.2, 8.10.7.3.2.

Statement of Problem and Substantiation for Public Input

The standard does not clearly indicate which sprinklers are affected by this exception from 8.5.5.3.1.4. Apply to all spray sprinkler sections with the "Wide Obstruction Rule".

It is intended that this would apply to 8.6.5.3.3*, 8.7.5.3.3, 8.8.5.3.2, 8.9.5.3.2, 8.10.6.3.2, and 8.10.7.3.2. The language in those sections should be visited to ensure that the general rule in 8.5.5 is not perceived as less restrictive and therefore unusable in the specific sprinkler type sections.

Submitter Information Verification

Submitter Full Name: Robert Upson

Organization: National Fire Sprinkler Association

Affilliation: NFSA Engineering and Standards Committee

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 10:23:55 EDT 2016

Public Input No. 530-NFPA 13-2016 [New Section after 8.5.6.1]

TITLE OF NEW CONTENT

8.5..6.1.1 The 18 in. (457 mm) dimension shall not limit the height of shelving on a wall or shelving against a wall in accordance with 8.6.6, 8.7.6, 8.8.6, and Section 8.9.

Statement of Problem and Substantiation for Public Input

This language is currently in Section 8.6.6.2 (SSU/SSP) and it references section 8.7, 8.8, and 8.9. As section 8.6 applies only to SSU and SSP sprinklers, it is not appropriate to reference sidewall sprinklers and EC sprinklers in this section. This concept would be more appropriate in new section in 8.5 which applies to all sprinkler types.

This language is deleted from section 8.6.6.2 (See PI 531). This PI moves this same language to section in 8.5 which applies to all sprinkler types

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 531-NFPA 13-2016 [Section No. 8.6.6.2 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Roland Asp

Organization: National Fire Sprinkler Association

Affilliation: NFSA E&S Committee

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 23:27:17 EDT 2016

Public Input No. 419-NFPA 13-2016 [New Section after 8.5.7]

Add new 8.5.7.3:

When acceptable to the authority having jurisdiction, the distances between the sprinkler deflector and the top of the skylight can be exceeded for skylights larger than 32 ft2 (3.0 m2) in area.

Statement of Problem and Substantiation for Public Input

There are a lot of issues and controversies with aesthetics of sprinklers and piping in skylights. There is also an issue of freezing pipes within walls of skylights when extending above the roof line. Allowing the sprinkler deflector distances to be exceeded allows for flexibility when installing sprinklers in skylights greater than 32 sq. ft. (3 m2). Life safety or property protection will not be greatly affected.

Submitter Information Verification

Submitter Full Name: Thomas Wellen

Organization: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 27 21:06:17 EDT 2016

Public Input No. 203-NFPA 13-2016 [Section No. 8.5.7.1]

8.5.7.1

Sprinklers shall be permitted to be omitted from skylights which can not open or have open side ventilation and not exceeding 32 ft ^{2} (3.0 m ^{2}) in area, regardless of hazard classification, that are separated by at least 10 ft (3.0 m) horizontally from any other unprotected skylight or unprotected ceiling pocket.

8.5.7.1.1

When a sprinkler is installed directly beneath a skylight which can not open or have open side ventilation and not exceeding 32 ft ^{2} (3.0 m ^{2}), the distance to the ceiling shall be measured to the plane of the ceiling as if the skylight was not present.

Additional Proposed Changes

File Name	Description	Approved
alum_sf_louv.jpg	Skylight with open sided ventilation	
Smoke_Hatch_Tri_Arch_Louver_Dome2.jpg	Open skylight with Open sided ventilation	
Skylight_Closed.jpg	Skylight which can not open and is without open side ventilation	

Statement of Problem and Substantiation for Public Input

A skylight which is open to the sky or one with open side ventilation will not collect heat within the dome and this may delay sprinkler activation. Unless specific testing has shown that the presence of an opening as large as 32 sqft in a ceiling or open ventilation in the sides of the skylight framing will not have an adverse effect on sprinkler activation this change should be made.

Submitter Information Verification

Submitter Full Name: John Deutsch

Organization: VFS Fire & Security Services

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 07 20:11:31 EDT 2016

Public Input No. 381-NFPA 13-2016 [Section No. 8.6.4.1.4.4]

8.6.4.1.4.4*

Sprinklers installed where the dimension perpendicular to the slope exceeds 8 ft (2.4 m) shall have a minimum pressure of 20 psi (1.4 bar).

New:

A.8.6.4.1.4.4 See Figure A.8.6.4.1.4.4.

Additional Proposed Changes

File Name	Description	Approved
Attic_Slope.pdf	Example diagram to show perpendicular to the slope and parallel to the slope.	

Statement of Problem and Substantiation for Public Input

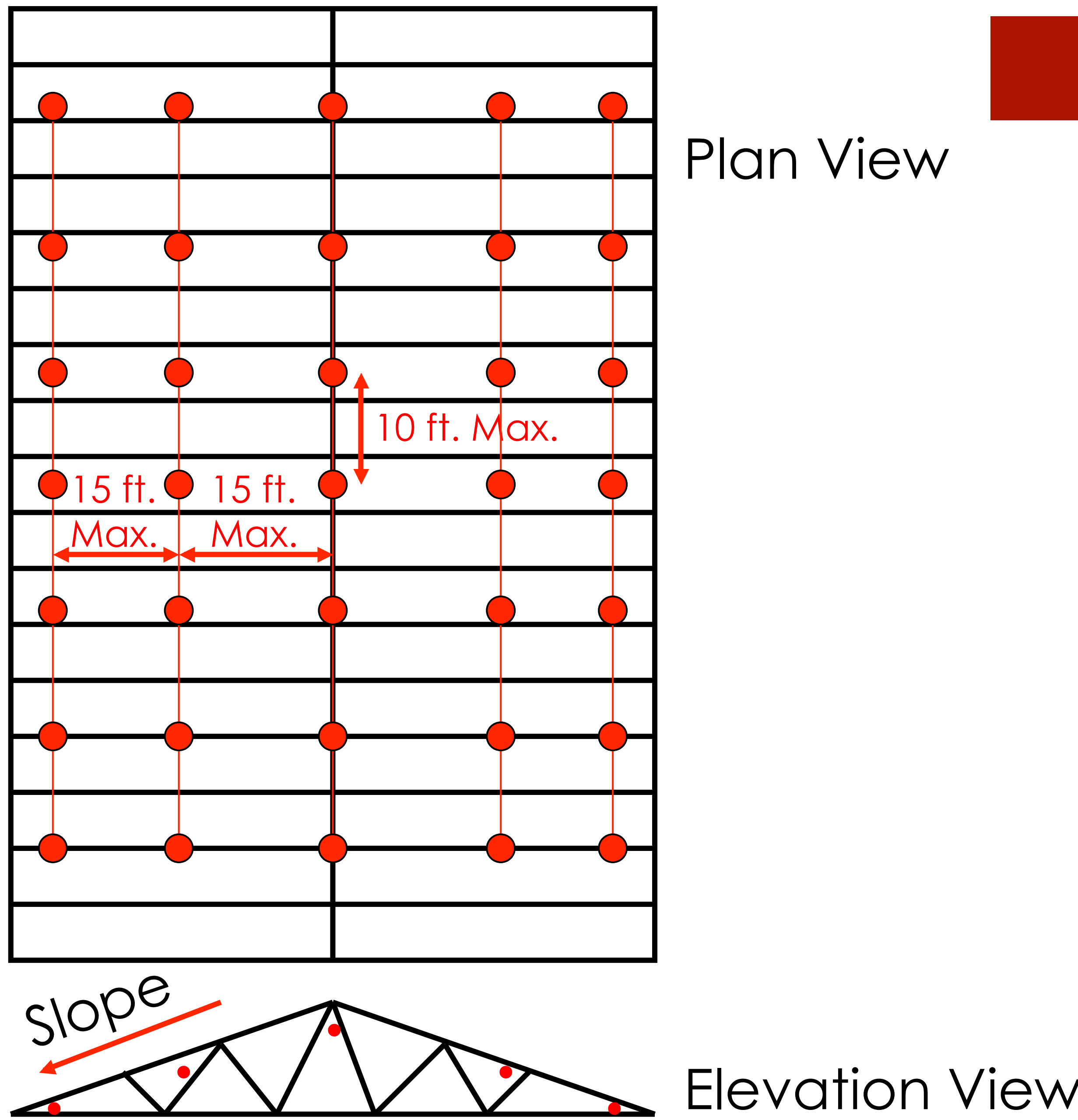
There is a lot of confusion between perpendicular to the slope and parallel to the slope in Table 8.6.2.2.1(a). This figure will provide clarification.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 26 11:56:13 EDT 2016

Table 8.6.2.2.1(a)

Truss members less than 3 ft. on center with a pitch 4 in 12 or greater



Public Input No. 263-NFPA 13-2016 [Section No. 8.6.4.1.4.5]

8.6.4.1.4.5 *

The requirements of 8.6.4.1.4.3 or 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 directly under the hip line spaced in accordance with 8.6.3.2.3 or ~~located along the eave spaced on the~~ located on the slope plane not less than 5 ft (1.5 m) from the intersection of the upper and lower truss chords or the wood rafters and ceiling joists on the eave and no more than 5 ft (1 .5 m) from the hip line.

Statement of Problem and Substantiation for Public Input

The current text references eave and should reference slope plane.

Submitter Information Verification

Submitter Full Name: Mark Fessenden
Organization: Tyco Fire Protection Products
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 23 14:33:14 EDT 2016

Public Input No. 533-NFPA 13-2016 [Section No. 8.6.5.1.2]

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. (750 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. (600 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. (mm)]**
Less than 1 ft (300 mm)	0 (0)
1 ft (300 mm) to less than 1 ft 6 in. (450 mm)	2 1/2 (65)
1 ft 6 in. (450 mm) to less than 2 ft (600 mm)	3 1/2 (90)
2 ft (600 mm) to less than 2 ft 6 in. (750 mm)	5 1/2 (140)
2 ft 6 (750 mm) in. to less than 3 ft (900 mm)	7 1/2 (190)
3 ft (900 mm) to less than 3 ft 6 in. (1.1 m)	9 1/2 (240)
3 ft 6 in. (1.1 m) to less than 4 ft (1.2 m)	12 (300)
4 ft (1.2 m) to less than 4 ft 6 in. (1.4 m)	14 (350)
4 ft 6 in. (1.4 m) to less than 5 ft (1.5 m)	16 1/2 (420)
5 ft (1.5 m) to less than 5 ft 6 in. (1.7 m)	18 (450)
5 ft 6 in. (1.7 m) to less than 6 ft (1.8 m)	20 (510)
6 ft (1.8 m) to less than 6 ft 6 in. (2.0 m)	24 (600)
6 ft 6 in. (2.0 m) to less than 7 ft (2.1 m)	30 (750)
7 ft (2.1 m) to less than 7 ft 6 in. (2.3 m)	35 (875)

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).

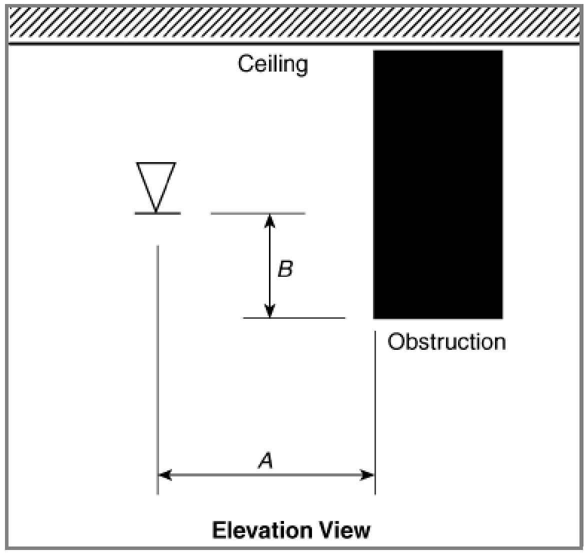


Figure 8.6.5.1.2(b) Obstruction Against Wall (SSU/SSP).

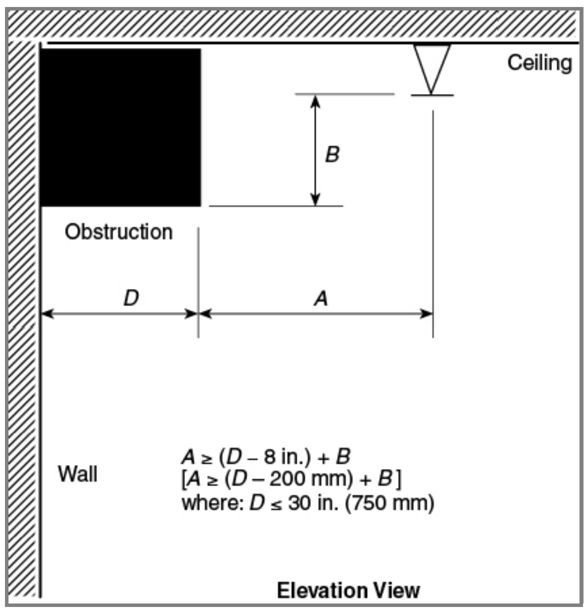


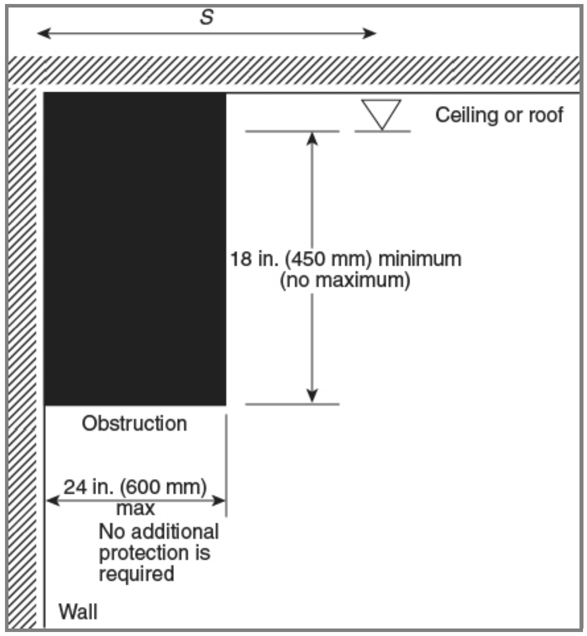
Figure 8.6.5.1.2(c) Obstructions Against Walls (SSU/SSP).

In Figure 8.6.5.1.2(c) revise the vertical dimension for the sprinkler deflector to the bottom of the obstruction distance as follows:

~~18 in. (450 mm) minimum (no maximum)~~ **No maximum**

Also, revise the horizontal dimension for the sprinkler to the wall at the back of the obstruction distance as follows:

~~**S**~~ **½ S**



Statement of Problem and Substantiation for Public Input

This proposal seeks to rectify a discrepancy that was introduced during the Second Draft of the cycle leading up to the 2016 edition of the standard, whereby the figure that was imaged in the First Draft Report was not consistent with the image illustrated in the Second Draft Report.

Public Input No. 289 and First Revision No. 105 and 106 sought to correct typographical errors in the Obstructions Against Walls figures, relating to the distance from the wall and to correct the misconception that a sprinkler deflector would need to be at least 18 inches above the bottom of the obstruction/soffit. The revisions were agreed to during the First Revision Meeting and shown correctly in the First Draft Report. During the Second Draft Meeting, the subject was not discussed again, but for some reason, in the Second Draft Report the figures reverted to show the incorrect information. It appears to be a mistake that was made when the figures were edited to show the metric conversions.

Additionally, in its current state Figure 8.6.5.1.2(c) is inconsistent with the similar new Figure 8.9.5.1.4(c) and Figure 8.10.7.1.4(c), which properly indicate the “½ S” and the “No maximum” dimensions.

This change was inadvertent. The Technical Committee did not take any action to change the figure after the First Draft. They should therefore be corrected again.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: PLC Fire Safety Solutions
Street Address:
City:
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Zip:
Submittal Date: Wed Jun 29 00:13:23 EDT 2016

Public Input No. 596-NFPA 13-2016 [Section No. 8.6.5.1.2]

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. (750 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. (600 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. (mm)]**
Less than 1 ft (300 mm)	0 (0)
1 ft (300 mm) ~~to less than 1 ft 6 in. (450 mm)~~ or more	2 1/2 (65)
1 ft 6 in. (450 mm) ~~to less than 2 ft (600 mm)~~ or more	3 1/2 (90)
2 ft (600 mm) ~~to less than 2 ft 6 in. (750 mm)~~ or more	5 1/2 (140)
2 ft 6 (750 mm) in. ~~to less than 3 ft (900 mm)~~ or more	7 1/2 (190)
3 ft (900 mm) ~~to less than 3 ft 6 in. (1.1 m)~~ or more	9 1/2 (240)
3 ft 6 in. (1.1 m) ~~to less than 4 ft (1.2 m)~~ or more	12 (300)
4 ft (1.2 m) ~~to less than 4 ft 6 in. (1.4 m)~~ or more	14 (350)
4 ft 6 in. (1.4 m) ~~to less than 5 ft (1.5 m)~~ or more	16 1/2 (420)
5 ft (1.5 m) ~~to less than 5 ft 6 in. (1.7 m)~~ or more	18 (450)
5 ft 6 in. (1.7 m)	

~~to less than 6 ft (1.8 m)~~	
or more	20 (510)
6 ft (1.8 m)	
~~to less than 6 ft 6 in. (2.0 m)~~	
or more	24 (600)
6 ft 6 in.	
~~(2.0 m) to less than 7 ft (2.1 m)~~	
or more	30 (750)
7 ft (2.1 m)	
~~to less than 7 ft 6 in. (2.3 m)~~	
or more	35 (875)

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).

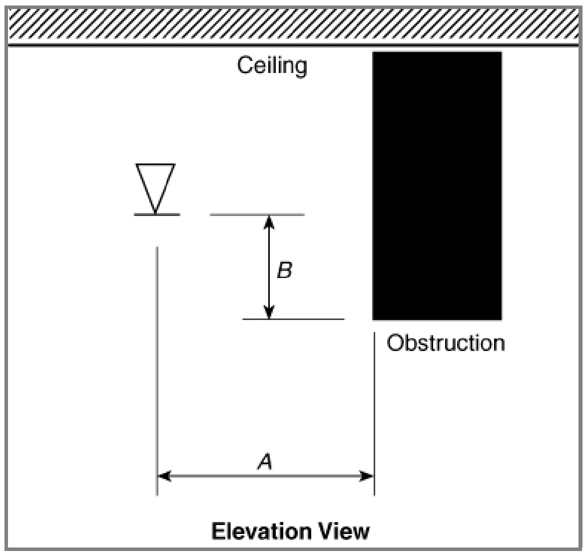


Figure 8.6.5.1.2(b) Obstruction Against Wall (SSU/SSP).

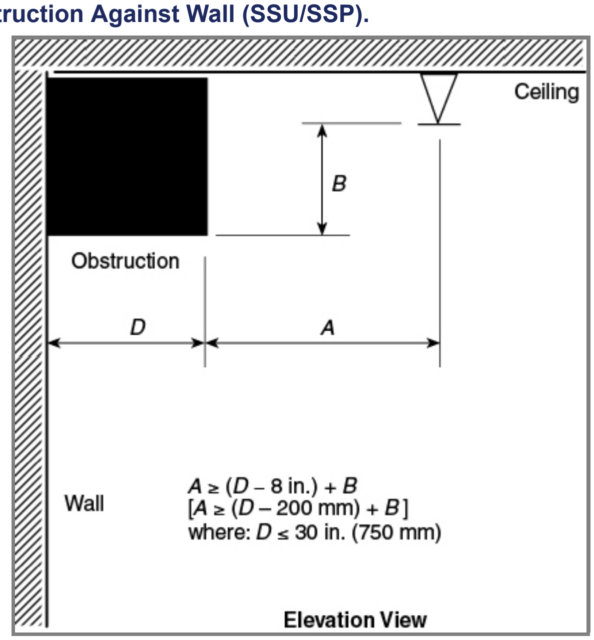
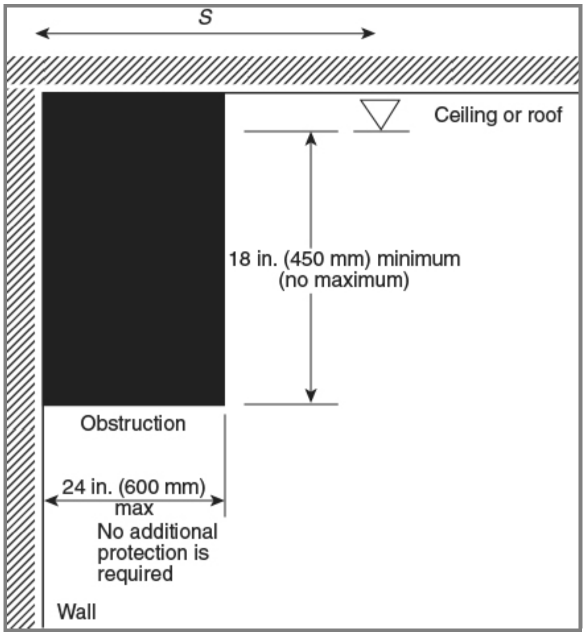


Figure 8.6.5.1.2(c) Obstructions Against Walls (SSU/SSP).



Statement of Problem and Substantiation for Public Input

The chart can be very very difficult to understand. This should to every section that is referred to as "the beam rule".

Submitter Information Verification

Submitter Full Name: Cecil Bilbo
Organization: Academy of Fire Sprinkler Tech
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 16:29:29 EDT 2016

Public Input No. 620-NFPA 13-2016 [Section No. 8.6.5.1.2]

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. (750 mm) in width shall be permitted to be protected in accordance with Figure 8.6.5.1.2(b). Where the onstruction is against the wall and greater than 30 in. in width and complies with 8.6.4.1.1 (B), an additional sprinkler is not required under the obstruction where protected in accordance with Figure 8.6.5.1.2 (b).

(4) Obstructions located against the wall and that are not over 24 in. (600 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. (mm)]**
Less than 1 ft (300 mm)	0 (0)
1 ft (300 mm) to less than 1 ft 6 in. (450 mm)	2 ½ (65)
1 ft 6 in. (450 mm) to less than 2 ft (600 mm)	3 ½ (90)
2 ft (600 mm) to less than 2 ft 6 in. (750 mm)	5 ½ (140)
2 ft 6 (750 mm) in. to less than 3 ft (900 mm)	7 ½ (190)
3 ft (900 mm) to less than 3 ft 6 in. (1.1 m)	9 ½ (240)
3 ft 6 in. (1.1 m) to less than 4 ft (1.2 m)	12 (300)
4 ft (1.2 m) to less than 4 ft 6 in. (1.4 m)	14 (350)
4 ft 6 in. (1.4 m) to less than 5 ft (1.5 m)	16 ½ (420)
5 ft (1.5 m) to less than 5 ft 6 in. (1.7 m)	18 (450)
5 ft 6 in. (1.7 m) to less than 6 ft (1.8 m)	20 (510)
6 ft (1.8 m) to less than 6 ft 6 in. (2.0 m)	24 (600)
6 ft 6 in. (2.0 m) to less than 7 ft (2.1 m)	30 (750)
7 ft (2.1 m) to less than 7 ft 6 in. (2.3 m)	35 (875)

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).

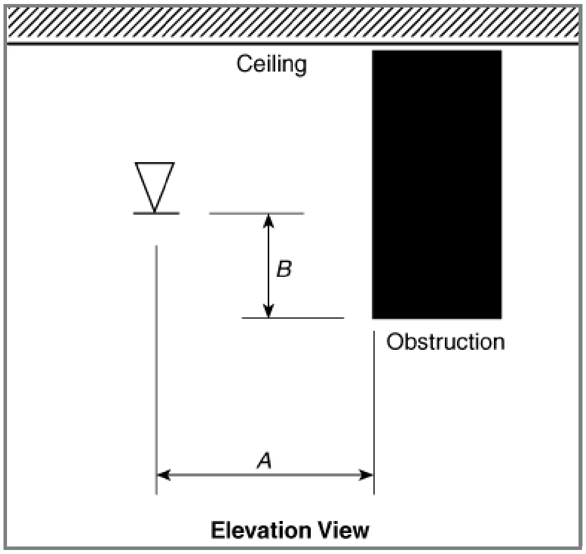


Figure 8.6.5.1.2(b) Obstruction Against Wall (SSU/SSP).

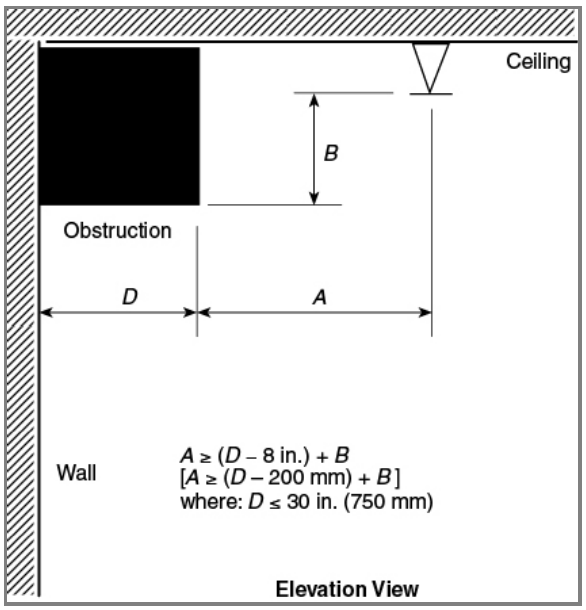
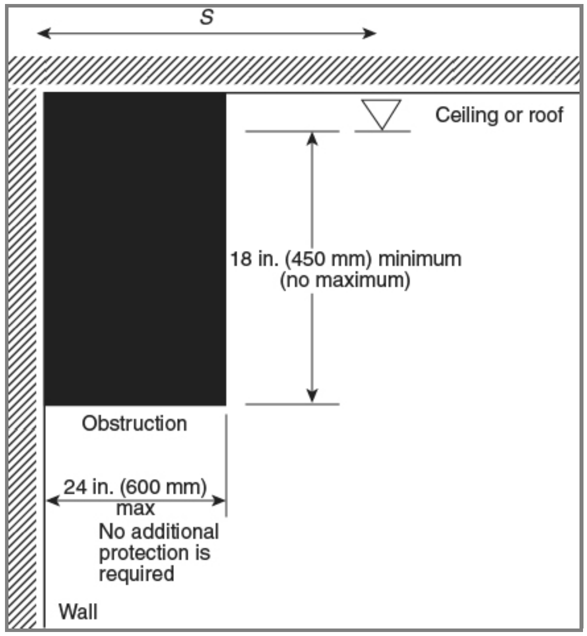


Figure 8.6.5.1.2(c) Obstructions Against Walls (SSU/SSP).



Statement of Problem and Substantiation for Public Input

There seems to be a conflict between sections. Section 8.6.4.1.1.3 (B) allows for a ceiling to be treated as flat when the change in height is less than 36". If a soffit is less than 36" in height and more than 30" in width and the sprinkler is spaced such that the discharge pattern reaches the wall beneath the soffit, why should another sprinkler be required beneath the soffit. Example: a 6 in. deep soffit is 36" deep and the sprinkler is spaced 4 ft. from the edge of the soffit, this sprinkler is only 7 ft. from the wall and the sprinkler is far enough away from the soffit that a proper pattern will develop under the soffitt to reach the wall.

Submitter Information Verification

Submitter Full Name: James Peterkin

Organization: TLC Engineering

Affilliation: None

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 21:52:52 EDT 2016

Public Input No. 428-NFPA 13-2016 [Section No. 8.6.5.2.1.3 [Excluding any Sub-Sections]]

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) in accordance with Figure 8.6.5.2.1.3(a) and Figure 8.6.5.2.1.3(b).

Figure 8.6.5.2.1.3(a) Minimum Distance from an Obstruction in the Vertical Orientation (SSU/SSP).
Delete this figure and replace with correct figure (see uploaded document)

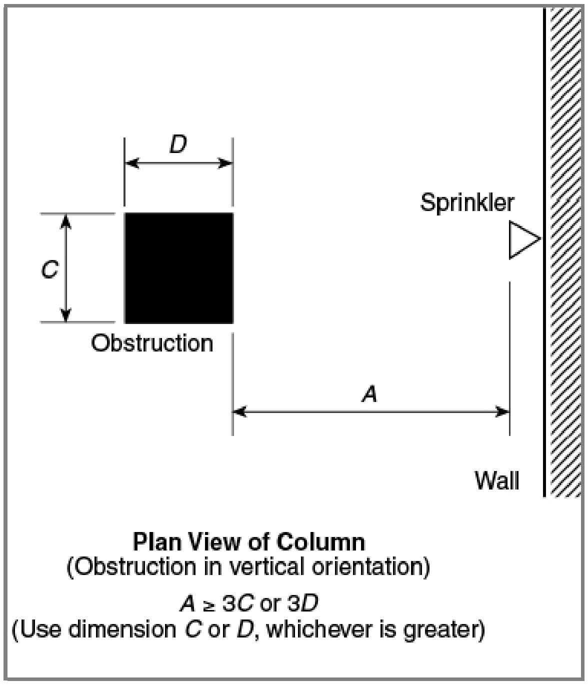
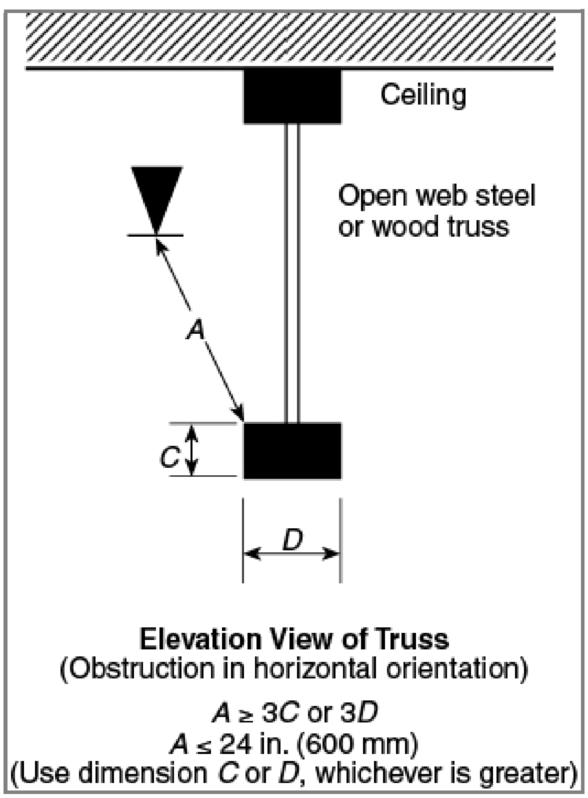


Figure 8.6.5.2.1.3(b) Minimum Distance from an Obstruction in the Horizontal Orientation (SSU/SSP).



Additional Proposed Changes

File Name	Description	Approved
Figure_8.6.5.2.1.3_a_.docx	Correct figure 8.6.5.2.1.3(a)	

Statement of Problem and Substantiation for Public Input

The figure shown is for the 3 times rule for SSU/SSP sprinklers but the figure shows a sidewall sprinkler. Delete incorrect figure and substitute correct figure as shown in the uploaded document. This was submitted NFPA as an Erratum. This PI is in case this erratum is not corrected.

Submitter Information Verification

Submitter Full Name: Roland Asp

Organization: National Fire Sprinkler Association

Affilliation: NFSA E&S Committee

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City:

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Zip:

Submittal Date: Mon Jun 27 22:02:27 EDT 2016

NFPA 13, Figure 8.6.5.2.1.3(a)

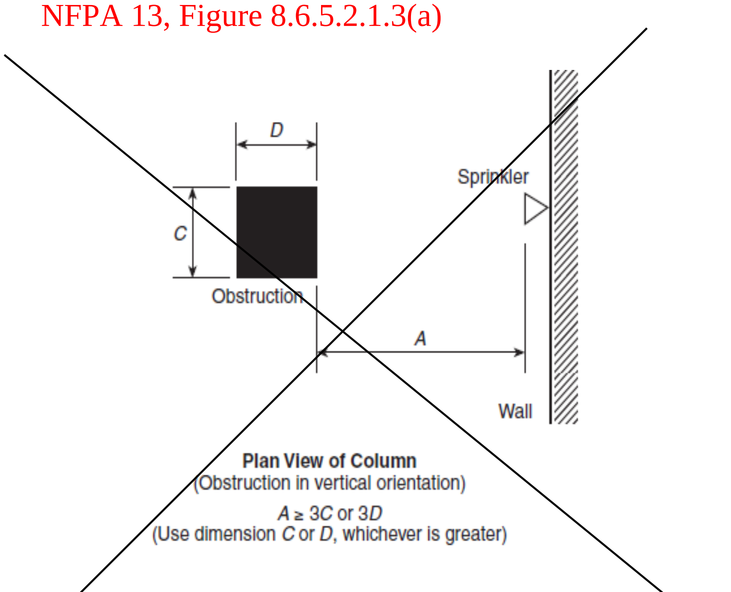

FIGURE 8.6.5.2.1.3(a) Minimum Distance from an Obstruction in the Vertical Orientation (SSU/SSP).

Problem: Figure 8.6.3.2.1.3(a) is the 3 times rule for SSU/SSP sprinklers but figure shows sidewall sprinkler

Proposal: Submit correct figure

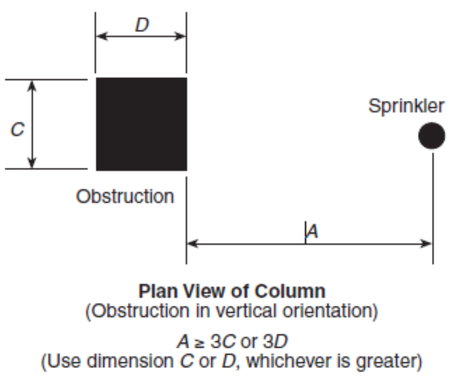

Figure 8.6.5.2.1.3(a) Minimum Distance from an Obstruction in the Vertical Orientation (SSU/SSP).

Substantiation:

This figure is for 3 times rule for SSU/SSP sprinklers but figure shows a sidewall sprinkler. Delete incorrect figure and substitute correct figure as shown. This was submitted NFPA as an Erratum. This PI is in case this erratum is not corrected.

Public Input No. 475-NFPA 13-2016 [Section No. 8.6.5.2.1.5]

8.6.5.2.1.5

Sprinklers shall be permitted to be spaced on opposite sides of the obstruction not exceeding 4 ft (1.2 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.

Statement of Problem and Substantiation for Public Input

This change correlates with the similar restriction in 8.6.5.1.2(2) and the bounding requirement in 8.6.5.3.2

Submitter Information Verification

Submitter Full Name: Roland Huggins
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City:
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Submittal Date: Tue Jun 28 11:50:46 EDT 2016

Public Input No. 92-NFPA 13-2016 [Section No. 8.6.5.2.1.8]

8.6.5.2.1.8

The requirements of 8.6.5.2.1.3 shall not apply to sprinkler system piping less than 3 in. (80 mm) in diameter.

Proposed changes: The requirements of 8.6.5.2.1.3 shall apply to sprinkler system piping is 3 in. (80 mm) or larger in diameter.

Statement of Problem and Substantiation for Public Input

Reason: There is Nothing Wrong if apply "3 times rules" to piping less than 3 in. The only negative effect is costs. If this article is intend for Upright sprinklers on large branch lines or mains must be placed on riser nipples or offset from the branch line to eliminate the obstruction that is created directly below the sprinkler, an affirmative sentence will be more precise and avoid leaving vague interpretation.

Submitter Information Verification

Submitter Full Name: Yi Xing

Organization: Pageau Morel et associés inc.

Street Address:

City:

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Zip:

Submittal Date: Tue Apr 12 12:40:27 EDT 2016

Public Input No. 600-NFPA 13-2016 [Section No. 8.6.5.2.2 [Excluding any Sub-Sections]]

The distance from sprinklers to privacy curtains, freestanding partitions, room dividers, and similar obstructions in light hazard occupancies shall be in accordance with Table 8.6.5.2.2 and Figure 8.6.5.2.2.

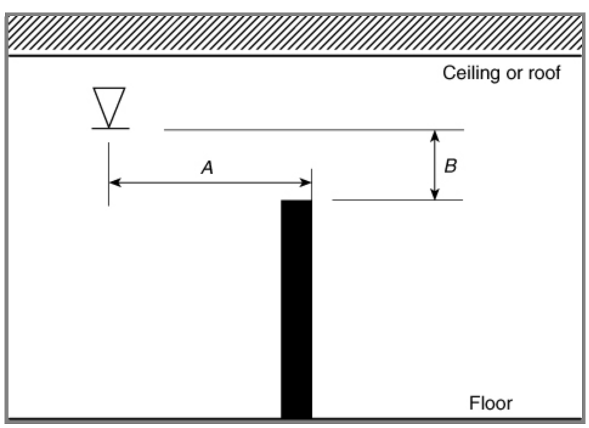
Table 8.6.5.2.2 Suspended or Floor-Mounted Obstructions in Light Hazard Occupancies Only (SSU/SSP)

Horizontal Distance (A)	Minimum Vertical Distance Below Deflector (B) [in. (mm)]
6 in. (150 mm) or less	3 (75)
~~More than 6 in. (150 mm) to~~	
9 in. (225 mm) or less	4 (100)
~~More than 9 in. (225 mm) to~~	
12 in. (300 mm) or less	6 (150)
~~More than 12 in. (300 mm) to~~	
15 in. (375 mm) or less	8 (200)
~~More than 15 in. (375 mm) to~~	
18 in. (400 mm) or less	9 $\frac{1}{2}$ (240)
~~More than 18 in. (400 mm) to~~	
24 in. (600 mm) or less	12 $\frac{1}{2}$ (315)
~~More than 24 in. (600 mm) to~~	
30 in. (750 mm) or less	15 $\frac{1}{2}$ (395)
More than 30 in. (750 mm)	18 (450)

For SI units, 1 in. = 25.4 mm.

Note: For *A* and *B*, refer to Figure 8.6.5.2.2.

Figure 8.6.5.2.2 Suspended or Floor-Mounted Obstruction in Light Hazard Occupancies Only (SSU/SSP).



Statement of Problem and Substantiation for Public Input

The chart can be difficult to interpret and apply. Please make this change to every location of the rule known as the "Partition Rule".

Submitter Information Verification

Submitter Full Name:	Cecil Bilbo
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Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 16:37:54 EDT 2016

Public Input No. 477-NFPA 13-2016 [Section No. 8.6.5.3.2]

8.6.5.3.2

The requirements of 8.6.5.3 shall also apply to obstructions 18 in. (450 mm) or less below the sprinkler ~~for light and ordinary hazard occupancies~~ .

Statement of Problem and Substantiation for Public Input

This criteria currently applies to >4 ft obstructions only in light and ordinary hazard occupancies when less than 18 inches below the deflector. Without this change what's suppose to be done in EH and storage. Additional, there is no similar restriction for obstructions located greater than 18 inches below the deflector.

Submitter Information Verification

Submitter Full Name: Roland Huggins

Organization: American Fire Sprinkler Association

Street Address:

City:

State:

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Submittal Date: Tue Jun 28 11:57:44 EDT 2016

Public Input No. 196-NFPA 13-2016 [New Section after 8.6.5.3.7]

8.6.5.4 Shadow Areas.

A maximum of 15 square feet of shadow area shall be permitted in the protection area of a sprinkler.

Statement of Problem and Substantiation for Public Input

Attempts were made in the 2013 cycle to specify permissible "shadowing," similar to proposals that were made for NFPA 13D and NFPA 13R. The NFPA 13 technical committee rejected these proposals, based at least in part on an unwillingness to provide a specific area. Instead, language discussing the concept of shadowing was added to the Annex. While there may be concern about a lack of flexibility by providing a specific area, the reaction of the AHJ community seems to be in the opposite direction. My firm has been involved in several housing projects where small closets or mechanical equipment enclosures create shadow areas (typically 5 square feet or less) which have been questioned by the AHJs. For most of these projects we have ultimately been successful in convincing the AHJ that this condition does not impair system performance. These efforts have included a comparison of the shadow area to explicitly allowable obstructions and their impact, as well as fire modeling using Fire Dynamics Simulator (sprinkler activation times in the same room with and without the enclosure causing the shadow were within a few seconds). However, on at least one occasion the AHJ was unwilling to accept any amount of shadow area. A definitive minimum allowable amount of shadow area is appropriate and will provide guidance to the architectural/engineering community, contractors and AHJs. Note that 15 square feet is considerably less than can result by application of the existing obstruction rules, as was pointed out in several of the comments during the 2013 cycle. This area was selected to coordinate with the provision added to NFPA 13R. We have often seen this scenario in a sleeping room, and if 15 square feet of shadow is acceptable for a life safety system it also seems appropriate for a property protection system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 195-NFPA 13-2016 [New Section after 3.3.20]	
Public Input No. 197-NFPA 13-2016 [New Section after 8.7.5.3.3]	
Public Input No. 198-NFPA 13-2016 [New Section after 8.8.5.3.6]	
Public Input No. 199-NFPA 13-2016 [New Section after 8.9.5.3.3]	
Public Input No. 200-NFPA 13-2016 [New Section after 8.10.6.3.4]	
Public Input No. 201-NFPA 13-2016 [New Section after 8.10.7.3.6]	
Public Input No. 202-NFPA 13-2016 [Section No. A.8.1.1(3)]	
Public Input No. 202-NFPA 13-2016 [Section No. A.8.1.1(3)]	

Submitter Information Verification

Submitter Full Name: Chris Born
Organization: Clark Nexsen Inc
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 07 15:11:09 EDT 2016

Public Input No. 362-NFPA 13-2016 [Section No. 8.6.6.2]

8. 5. 6.6 ~~.2~~

The 18 in. (450 mm) dimension shall not limit the height of shelving on a wall or shelving against a wall in accordance with 8.6.6, 8.7.6, 8.8.6, and Section 8.9.

8. 5. 6.6. ~~2.~~ 1

Where shelving is installed on a wall and is not directly below sprinklers, the shelves, including storage thereon, shall be permitted to extend above the level of a plane located 18 in. (450 mm) below ceiling sprinkler deflectors.

8. 5. 6.6.2 ~~.2~~

Shelving, and any storage thereon, directly below the sprinklers shall not extend above a plane located 18 in. (450 mm) below the ceiling sprinkler deflectors.

Statement of Problem and Substantiation for Public Input

The requirements of 8.6.6.2 should be moved to 8.5.6.6 because they are general requirements that also apply to 8.7, 8.8, and 8.9.

Submitter Information Verification

Submitter Full Name: e Parks Moore
Organization: S&S Sprinkler Company LLC
Street Address:
City:
State:
Zip:
Submittal Date: Fri Jun 24 15:10:38 EDT 2016

Public Input No. 531-NFPA 13-2016 [Section No. 8.6.6.2 [Excluding any Sub-Sections]]

~~The 18 in. (450 mm) dimension shall not limit the height of shelving on a wall or shelving against a wall in accordance with 8.6.6 , 8.7.6 , 8.8.6 , and Section 8.9 .~~

Statement of Problem and Substantiation for Public Input

This section (8.6.6.2 (SSU/SSP)) references section 8.7(Standard Spray Sidewall Sprinklers), 8.8 (EC pendent and upright), and 8.9(EC sidewalls). Referencing these different types of sprinklers is not appropriate in section 8.6 which applies only to SSU and SSP sprinklers. This concept would be more appropriate in new section in 8.5 which applies to all sprinkler types.

PI 530 has added this wording to section 8.5 which applies to all sprinkler types and not just SSU/SSP

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 530-NFPA 13-2016 [New Section after 8.5.6.1]	Same concept

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
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Street Address:
City:
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Submittal Date: Tue Jun 28 23:31:37 EDT 2016

Public Input No. 498-NFPA 13-2016 [Sections 8.7.4.1.4.2, 8.7.4.1.4.3]

Sections 8.7.4.1.4.2, 8.7.4.1.4.3

8.7.4.1.4.2

~~Sidewall sprinklers~~ When proteting kitchens or similar rooms with cabinets, 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. (300 mm) from the wall.

8.7.4.1.4.3

~~Where sidewall~~ When protecting kitchens or similar rooms with cabinets, where sidewall sprinklers are more than 36 in. (900 mm) 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. (300 mm) from the wall.

Statement of Problem and Substantiation for Public Input

This proposal is offered to address an apparent inconsistency between the provision of 8.7.4.1.4.1, which requires sprinklers below soffits that are over 8 in. wide and those of 8.7.4.1.4.2 and 8.7.4.1.4.3 which allow the soffits and cabinets to be 12 in. wide. The added text clarifies when the wider dimension would or would not be allowed, ie. If the occupancy is not a kitchen or a similar environment, such as an employee break room, the 8 in. dimension would be in force.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: PLC Fire Safety Solutions
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 19:57:06 EDT 2016

Public Input No. 398-NFPA 13-2016 [New Section after 8.7.5.1.3]

8.7.5.1.3.1 The bottom of light fixtures and similar obstructions located 4 ft or less from the sprinkler shall be above the plane of the sprinkler deflector.

Statement of Problem and Substantiation for Public Input

This will explicitly clarify this issue and correlates with the changes last cycle.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 370-NFPA 13-2016 [New Section after 8.9.5.1.3]	

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 27 12:04:51 EDT 2016

Public Input No. 496-NFPA 13-2016 [Section No. 8.7.5.3.2]

8.7.5.3.2

Sprinklers shall be installed under fixed obstructions over 4 ft (1.2 m)~~ wide such as ducts, decks, open grate flooring, cutting tables, and overhead doors~~ .

Statement of Problem and Substantiation for Public Input

During the cycle leading up to the 2013 edition of the standard, Proposal 13-188 and Proposal 13-203 were accepted to revise Section 8.5.5.3.1 and Section 8.6.5.3.3 to delete the list of examples from the body of the standard and provide them in the annex instead, to conform with the Manual of style. However, the similar text in other sections such as 8.7.5.3.2, 8.8.5.3.2, 8.9.5.3.2 and 8.10.7.3.2 were not similarly revised. To accord with the other obstruction requirements within NFPA 13, those omissions should be rectified now.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 497-NFPA 13-2016 [New Section after A.8.7.5.3]	

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: PLC Fire Safety Solutions
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 19:45:12 EDT 2016

Public Input No. 197-NFPA 13-2016 [New Section after 8.7.5.3.3]

8.7.5.4 Shadow Areas.

A maximum of 15 square feet of shadow area shall be permitted within the protection area of a sprinkler.

Statement of Problem and Substantiation for Public Input

Attempts were made in the 2013 cycle to specify permissible "shadowing," similar to proposals that were made for NFPA 13D and NFPA 13R. The NFPA 13 technical committee rejected these proposals, based at least in part on an unwillingness to provide a specific area. Instead, language discussing the concept of shadowing was added to the Annex. While there may be concern about a lack of flexibility by providing a specific area, the reaction of the AHJ community seems to be in the opposite direction. My firm has been involved in several housing projects where small closets or mechanical equipment enclosures create shadow areas (typically 5 square feet or less) which have been questioned by the AHJs. For most of these projects we have ultimately been successful in convincing the AHJ that this condition does not impair system performance. These efforts have included a comparison of the shadow area to explicitly allowable obstructions and their impact, as well as fire modeling using Fire Dynamics Simulator (sprinkler activation times in the same room with and without the enclosure causing the shadow were within a few seconds). However, on at least one occasion the AHJ was unwilling to accept any amount of shadow area. A definitive minimum allowable amount of shadow area is appropriate and will provide guidance to the architectural/engineering community, contractors and AHJs. Note that 15 square feet is considerably less than can result by application of the existing obstruction rules, as was pointed out in several of the comments during the 2013 cycle. This area was selected to coordinate with the provision added to NFPA 13R. We have often seen this scenario in a sleeping room, and if 15 square feet of shadow is acceptable for a life safety system it also seems appropriate for a property protection system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 195-NFPA 13-2016 [New Section after 3.3.20]	
Public Input No. 198-NFPA 13-2016 [New Section after 8.8.5.3.6]	
Public Input No. 199-NFPA 13-2016 [New Section after 8.9.5.3.3]	
Public Input No. 200-NFPA 13-2016 [New Section after 8.10.6.3.4]	
Public Input No. 201-NFPA 13-2016 [New Section after 8.10.7.3.6]	
Public Input No. 196-NFPA 13-2016 [New Section after 8.6.5.3.7]	
Public Input No. 202-NFPA 13-2016 [Section No. A.8.1.1(3)]	

Submitter Information Verification

Submitter Full Name: Chris Born
Organization: Clark Nexsen Inc
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 07 15:14:46 EDT 2016

Public Input No. 534-NFPA 13-2016 [Section No. 8.8.5.1.2]

8.8.5.1.2 *

Sprinklers shall be arranged to comply with one of the following arrangements:

(1) Sprinklers shall be in accordance with 8.5.5.2, Table 8.8.5.1.2, and Figure 8.8.5.1.2(a).

(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. (750 mm) in width shall be permitted to be protected in accordance with Figure 8.8.5.1.2(b).

(4) Obstructions located against the wall and that are not over 24 in. (600 mm) in width shall be permitted to be protected in accordance with Figure 8.8.5.1.2(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 8.8.5.1.2 Position of Sprinklers to Avoid Obstructions to Discharge (Extended Coverage Upright and Pendent Spray Sprinklers)

Distance from Sprinklers to Side of Obstruction ***(A)***	**Maximum Allowable Distance of Deflector Above Bottom of Obstruction** ***(B)*** **[in. (mm)]**
Less than 1 ft (300 m)	0 (0)
1 ft (300 m) to less than 1 ft 6 in. (450 m)	0 (0)
1 ft 6 in. (450 m) to less than 2 ft (600 m)	1 (25)
2 ft (600 m) to less than 2 ft 6 in. (750 m)	1 (25)
2 ft 6 in. (750 m) to less than 3 ft (900 m)	1 (25)
3 ft (900 m) to less than 3 ft 6 in. (1.1 m)	3 (75)
3 ft 6 in. (1.1 m) to less than 4 ft (1.2 m)	3 (75)
4 ft (1.2 m) to less than 4 ft 6 in. (1.4 m)	5 (125)
4 ft 6 in. (1.4 m) to less than 5 ft (1.5 m)	7 (175)
5 ft (1.5 m) to less than 5 ft 6 in. (1.7 m)	7 (175)
5 ft 6 in. (1.7 m) to less than 6 ft (1.8 m)	7 (175)
6 ft (1.8 m) to less than 6 ft 6 in. (2 m)	9 (225)
6 ft 6 in. (2 m) to less than 7 ft (2.1 m)	11 (275)
7 ft (2.1 m) to less than 7 ft 6 in. (2.3 m)	14 (350)
7 ft 6 in. (2.3 m) to less than 8 ft (2.4 m)	14 (350)
8 ft (2.4 m) to less than 8 ft 6 in. (2.6 m)	15 (375)
8 ft 6 in. (2.6 m) to less than 9 ft (2.7 m)	17 (425)
9 ft (2.7 m) to less than 9 ft 6 in. (2.9 m)	19 (475)

Distance from Sprinklers to Side of Obstruction (A)	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B) [in. (mm)]
9 ft 6 (2.9 m) in. to less than 10 ft (3.0 m)	21 (525)

Note: For *A* and *B*, refer to Figure 8.8.5.1.2(a).

Figure 8.8.5.1.2(a) Position of Sprinkler to Avoid Obstruction to Discharge (Extended Coverage Upright and Pendent Spray Sprinklers).

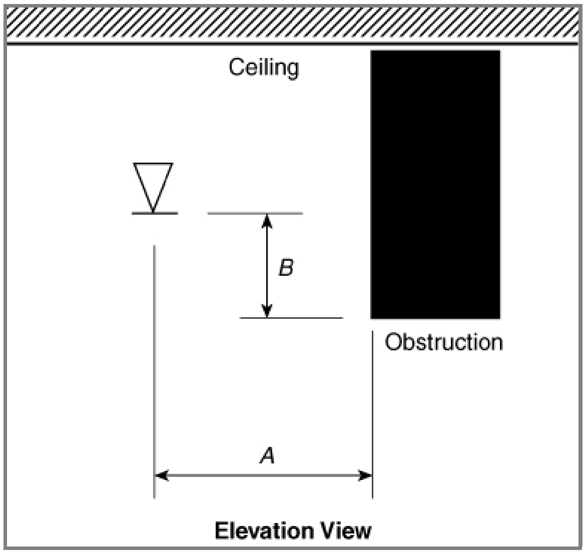


Figure 8.8.5.1.2(b) Obstructions Against Walls (Extended Coverage Upright and Pendent Spray Sprinklers).

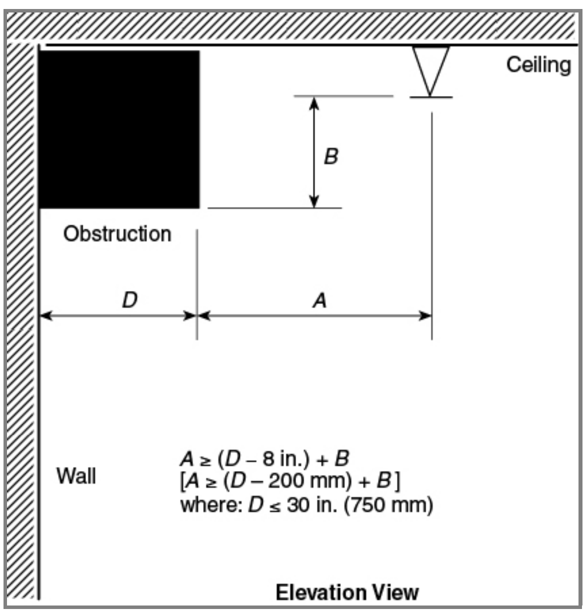
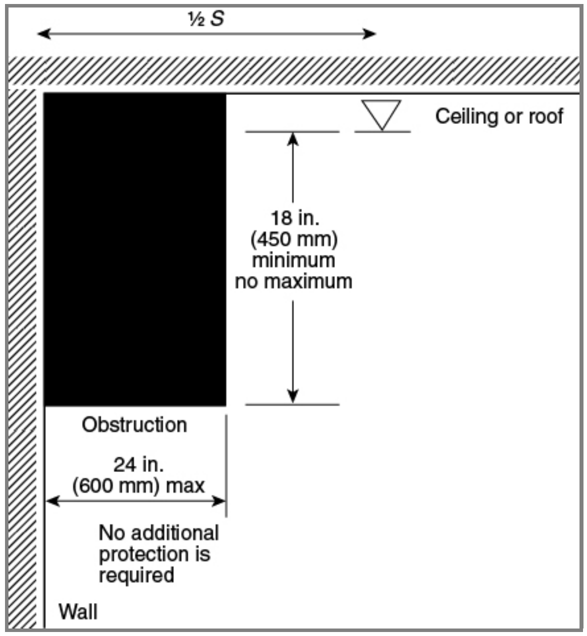


Figure 8.8.5.1.2(c) Obstructions Against Walls (Extended Coverage Upright and Pendent Spray Sprinklers).

In Figure 8.8.5.1.2(c) revise the vertical dimension for the sprinkler deflector to the bottom of the obstruction distance as follows:

~~18 in. (450 mm) minimum (no maximum)~~ **No maximum**



Statement of Problem and Substantiation for Public Input

This proposal seeks to rectify a discrepancy that was introduced during the Second Draft of the cycle leading up to the 2016 edition of the standard, whereby the figure that was imaged in the First Draft Report was not consistent with the image illustrated in the Second Draft Report.

Public Input No. 289 and First Revision No. 105 and 106 sought to correct typographical errors in the Obstructions Against Walls figures, relating to the distance from the wall and to correct the misconception that a sprinkler deflector would need to be at least 18 inches above the bottom of the obstruction/soffit. The revisions were agreed to during the First Revision Meeting and shown correctly in the First Draft Report. During the Second Draft Meeting, the subject was not discussed again, but for some reason, in the Second Draft Report the figures reverted to show the incorrect information. It appears to be a mistake that was made when the figures were edited to show the metric conversions.

Additionally, in its current state Figure 8.8.5.1.2(c) is inconsistent with the similar new Figure 8.9.5.1.4(c) and Figure 8.10.7.1.4(c), which properly indicate the “No maximum” dimensions.

This change was inadvertent. The Technical Committee did not take any action to change the figure after the First Draft. It should therefore be corrected again.

Submitter Information Verification

Submitter Full Name: Larry Keeping
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Submittal Date: Wed Jun 29 00:17:46 EDT 2016

Public Input No. 380-NFPA 13-2016 [Section No. 8.8.5.2.1.3 [Excluding any Sub-Sections]]

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) in accordance with Figure 8.8.5.2.1.3(a) and Figure 8.8.5.2.1.3(b).

Figure 8.8.5.2.1.3(a) Minimum Distance from an Obstruction in the Vertical Orientation (Extended Coverage Upright and Pendent Spray Sprinkler).

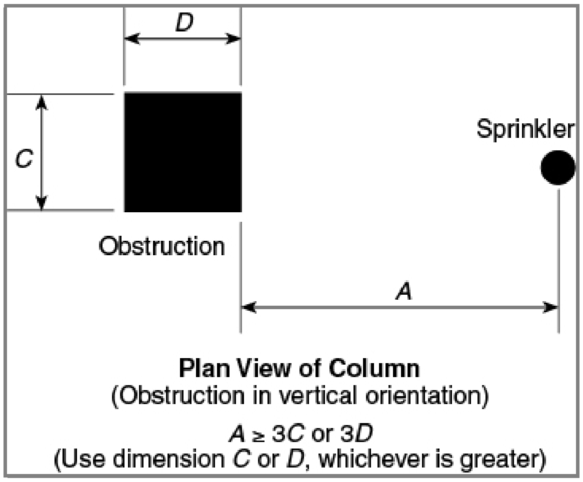
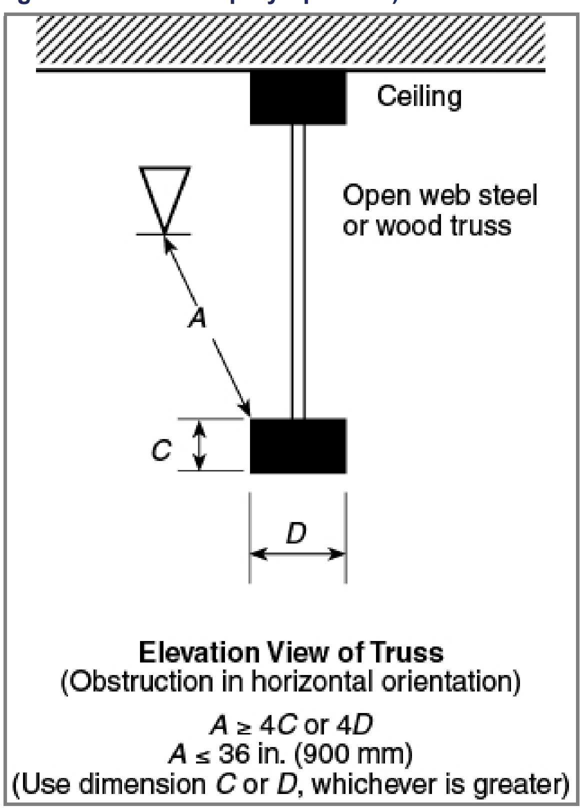


Figure 8.8.5.2.1.3(b) Minimum Distance from an Obstruction in the Horizontal Orientation (Extended Coverage Upright and Pendent Spray Sprinkler).



Additional Proposed Changes

File Name	Description	Approved
NFPA_13_edit.docx	Edit of Figure	

Statement of Problem and Substantiation for Public Input

Figure 8.8.5.2.1.3(a) needs to be edited as per attached.

Submitter Information Verification

Submitter Full Name: David Morin

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Affilliation: DOD

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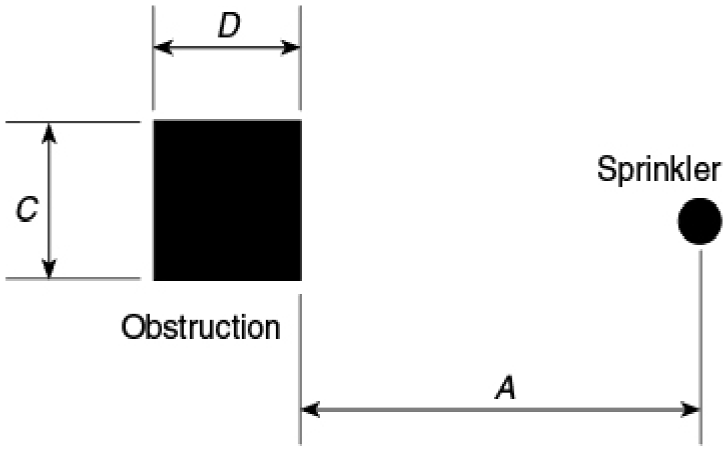
Submittal Date: Sun Jun 26 11:51:25 EDT 2016



Plan View of Column
(Obstruction in vertical orientation)

$A \geq 3C$ or $3D$
(Use dimension C or D, whichever is greater)

Should read: **$A \geq 4C$ or $4D$**

Public Input No. 432-NFPA 13-2016 [Section No. 8.8.5.2.1.3 [Excluding any Sub-Sections]]

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) in accordance with Figure 8.8.5.2.1.3(a) and Figure 8.8.5.2.1.3(b).

Figure 8.8.5.2.1.3(a) Minimum Distance from an Obstruction in the Vertical Orientation (Extended Coverage Upright and Pendent Spray Sprinkler).

This Figure is the 4 times rule for EC sprinklers but the figure states 3x not 4x.

The correct wording is *A>/=4C or 4D*

See uploaded file

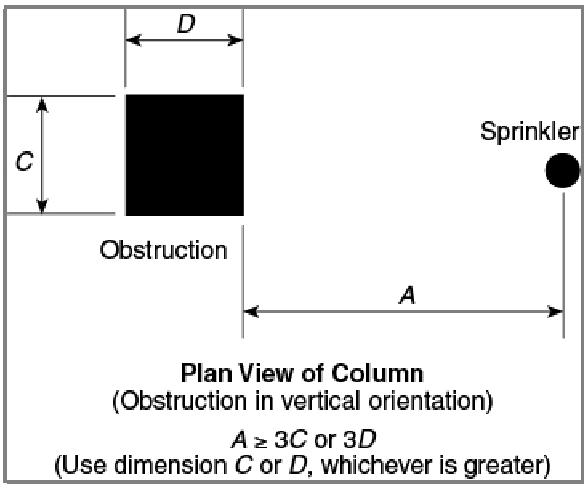
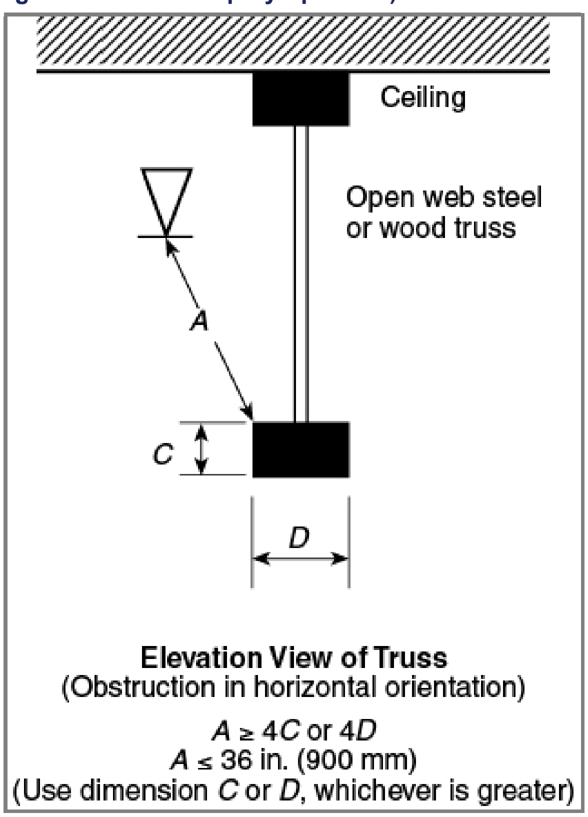


Figure 8.8.5.2.1.3(b) Minimum Distance from an Obstruction in the Horizontal Orientation (Extended Coverage Upright and Pendent Spray Sprinkler).



Additional Proposed Changes

File Name	Description	Approved

8.8.5.2.1.3_a_.docx Corrected figure 8.8.5.2.1.3(a)

Statement of Problem and Substantiation for Public Input

This Figure is for the "4 times rule" for EC but figure states 3x not 4x
The correct wording: is A>/=4C or 4D. See uploaded file

This was submitted NFPA as an Erratum. This PI is in case this erratum is not corrected.

Submitter Information Verification

Submitter Full Name:	Roland Asp
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Submittal Date:	Mon Jun 27 22:37:55 EDT 2016

NFPA 13, Figure 8.8.5.2.1.3(a)

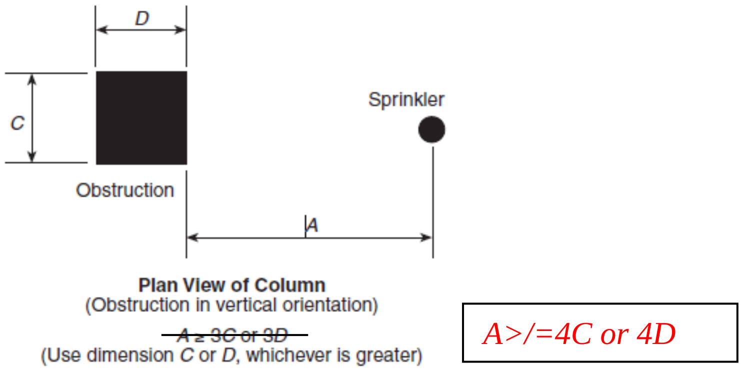

FIGURE 8.8.5.2.1.3(a) Minimum Distance from an Obstruction in the Vertical Orientation (Extended Coverage Upright and Pendent Spray Sprinkler).

Problem: Figure is 4 times rule for EC but figure states 3x not 4x
Proposal: submit correct wording:
A>/=4C or 4D

Substantiation:
This was submitted NFPA as an Errata. This PI is in case this erratum is not corrected.

Public Input No. 499-NFPA 13-2016 [Section No. 8.8.5.3.2]

8.8.5.3.2

Sprinklers shall be installed under fixed obstructions over 4 ft (1.2 m) wide~~ such as ducts, decks, open grate flooring, cutting tables, and overhead doors~~ .

Statement of Problem and Substantiation for Public Input

During the cycle leading up to the 2013 edition of the standard, Proposal 13-188 and Proposal 13-203 were accepted to revise Section 8.5.5.3.1 and Section 8.6.5.3.3 to delete the list of examples from the body of the standard and provide them in the annex instead, to conform with the Manual of style. However, the similar text in other sections such as 8.7.5.3.2, 8.8.5.3.2, 8.9.5.3.2 and 8.10.7.3.2 were not similarly revised. To accord with the other obstruction requirements within NFPA 13, those omissions should be rectified now.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 500-NFPA 13-2016 [New Section after A.8.8.5.3]	

Submitter Information Verification

Submitter Full Name: Larry Keeping
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Submittal Date: Tue Jun 28 20:02:38 EDT 2016

Public Input No. 198-NFPA 13-2016 [New Section after 8.8.5.3.6]

8.8.5.4 Shadow Areas.

A maximum of 15 square feet of shadow area shall be permitted in the protection area of a sprinkler.

Statement of Problem and Substantiation for Public Input

Attempts were made in the 2013 cycle to specify permissible "shadowing," similar to proposals that were made for NFPA 13D and NFPA 13R. The NFPA 13 technical committee rejected these proposals, based at least in part on an unwillingness to provide a specific area. Instead, language discussing the concept of shadowing was added to the Annex. While there may be concern about a lack of flexibility by providing a specific area, the reaction of the AHJ community seems to be in the opposite direction. My firm has been involved in several housing projects where small closets or mechanical equipment enclosures create shadow areas (typically 5 square feet or less) which have been questioned by the AHJs. For most of these projects we have ultimately been successful in convincing the AHJ that this condition does not impair system performance. These efforts have included a comparison of the shadow area to explicitly allowable obstructions and their impact, as well as fire modeling using Fire Dynamics Simulator (sprinkler activation times in the same room with and without the enclosure causing the shadow were within a few seconds). However, on at least one occasion the AHJ was unwilling to accept any amount of shadow area. A definitive minimum allowable amount of shadow area is appropriate and will provide guidance to the architectural/engineering community, contractors and AHJs. Note that 15 square feet is considerably less than can result by application of the existing obstruction rules, as was pointed out in several of the comments during the 2013 cycle. This area was selected to coordinate with the provision added to NFPA 13R. We have often seen this scenario in a sleeping room, and if 15 square feet of shadow is acceptable for a life safety system it also seems appropriate for a property protection system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 199-NFPA 13-2016 [New Section after 8.9.5.3.3]	
Public Input No. 200-NFPA 13-2016 [New Section after 8.10.6.3.4]	
Public Input No. 201-NFPA 13-2016 [New Section after 8.10.7.3.6]	
Public Input No. 195-NFPA 13-2016 [New Section after 3.3.20]	
Public Input No. 196-NFPA 13-2016 [New Section after 8.6.5.3.7]	
Public Input No. 197-NFPA 13-2016 [New Section after 8.7.5.3.3]	
Public Input No. 202-NFPA 13-2016 [Section No. A.8.1.1(3)]	

Submitter Information Verification

Submitter Full Name: Chris Born
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Submittal Date: Tue Jun 07 15:24:22 EDT 2016

Public Input No. 463-NFPA 13-2016 [New Section after 8.9.5.1.2]

8.9.5.1.2.1

For obstructions, such as light fixtures, where the greatest dimension of the obstruction is less than 2 ft (0.6m), sidewall sprinklers shall be permitted to be installed at a minimum distance of four times the greatest dimension.

Statement of Problem and Substantiation for Public Input

The current language is ambiguous on what a “light fixture or similar obstruction” pertains to. As fire testing has shown that EC sidewall sprinklers can be placed per the 4 times rule of section 8.9.5.2.1.4, allowing a column with a maximum dimension of 1 foot be within 3 feet of an EC sidewall, then surely a light fixture can be protected by the same criteria, as it acts as less of an obstruction than a vertical column.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 461-NFPA 13-2016 [Section No. 8.9.5.1.2]	

Submitter Information Verification

Submitter Full Name: Louis Guerrazzi
Organization: National Fire Sprinkler Association
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Submittal Date: Tue Jun 28 09:44:55 EDT 2016

Public Input No. 461-NFPA 13-2016 [Section No. 8.9.5.1.2]

8.9.5.1.2

Sidewall sprinklers shall be installed no closer than 8 ft (2.4 m) from light fixtures or similar obstructions unless the requirements of 8 .9.5.1.2.1 are met.

Statement of Problem and Substantiation for Public Input

The current language is ambiguous on what a "light fixture or similar obstruction" pertains to. As fire testing has shown that EC sidewall sprinklers can be placed per the 4 times rule of section 8.9.5.2.1.4, allowing a column with a maximum dimension of 1 foot be within 3 feet of an EC sidewall, then surely a light fixture can be protected by the same criteria, as it acts as less of an obstruction than a vertical column.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 463-NFPA 13-2016 [New Section after 8.9.5.1.2]	

Submitter Information Verification

Submitter Full Name:	Louis Guerrazzi
Organization:	National Fire Sprinkler Association
Affilliation:	UL/FM/NFSA Standards Review Committee
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Submittal Date:	Tue Jun 28 09:43:08 EDT 2016

Public Input No. 370-NFPA 13-2016 [New Section after 8.9.5.1.3]

8.9.5.1.3.1 The bottom of light fixtures and similar onstructions located 8 ft or less from the sprinkler shall be at least 4 inches above the plane of the sprinkler deflector.

Statement of Problem and Substantiation for Public Input

Explicit guidance on the change of philosophy regarding obstructions closer than 8 ft is warranted. Additionally, paragraph 8.9.5.1.3 applies only to obstructions greater than 8 ft from the sprinkler so guidance on the area closer to the sprinkler should be a separate paragraph.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 398-NFPA 13-2016 [New Section after 8.7.5.1.3]	

Submitter Information Verification

Submitter Full Name: Roland Huggins
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Submittal Date: Fri Jun 24 18:47:42 EDT 2016

Public Input No. 501-NFPA 13-2016 [Section No. 8.9.5.3.2]

8.9.5.3.2

Sprinklers shall be installed under fixed obstructions over 4 ft (1.2 m) wide~~, such as ducts, decks, open grate flooring, cutting tables, and overhead doors~~ .

Statement of Problem and Substantiation for Public Input

During the cycle leading up to the 2013 edition of the standard, Proposal 13-188 and Proposal 13-203 were accepted to revise Section 8.5.5.3.1 and Section 8.6.5.3.3 to delete the list of examples from the body of the standard and provide them in the annex instead, to conform with the Manual of style. However, the similar text in other sections such as 8.7.5.3.2, 8.8.5.3.2, 8.9.5.3.2 and 8.10.7.3.2 were not similarly revised. To accord with the other obstruction requirements within NFPA 13, those omissions should be rectified now.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 502-NFPA 13-2016 [New Section after A.8.9.5.3]	

Submitter Information Verification

Submitter Full Name: Larry Keeping
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Submittal Date: Tue Jun 28 20:18:32 EDT 2016

Public Input No. 199-NFPA 13-2016 [New Section after 8.9.5.3.3]

8.9.5.4 Shadow Areas.

A maximum of 15 square feet of shadow area shall be permitted in the protection area of a sprinkler.

Statement of Problem and Substantiation for Public Input

Attempts were made in the 2013 cycle to specify permissible "shadowing," similar to proposals that were made for NFPA 13D and NFPA 13R. The NFPA 13 technical committee rejected these proposals, based at least in part on an unwillingness to provide a specific area. Instead, language discussing the concept of shadowing was added to the Annex. While there may be concern about a lack of flexibility by providing a specific area, the reaction of the AHJ community seems to be in the opposite direction. My firm has been involved in several housing projects where small closets or mechanical equipment enclosures create shadow areas (typically 5 square feet or less) which have been questioned by the AHJs. For most of these projects we have ultimately been successful in convincing the AHJ that this condition does not impair system performance. These efforts have included a comparison of the shadow area to explicitly allowable obstructions and their impact, as well as fire modeling using Fire Dynamics Simulator (sprinkler activation times in the same room with and without the enclosure causing the shadow were within a few seconds). However, on at least one occasion the AHJ was unwilling to accept any amount of shadow area. A definitive minimum allowable amount of shadow area is appropriate and will provide guidance to the architectural/engineering community, contractors and AHJs. Note that 15 square feet is considerably less than can result by application of the existing obstruction rules, as was pointed out in several of the comments during the 2013 cycle. This area was selected to coordinate with the provision added to NFPA 13R. We have often seen this scenario in a sleeping room, and if 15 square feet of shadow is acceptable for a life safety system it also seems appropriate for a property protection system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 200-NFPA 13-2016 [New Section after 8.10.6.3.4]	
Public Input No. 201-NFPA 13-2016 [New Section after 8.10.7.3.6]	
Public Input No. 195-NFPA 13-2016 [New Section after 3.3.20]	
Public Input No. 196-NFPA 13-2016 [New Section after 8.6.5.3.7]	
Public Input No. 197-NFPA 13-2016 [New Section after 8.7.5.3.3]	
Public Input No. 198-NFPA 13-2016 [New Section after 8.8.5.3.6]	
Public Input No. 202-NFPA 13-2016 [Section No. A.8.1.1(3)]	

Submitter Information Verification

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Submittal Date: Tue Jun 07 15:25:36 EDT 2016

Public Input No. 429-NFPA 13-2016 [New Section after 8.9.5.3.3]

8.9.6

8.9.6 Clearance to Storage (Extended Coverage Sidewall Spray Sprinklers). The clearance between the deflector and the top of storage shall be 18 in. (457 mm) or greater.

Statement of Problem and Substantiation for Public Input

The statement defining maximum clearance between the deflector and top of storage for Standard Spray Sidewalls in section 8.7.6 should be mirrored in 8.9 for Extended Coverage Sidewall Sprinklers

Submitter Information Verification

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Submittal Date:	Mon Jun 27 22:23:44 EDT 2016

Public Input No. 494-NFPA 13-2016 [New Section after 8.10.2.2]

Clarify the use of residential sprinklers in NFPA 13 Applications.

8.10.2.2.1 Residential sprinklers installed in ceilings with a slope greater than 2:12 up to a slope of 8:12 shall be positioned in accordance with the manufacturer's technical documentation and shall be designed in accordance with section 11.3.1.

Statement of Problem and Substantiation for Public Input

During the transition from the 2010 to the 2013 edition of NFPA 13, section 8.10.2.2 was removed. It was removed due to the elimination of the test protocol for sloped and beamed ceilings for residential sprinklers. Since 2013 there has been a gap in criteria for sloped ceilings when using residential sprinklers in NFPA 13 applications. This gap needs to be addressed by the committee and either criterion should be created or the criteria should default to the manufacturers guidelines.

Submitter Information Verification

Submitter Full Name: John Desrosier
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Submittal Date: Tue Jun 28 15:40:24 EDT 2016

Public Input No. 266-NFPA 13-2016 [Section No. 8.10.2.2]

~~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

With the removal of UL 1626A there is currently no listing protocol for residential sprinklers on sloped ceilings. The existing language does not provide flexibility assess the suitability of a very common ceiling construction for residential occupancies.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 294-NFPA 13-2016 [Section No. 8.4.5.1]	

Submitter Information Verification

Submitter Full Name: Mark Fessenden
Organization: Tyco Fire Protection Products
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State:
Zip:
Submittal Date: Thu Jun 23 14:50:25 EDT 2016

Public Input No. 284-NFPA 13-2016 [New Section after 8.10.4.1]

TITLE OF NEW CONTENT

Type your content here ...

The requirements of 8.10.4.1 shall not apply for residential occupancies with ceilings of noncombustible or limited-combustible construction where either X.X.X.X (A) or X.X.X.X (B) applies.

(A) Where a vertical change in ceiling elevation within the area of coverage of the sprinkler creates a distance of more than 12 in.

(300 mm) between the upper ceiling and the sprinkler deflector, a vertical plane extending down from the ceiling at the change in elevation shall be considered a wall for the purpose of sprinkler spacing as shown in Figure X.X.X.X (A).

(B) Where the distance between the upper ceiling and the sprinkler deflector is less than or equal to 12 in. (300 mm), the sprinklers shall be permitted to be spaced as though the ceiling was flat, provided the obstruction rules are observed as shown in Figure X.X.X.X (B).

Additional Proposed Changes

File Name	Description	Approved
vertical_change.jpg		

Statement of Problem and Substantiation for Public Input

The proposed chance provides guidance on how to position residential pendent sprinklers under ceilings with varying ceiling planes.

Submitter Information Verification

Submitter Full Name: Mark Fessenden

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Submittal Date: Thu Jun 23 16:04:41 EDT 2016

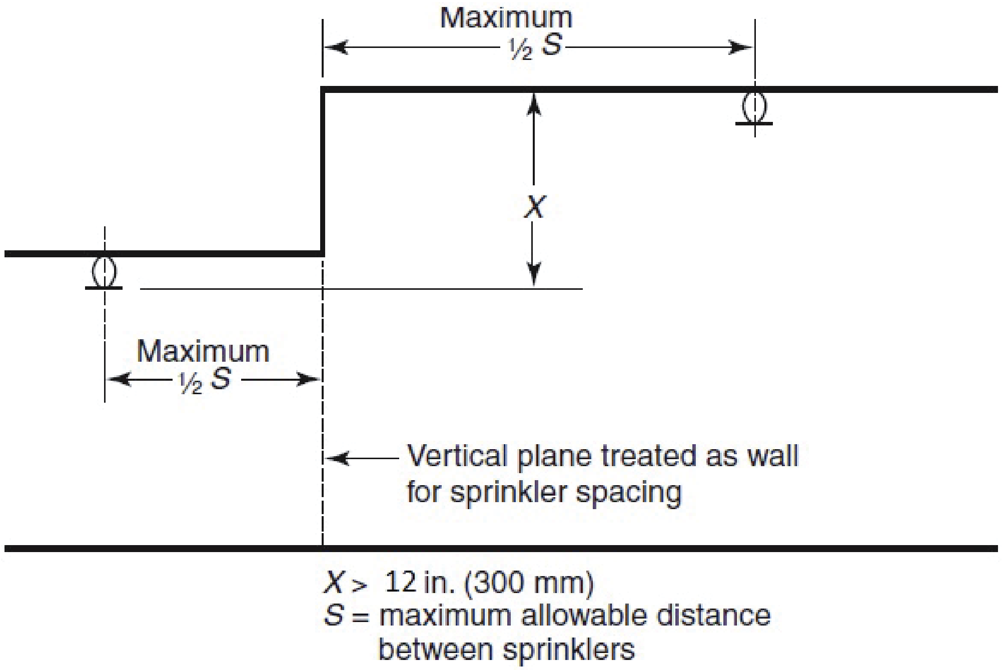

Figure X.X.X.X (A) Vertical Change in Ceiling Elevation Greater Than 12 in (300 mm).

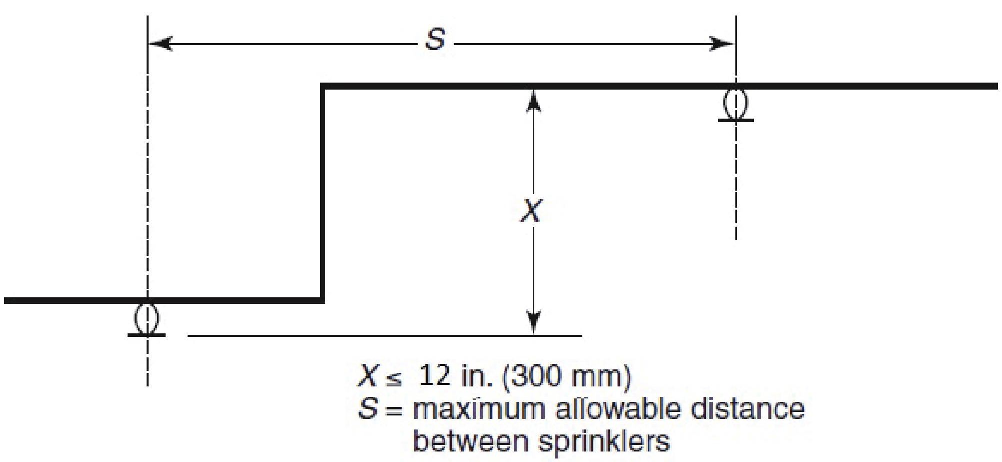

Figure X.X.X.X (B) Vertical Change in Ceiling Elevation Less Than or Equal to 12 in (300 mm).

Public Input No. 296-NFPA 13-2016 [New Section after 8.10.4.1]

TITLE OF NEW CONTENT

Type your content here ...

The requirements of 8.10.4.1 shall not apply for residential pendent are installed as show in Figure X.X.X.X (A) or Figure X.X.X.X (B).

Additional Proposed Changes

File Name	Description	Approved
Beam_Figures.jpg		

Statement of Problem and Substantiation for Public Input

The proposed chance provides guidance on how to position residential pendent sprinklers under beamed ceilings.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 294-NFPA 13-2016 [Section No. 8.4.5.1]	

Submitter Information Verification

Submitter Full Name: Mark Fessenden

Organization: Tyco Fire Protection Products

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Zip:

Submittal Date: Thu Jun 23 17:03:29 EDT 2016

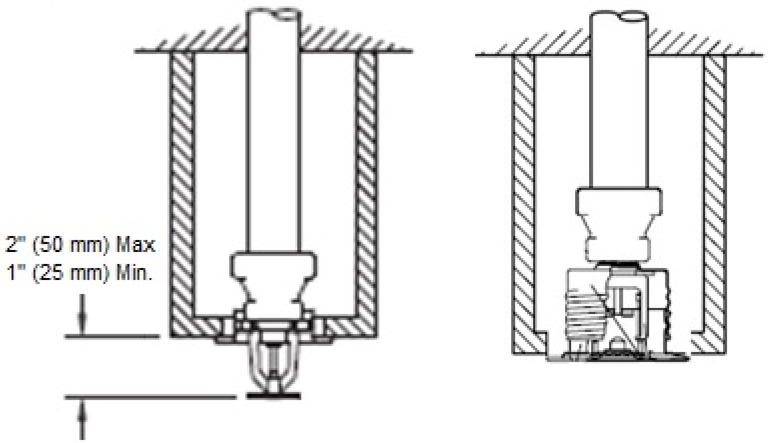

Figure X.X.X.X (A)
Position of Sprinkler
in a Beam

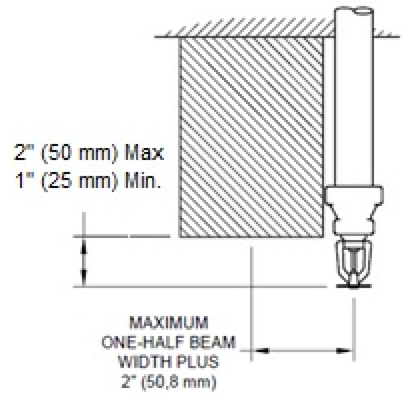

Figure X.X.X.X (B)
Positioning of Sprinkler
Adjacent to Beam

Public Input No. 469-NFPA 13-2016 [New Section after 8.10.4.1]

8.10.4.1.1

Pendent and upright sprinkler installed under beamed or beamed and sloped ceilings are permitted to be installed within 3 inches below beams where all of the following apply:

(1) Maximum beam depth of 14 inches

(2) Maximum ceiling height of 24 feet

(3) Maximum ceiling slope of 8 in 12

(4) Maximum compartment size of 600 ft^2

(5) The highest sprinkler in the compartment shall be above all openings from the compartment into any communicated spaces.

Statement of Problem and Substantiation for Public Input

Certifications of residential sprinklers to be installed below beamed ceilings where the beams are up to 14 inches in depth had been removed by certifying labs due to the FPRF research on this topic in 2011. The removal of the certifications was due to the inclusion of the design criteria in NFPA 13R and NFPA 13D, however, there is no installation guidance to allow the sprinklers below beams up to 14 inches in any of these documents. The first requirement of new 8.10.4.1.1 provides guidance indicating that you are permitted to install residential sprinklers below beams up to 14 inches. The following 4 criteria follow the constraints of the research project, and may be conservative in nature for this application. This follows the research findings as well as the past certifications.

Submitter Information Verification

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Submittal Date:	Tue Jun 28 10:39:04 EDT 2016

Public Input No. 535-NFPA 13-2016 [Section No. 8.10.6.1.2]

8.10.6.1.2

Sprinklers shall be arranged to comply with one of the following arrangements:

(1) Sprinklers shall be in accordance with 8.5.5.2, Table 8.10.6.1.2, and Figure 8.10.6.1.2(a).

(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. (750 mm) in width shall be permitted to be protected in accordance with Figure 8.10.6.1.2(b).

(4) Obstructions that are located against the wall and that are not over 24 in. (600 mm) in width shall be permitted to be protected in accordance with Figure 8.10.6.1.2(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 8.10.6.1.2 Positioning of Sprinklers to Avoid Obstructions to Discharge (Residential Upright and Pendent Spray Sprinklers)

Distance from Sprinklers to Side of Obstruction *(A)*	**Maximum Allowable Distance of Deflector Above Bottom of Obstruction *(B)* [in. (mm)]**
Less than 1 ft (300 mm)	0 (0)
1 ft (300 mm) to less than 1 ft 6 in. (450 mm)	0 (0)
1 ft 6 in. (450 mm) to less than 2 ft (600 mm)	1 (25)
2 ft (600 mm) to less than 2 ft 6 in. (750 mm)	1 (25)
2 ft 6 in. (750 mm) to less than 3 ft (900 mm)	1 (25)
3 ft (900 mm) to less than 3 ft 6 in. (1.1 m)	3 (75)
3 ft 6 in. (1.1 m) to less than 4 ft (1.2 m)	3 (75)
4 ft (1.2 m) to less than 4 ft 6 in. (1.4 m)	5 (125)
4 ft 6 in. (1.4 m) to less than 5 ft (1.5 m)	7 (175)
5 ft (1.5 m) to less than 5 ft 6 in. (1.7 m)	7 (175)
5 ft 6 in. (1.7 m) to less than 6 ft (1.8 m)	7 (175)
6 ft (1.8 m) to less than 6 ft 6 in. (2.0 m)	9 (225)
6 ft 6 in. (2.0 m) to less than 7 ft (2.1 m)	11 (275)
7 ft (2.1 m) and greater	14 (350)

Note: For *A* and *B*, refer to Figure 8.10.6.1.2(a).

Figure 8.10.6.1.2(a) Positioning of Sprinkler to Avoid Obstruction to Discharge (Residential Upright and Pendent Spray Sprinklers).

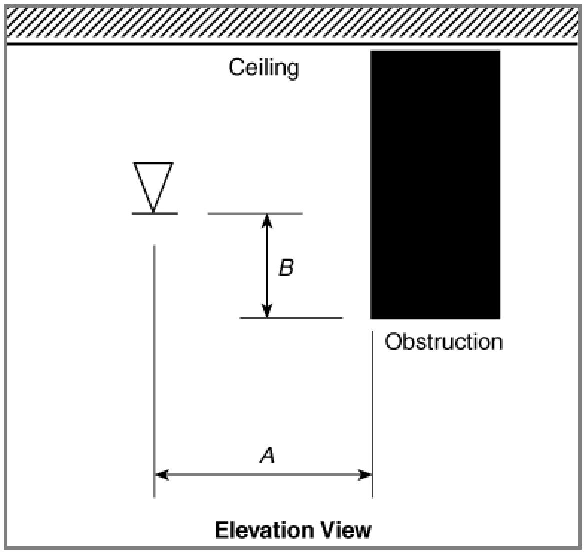


Figure 8.10.6.1.2(b) Obstructions Against Wall (Residential Upright and Pendent Spray Sprinklers).

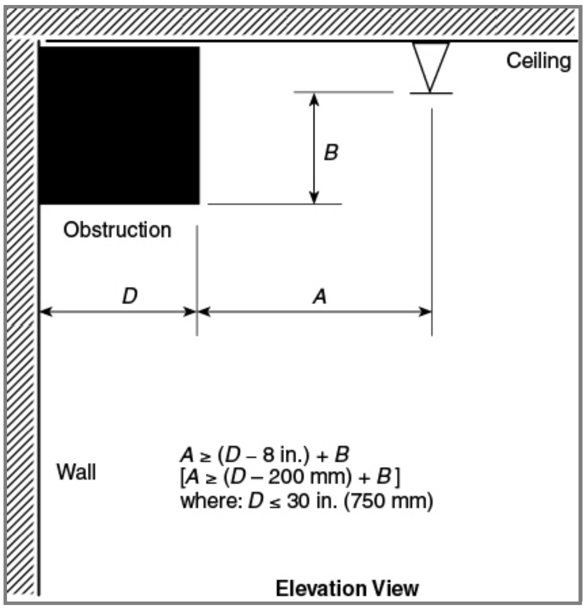


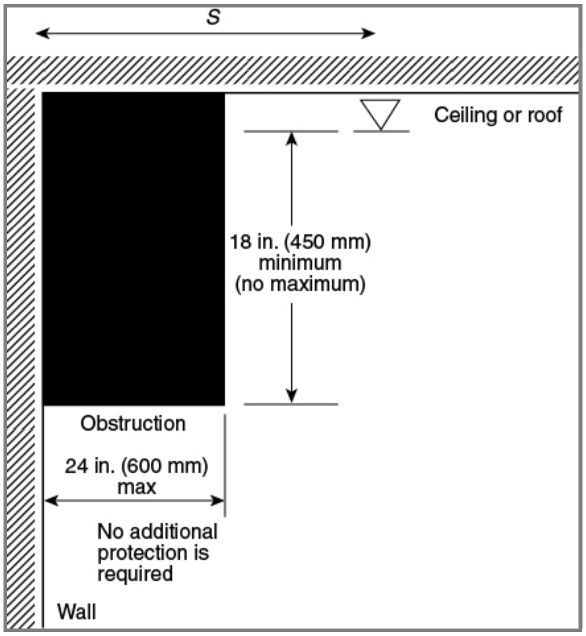
Figure 8.10.6.1.2(c) Obstructions Against Wall (Measurements for Residential Upright and Pendent Spray Sprinklers).

In Figure 8.10.6.1.2(c) revise the vertical dimension for the sprinkler deflector to the bottom of the obstruction distance as follows:

~~18 in. (450 mm) minimum (no maximum)~~ **No maximum**

Additionally revise the horizontal dimension for the sprinkler to the wall at the back of the obstruction distance as follows:

~~**S**~~ **½ S**



Statement of Problem and Substantiation for Public Input

This proposal seeks to rectify a discrepancy that was introduced during the Second Draft of the cycle leading up to the 2016 edition of the standard, whereby the figure that was imaged in the First Draft Report was not consistent with the image illustrated in the Second Draft Report.

Public Input No. 289 and First Revision No. 105 and 106 sought to correct typographical errors in the Obstructions Against Walls figures, relating to the distance from the wall and to correct the misconception that a sprinkler deflector would need to be at least 18 inches above the bottom of the obstruction/soffit. The revisions were agreed to during the First Revision Meeting and shown correctly in the First Draft Report. During the Second Draft Meeting, the subject was not discussed again, but for some reason, in the Second Draft Report the figures reverted to show the incorrect information. It appears to be a mistake that was made when the figures were edited to show the metric conversions.

Additionally, in its current state Figure 8.10.6.1.2(c) is inconsistent with the similar new Figure 8.9.5.1.4(c) and Figure 8.10.7.1.4(c), which properly indicate the "½ S" and the "No maximum" dimensions.

This change was inadvertent. The Technical Committee did not take any action to change the figure after the First Draft. They should therefore be corrected again.

Submitter Information Verification

Submitter Full Name:	Larry Keeping
Organization:	PLC Fire Safety Solutions
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 00:24:14 EDT 2016

Public Input No. 200-NFPA 13-2016 [New Section after 8.10.6.3.4]

8.10.6.4 Shadow Areas.

A maximum of 15 square feet of shadow area shall be permitted in the protection area of a sprinkler.

Statement of Problem and Substantiation for Public Input

Attempts were made in the 2013 cycle to specify permissible "shadowing," similar to proposals that were made for NFPA 13D and NFPA 13R. The NFPA 13 technical committee rejected these proposals, based at least in part on an unwillingness to provide a specific area. Instead, language discussing the concept of shadowing was added to the Annex. While there may be concern about a lack of flexibility by providing a specific area, the reaction of the AHJ community seems to be in the opposite direction. My firm has been involved in several housing projects where small closets or mechanical equipment enclosures create shadow areas (typically 5 square feet or less) which have been questioned by the AHJs. For most of these projects we have ultimately been successful in convincing the AHJ that this condition does not impair system performance. These efforts have included a comparison of the shadow area to explicitly allowable obstructions and their impact, as well as fire modeling using Fire Dynamics Simulator (sprinkler activation times in the same room with and without the enclosure causing the shadow were within a few seconds). However, on at least one occasion the AHJ was unwilling to accept any amount of shadow area. A definitive minimum allowable amount of shadow area is appropriate and will provide guidance to the architectural/engineering community, contractors and AHJs. Note that 15 square feet is considerably less than can result by application of the existing obstruction rules, as was pointed out in several of the comments during the 2013 cycle. This area was selected to coordinate with the provision added to NFPA 13R. We have often seen this scenario in a sleeping room, and if 15 square feet of shadow is acceptable for a life safety system it also seems appropriate for a property protection system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 201-NFPA 13-2016 [New Section after 8.10.7.3.6]	
Public Input No. 195-NFPA 13-2016 [New Section after 3.3.20]	
Public Input No. 196-NFPA 13-2016 [New Section after 8.6.5.3.7]	
Public Input No. 197-NFPA 13-2016 [New Section after 8.7.5.3.3]	
Public Input No. 198-NFPA 13-2016 [New Section after 8.8.5.3.6]	
Public Input No. 199-NFPA 13-2016 [New Section after 8.9.5.3.3]	
Public Input No. 202-NFPA 13-2016 [Section No. A.8.1.1(3)]	

Submitter Information Verification

Submitter Full Name: Chris Born
Organization: Clark Nexsen Inc
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 07 15:27:26 EDT 2016

Public Input No. 457-NFPA 13-2016 [Section No. 8.10.7.2.2]

8.10.7.2.2* Suspended or Floor-Mounted Vertical Obstructions.

The distance from sprinklers to privacy curtains, free-standing partitions, room dividers, and similar obstructions in light hazard occupancies shall be in accordance with Table 8.10.7.2.2 and Figure 8.10.7.2.2 (a) or (b) .

Table 8.10.7.2.2 Suspended or Floor-Mounted Obstructions (Residential Sidewall Sprinklers) in Light Hazard Occupancies Only

Horizontal Distance *(A)*	Minimum Allowable Distance Below Deflector *(B)* [in. (mm)]
6 in. (150 mm) or less	3 (75)
More than 6 in. (150 mm) to 9 in. (225 mm)	4 (100)
More than 9 in. (225 mm) to 12 in. (300 mm)	6 (150)
More than 12 in. (300 mm) to 15 in. (375 mm)	8 (200)
More than 15 in. (375 mm) to 18 in. (450 mm)	9 ½ (240)
More than 18 in. (450 mm) to 24 in. (600 mm)	12 ½ (315)
More than 24 in. (600 mm) to 30 in. (750 mm)	15 ½ (390)
More than 30 in. (750 mm)	18 (450)

For SI units, 1 in. = 25.4 mm.

Note: For *A* and *B*, refer to Figure 8.10.7.2.2.

Figure 8.10.7.2.~~2 Suspended~~ 2 (a) Suspended or Floor-Mounted Obstruction (Residential Sidewall Sprinklers) in Light Hazard Occupancy Only.

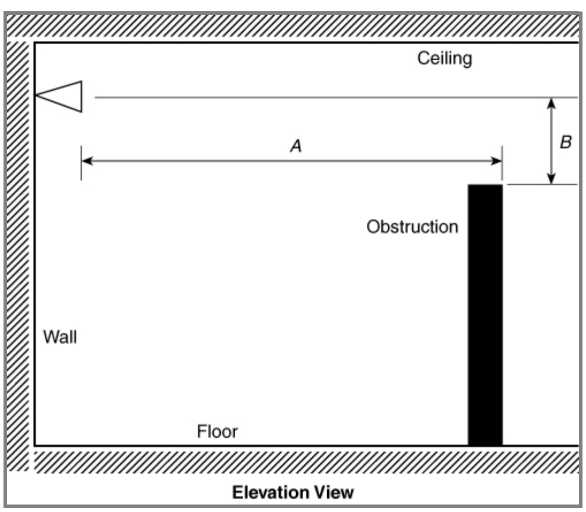


Figure 8.10.7.2.2 (b) [Insert new Figure]

ADD NEW ANNEX LANGUAGE:

A.8.10.7.2.2 Floor-mounted obstructions may be parallel or perpendicular to the wall with the sidewall sprinkler.

Additional Proposed Changes

File Name	Description	Approved
Partition_Rule.pdf	New Figure 8.10.7.2.2(b)	

Statement of Problem and Substantiation for Public Input

Currently, Figure 8.10.7.2.2 shows the partition parallel to the wall the sidewall sprinkler is installed upon. A partition wall that is below the level of the sidewall sprinkler could be parallel or perpendicular to the wall where the sprinkler is located. The clearance distances should still be acceptable. The new figure demonstrates where measurements apply for a wall perpendicular to the wall where the sprinkler is located. A statement has also been added to the annex for clarity.

This proposal was developed by the NFSA Engineering and Standards Committee.

Submitter Information Verification

Submitter Full Name: Victoria Valentine

Organization: National Fire Sprinkler Assoc

Affilliation: NFSA Engineering and Standards Committee

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City:

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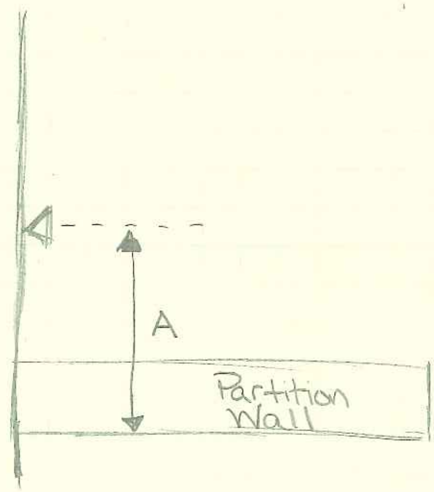
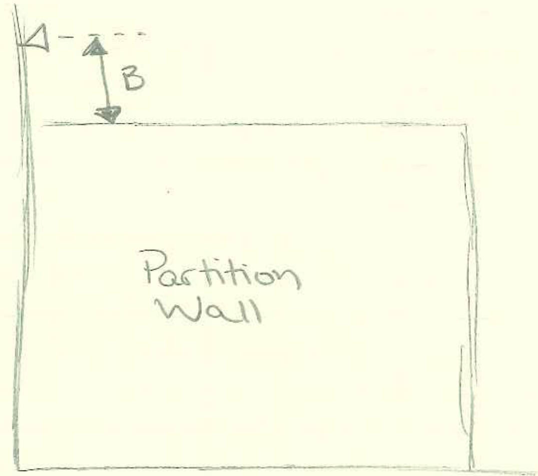
Submittal Date: Tue Jun 28 09:29:03 EDT 2016



Plan View



Elevation View

Proposed Figure 8.10.7.2.2(b)
[New]

Public Input No. 503-NFPA 13-2016 [Section No. 8.10.7.3.2]

8.10.7.3.2

Sprinklers shall be installed under fixed obstructions over 4 ft (1.2 m) wide~~, such as ducts, stairs, and landings~~ .

Statement of Problem and Substantiation for Public Input

During the cycle leading up to the 2013 edition of the standard, Proposal 13-188 and Proposal 13-203 were accepted to revise Section 8.5.5.3.1 and Section 8.6.5.3.3 to delete the list of examples from the body of the standard and provide them in the annex instead, to conform with the Manual of style. However, the similar text in other sections such as 8.7.5.3.2, 8.8.5.3.2, 8.9.5.3.2 and 8.10.7.3.2 were not similarly revised. To accord with the other obstruction requirements within NFPA 13, those omissions should be rectified now.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 504-NFPA 13-2016 [New Section after A.8.10.7.3]	

Submitter Information Verification

Submitter Full Name: Larry Keeping
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City:
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Submittal Date: Tue Jun 28 20:27:56 EDT 2016

Public Input No. 201-NFPA 13-2016 [New Section after 8.10.7.3.6]

8.10.7.4 Shadow Areas.

A maximum of 15 square feet of shadow area shall be permitted in the protection area of a sprinkler.

Statement of Problem and Substantiation for Public Input

Attempts were made in the 2013 cycle to specify permissible "shadowing," similar to proposals that were made for NFPA 13D and NFPA 13R. The NFPA 13 technical committee rejected these proposals, based at least in part on an unwillingness to provide a specific area. Instead, language discussing the concept of shadowing was added to the Annex. While there may be concern about a lack of flexibility by providing a specific area, the reaction of the AHJ community seems to be in the opposite direction. My firm has been involved in several housing projects where small closets or mechanical equipment enclosures create shadow areas (typically 5 square feet or less) which have been questioned by the AHJs. For most of these projects we have ultimately been successful in convincing the AHJ that this condition does not impair system performance. These efforts have included a comparison of the shadow area to explicitly allowable obstructions and their impact, as well as fire modeling using Fire Dynamics Simulator (sprinkler activation times in the same room with and without the enclosure causing the shadow were within a few seconds). However, on at least one occasion the AHJ was unwilling to accept any amount of shadow area. A definitive minimum allowable amount of shadow area is appropriate and will provide guidance to the architectural/engineering community, contractors and AHJs. Note that 15 square feet is considerably less than can result by application of the existing obstruction rules, as was pointed out in several of the comments during the 2013 cycle. This area was selected to coordinate with the provision added to NFPA 13R. We have often seen this scenario in a sleeping room, and if 15 square feet of shadow is acceptable for a life safety system it also seems appropriate for a property protection system.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 195-NFPA 13-2016 [New Section after 3.3.20]	
Public Input No. 196-NFPA 13-2016 [New Section after 8.6.5.3.7]	
Public Input No. 197-NFPA 13-2016 [New Section after 8.7.5.3.3]	
Public Input No. 198-NFPA 13-2016 [New Section after 8.8.5.3.6]	
Public Input No. 199-NFPA 13-2016 [New Section after 8.9.5.3.3]	
Public Input No. 200-NFPA 13-2016 [New Section after 8.10.6.3.4]	
Public Input No. 202-NFPA 13-2016 [Section No. A.8.1.1(3)]	

Submitter Information Verification

Submitter Full Name: Chris Born

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Submittal Date: Tue Jun 07 15:28:24 EDT 2016

NFPA Public Input No. 433-NFPA 13-2016 [New Section after 8.11.5.3.3]

New Section

When obstruction is between 8 and 24 inches in width, sprinklers shall be positioned such that they are located at least a distance of three feet from the obstruction.

Statement of Problem and Substantiation for Public Input

The rules in section 8.11.5.2 or 8.11.5.3 do not specifically address an obstruction less than 24 in wide and within 24 inches below the sprinkler. This new sections will provide guidance for these obstructions.

Submitter Information Verification

Submitter Full Name: Roland Asp

Organization: National Fire Sprinkler Association

Affilliation: NFSA E&S Committee

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City:

State:

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Submittal Date: Mon Jun 27 22:52:02 EDT 2016

Public Input No. 447-NFPA 13-2016 [Section No. 8.12.2.2.4]

8.12.2.2.4

Deviations from the maximum sprinkler spacing shall be permitted to eliminate obstructions ~~created~~ by ~~structural elements (such as trusses, bar joists, and wind bracing) by~~ moving a single branch line a maximum of 1 ft (300 mm) from its allowable spacing, provided coverage for the sprinklers on that branch line and the sprinklers on the branch line it is moving away from does not exceed 110 ft^2 (10.2 m^2) per sprinkler where all of the following conditions are met:

(1) The average actual floor area protected by the sprinklers on the moved branch line and the sprinklers on the adjacent branch lines shall not exceed 100 ft^2 (9.3 m^2) per sprinkler.

(2) In no case shall the distance between sprinklers exceed 12 ft (3.7 m).

(3) It shall not be permitted to move a branch line where there are moved sprinklers on a branch line that exceed the maximum sprinkler spacing.

Statement of Problem and Substantiation for Public Input

The sensitivity of ESFR sprinklers means that they are impacted by structural and nonstructural obstructions. This modification would allow the user flexibility to locate ESFR sprinklers even when other nonstructural obstructions are present.

Submitter Information Verification

Submitter Full Name: Louis Guerrazzi
Organization: National Fire Sprinkler Association
Affilliation: NFSA Engineering and Standards Committee
Street Address:
City:
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Submittal Date: Tue Jun 28 09:07:51 EDT 2016

Public Input No. 538-NFPA 13-2016 [New Section after 8.12.5.2]

Incorporate the results of the Fire Protection Research Foundation project on obstructions for ESFR sprinklers into the 2019 edition.

Statement of Problem and Substantiation for Public Input

The Fire Protection Research Foundation performed a project specifically on this subject. The results should be incorporated into this edition of NFPA 13 and should not have to wait until 2022 to get into the standard.

Submitter Information Verification

Submitter Full Name: Kenneth Isman

Organization: University of Maryland

Street Address:

City:

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Zip:

Submittal Date: Wed Jun 29 06:29:31 EDT 2016

Public Input No. 519-NFPA 13-2016 [Section No. 8.12.5.3.2 [Excluding any Sub-Sections]]

ESFR sprinklers shall be positioned a minimum of 1 ft (300 mm) horizontally from the nearest edge to ~~any~~ the bottom chord of a bar joist or open ~~truss.~~ truss where the bottom chord does not exceed 12 inches in width . . . .

Statement of Problem and Substantiation for Public Input

This proposal will limit the maximum width of the bottom chord of the bar joist to 12 inches. This will be in compliance with section 8.12.5.3.1 (3). Common width of bar joist seldom exceed 6 inches however there are cases where the bottom chord of open web trusses actually exceed 12 inches in width. As this section read write know, an ESFR Sprinkler could be located 1 ft away from a bottom chord that exceeds 12 inches in width and be in compliance with the standard.

Submitter Information Verification

Submitter Full Name: Roland Asp
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Affilliation: NFSA E&S Committee
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Submittal Date: Tue Jun 28 22:16:05 EDT 2016

Public Input No. 410-NFPA 13-2016 [Section No. 8.14.6 [Excluding any Sub-Sections]]

Pilot line detectors shall be permitted to be spaced more than 22 in. (550 mm) below a ceiling or deck where the maximum spacing between pilot line detectors is 10 ft (3.0 m) or less, and where such spacing is supported by an engineering analysis discussing sprinkler temperature and response rating, plume diameter, temperature within the plume that will pass across the sprinklers, and the expected fire size required to activate the pilot sprinklers .

Statement of Problem and Substantiation for Public Input

As written this code allows pilot line detectors (sprinklers) to be located an unlimited distance below a ceiling, as long as the pilot sprinklers are spaced at 10 feet or less. When the distance from the ceiling is increased, the pilot sprinklers are no longer expected to be activated by the ceiling jet, but rather by heat within the fire plume. Fire plume have been determined to have two diameters. One is the visible diameter, which is where smoke is expected to be visible. The other is the effective heat diameter, where significant heat from the plume is expected. Roughly, the visible diameter is expected to be one-half the height of analysis, and the effective heat diameter is expected to be one-half the visible diameter. Therefore, if pilot sprinklers are located 32 feet above the floor, the effective heat diameter would be approximately 8 feet, which is smaller than the 10 feet spacing, and could lead to no activation of the pilot sprinklers. In addition, the temperature of the plume decreases the higher the plume rises, to the point where there would be little difference in temperature between smoke and ambient for small fires with tall ceilings. Therefore, there would be a point where even if the effective heat diameter is greater than 14 feet, the heat inside that diameter would not be sufficient to activate sprinklers. The process of activating sprinklers where there is no ceiling is difficult to analyze, but is necessary to ensure that the system will work as designed. For discussion about heat and visible diameter, see Klote/Milke, Design of Smoke Management Systems

Submitter Information Verification

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City:	
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Submittal Date:	Mon Jun 27 16:28:30 EDT 2016

Public Input No. 564-NFPA 13-2016 [New Section after 8.15]

Temporary Exhibit Booths Within a Permanent Building

8.15.27 Temporary Exhibit Booths Within a Permanent Building. Where sprinkler protection is required in temporary exhibit booths constructed in a permanent building, such systems shall comply with Section 8.15.27.

8.15.27.1 Hydraulic Design. Systems shall meet Density/Area Method requirements of Section 11.2.3.2 or the Pipe Schedule method of Section 23.5. The minimum design shall be for Ordinary Hazard Group 2, or higher design to accommodate the hazard within the temporary exhibit booth

8.15.27.2 Bracing. Bracing shall not be required for temporary piping serving temporary exhibit booths.

8.15.27.3 Hangers. Hangers conforming to Section 9.1 shall be provided for temporary piping to temporary exhibit booths. Hangers shall be permitted to be attached to the temporary exhibit booth structure.

8.15.27.4 Exposed CPVC Piping. CPVC piping listed for fire protection service shall be permitted to be exposed when installed as temporary piping to serve temporary exhibit booths.

8.15.27.5 Valve. A valve and open pipe shall be provided from the most hydraulically remote point to allow for inspection of piping to prove that the piping is charged with water and void of trapped air.

Statement of Problem and Substantiation for Public Input

The purpose of these amendments is to provide a reasonable approach to temporary sprinkler system installation in exhibit booths when required to be fire sprinklered by other codes or standards.

Submitter Information Verification

Submitter Full Name: Lynn Nielson

Organization: City Of Henderson

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City:

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Submittal Date: Wed Jun 29 11:42:32 EDT 2016

Public Input No. 557-NFPA 13-2016 [New Section after 8.15.1]

Concealed Spaces which require a 3000 square foot design area

Combined the concealed spaces which do not require sprinklers and do require a 3000 square foot design area into a common section.

Statement of Problem and Substantiation for Public Input

it is difficult to understand which unbsprinkled combustible concealed spaces require a 3000 square foot design area. The rules which eliminate the 3000 square foot design area need to coordinate with the rules which eliminate the sprinkler protection from that concealed space. This coordination needs to be done with sections in chapter 11 and 12 and 8.15.

Submitter Information Verification

Submitter Full Name: Kevin Kelly
Organization: Victaulic
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Submittal Date: Wed Jun 29 10:16:49 EDT 2016

Public Input No. 163-NFPA 13-2016 [Section No. 8.15.1.2.1.2]

8.15.1.2.1.2

Small openings with

~~a~~

both of the following limits shall be permitted:

(1) A combined total area of not more than

~~20 percent~~

20 percent of the ceiling, construction feature, or plane used to determine the boundaries of the concealed space

~~shall be permitted where length~~

(2) Gaps greater than

~~4 ft~~

4 ft (1.

~~2 m~~

2 m) long shall not

~~have a width greater than 8 in~~

be more than 8 in . (

~~200 mm~~

200 mm) wide .

Statement of Problem and Substantiation for Public Input

Clarity and Manual of Style. Splitting the requirements into two parts makes them much more clear. The Manual of Style does not like two requirements in the same section.

Submitter Information Verification

Submitter Full Name: Kenneth Isman

Organization: University of Maryland

Street Address:

City:

State:

Zip:

Submittal Date: Thu May 26 15:48:09 EDT 2016

Public Input No. 162-NFPA 13-2016 [Section No. 8.15.1.2.1.3]

~~8.15.1.2.1.3~~

~~The space above cloud ceilings meeting the requirements in 8.15.24.1 and having openings with a combined total area of not more than 20 percent of the ceiling, construction feature, or plane used to determine the boundaries of the concealed space shall be permitted.~~

Statement of Problem and Substantiation for Public Input

The space above a cloud ceiling is NOT a concealed space. Putting this section here actually confuses the issue tremendously. The section in 8.15.24 on cloud ceilings is sufficient on its own. The 20% rule can be handled there.

Submitter Information Verification

Submitter Full Name: Kenneth Isman
Organization: University of Maryland
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 26 15:44:17 EDT 2016

Public Input No. 268-NFPA 13-2016 [Section No. 8.15.1.2.6]

8.15.1.2.6*

Concealed spaces formed by ceilings attached to composite wood joist construction either directly or onto metal channels not exceeding 1 in. (25 mm) in depth, provided the joist channels are ~~firestopped~~ separated into volumes each not exceeding 160 ft^3 (4.5 m^3) using materials equivalent to the web construction and at least 3 ½ in. (90 mm) of batt insulation is installed at the bottom of the joist channels when the ceiling is attached utilizing metal channels, shall not require sprinkler protection.

Statement of Problem and Substantiation for Public Input

The use of the term "firestopped" is inappropriate. Reference to a firestop is (or should be) reserved for an assembly that has a fire resistance rating that is applied to the protection of penetrations through fire-rated floors and walls, and that is listed in accordance with UL 1479 or an equivalent standard of performance and testing. Section 8.15.1.2.8 was apparently revised during the previous cycle to include the word "separated" and this section should be so revised as well. If it suits the committee, the term "compartmentalized" or “divided” could also be used instead of “firestopped”.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 274-NFPA 13-2016 [Section No. 11.3.1.2 [Excluding any Sub-Sections]]	

Submitter Information Verification

Submitter Full Name: Stephen Leyton
Organization: Protection Design Consulting
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 23 15:20:58 EDT 2016

Public Input No. 487-NFPA 13-2016 [Section No. 8.15.1.2.6]

8.15.1.2.6*

Concealed spaces formed by ceilings attached to composite wood joist construction either directly or onto metal channels not exceeding 1 in. (25 mm) in depth, provided the joist channels are firestopped into volumes each not exceeding 160 ft^3 (4.5 m^3) of open air using materials equivalent to the web construction and at least 3 ½ in. (90 mm) of batt insulation is installed at the bottom of the joist channels when the ceiling is attached utilizing metal channels, shall not require sprinkler protection.

Statement of Problem and Substantiation for Public Input

Clarification that it's not simply the volume of the overall channel is needed

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 486-NFPA 13-2016 [Section No. A.8.15.1.2.6]	

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
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Submittal Date: Tue Jun 28 12:37:44 EDT 2016

Public Input No. 505-NFPA 13-2016 [Section No. 8.15.1.2.8]

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~~ shall not require sprinkler protection.

8.15.1.2.8.1

Concealed spaces within composite wood joist construction having noncombustible insulation filling the space from the ceiling up to the bottom edge of the composite wood joist of the roof or floor deck and with the joist channels separated into volumes each not exceeding ~~160 ft ^{3}~~ **160 ft³ (4.** ~~5 m ^{3}~~ **5 m³) to the full depth of the composite wood joist , with material equivalent to the web construction, shall not require sprinkler protection.**

Statement of Problem and Substantiation for Public Input

This proposal is to separate the requirements for wood joist construction and for composite wood joist construction into two separate sections for clarity. Because the composite wood joist spaces need to be separated into 160 ft³ volumes, but the wood joist do not require such division, containing the provisions all within one section is somewhat confusing.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: PLC Fire Safety Solutions
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 20:40:55 EDT 2016

Public Input No. 378-NFPA 13-2016 [New Section after 8.15.1.2.9]

Concealed Spaces

Add new 8.15.1.2.10 and renumber subsequent paragraphs:

Concealed spaces not exceeding 55 ft2 (5.1 m2) in area within a room or compartment shall not require sprinkler protection.

A.8.15.1.2.10 The concealed spaces are similar to soffits added for HVAC ducts, plumbing, or other utilities within a room.

Statement of Problem and Substantiation for Public Input

HVAC ducts, plumbing, other utilities run through a space within a room or compartment. These utilities are covered with a soffit. The spaces are so tight where there is no 6 in. clearance.

Submitter Information Verification

Submitter Full Name: Thomas Wellen

Organization: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Sun Jun 26 11:17:16 EDT 2016

Public Input No. 379-NFPA 13-2016 [Section No. 8.15.1.2.9]

8.15.1.2.9

Concealed spaces over ~~isolated small~~ rooms or compartments not exceeding 55 ft^2 (5.1 m^2) in area shall not require sprinkler protection.

Add new annex:

A.8.15.1.2.9 The concealed space cannot be subdivided into areas less than 55 ft^2 (5.1 m^2) in area with the intent to omit sprinklers from concealed spaces.

Statement of Problem and Substantiation for Public Input

It make no sense why the concealed space has to be over isolated small compartments. That makes no difference if the room or compartment is isolated or small.

Submitter Information Verification

Submitter Full Name: Thomas Wellen

Organization: American Fire Sprinkler Associ

Street Address:

City:

State:

Zip:

Submittal Date: Sun Jun 26 11:37:47 EDT 2016

Public Input No. 22-NFPA 13-2016 [Section No. 8.15.1.2.10]

8.15.1.2.10

Concealed spaces where rigid materials are used and the exposed surfaces, in the form in which they are installed, comply with one of the following do not require sprinkler protection:

1. The surface materials 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 E84, *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~~ .

2. The surface materials comply with the requirements of ASTM E2768, Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials, (30 minute Tunnel Test) .

Statement of Problem and Substantiation for Public Input

ASTM E2768 was developed specifically as the test that includes all requirements of the "30 minute test" for ASTM E84. ASTM E84 is a 10 minute test and, when extended for 20 additional minutes, it becomes a 30 minute test. Testing to ASTM E2768 and complying with the requirements means that it complies with all the requirements in the existing section.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 10-NFPA 13-2016 [Section No. 2.3.4]	
Public Input No. 23-NFPA 13-2016 [Section No. 11.2.3.1.5.2]	

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jan 06 18:05:28 EST 2016

Public Input No. 18-NFPA 13-2016 [Section No. 8.15.1.2.14]

8.15.1.2.14

Vertical pipe chases under 10 ft^2 (0.9 m^2), where provided in single or multifloor buildings where the chases are firestopped at each floor using materials equivalent to the floor construction, and where such pipe chases shall contain no sources of ignition, piping shall be water-filled ~~or~~ , limited combustible or noncombustible and pipe penetrations at each floor shall be properly sealed and shall not require sprinkler protection.

Statement of Problem and Substantiation for Public Input

A pipe chase in a single story building less than 10 square feet should not be required to be have sprinkler protection. Currently this section applies to 2 story or taller buildings (multifloor). In addition, the committee should seriously look at the requirement to only allow non combustible piping when non water filled. This contradicts section 8.15.1.2.1 which allows minimal combustible loading. Once could infer that a space above an acoustical ceiling containing PVC piping for Drain and Waste should be protected.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jan 04 13:55:29 EST 2016

Public Input No. 377-NFPA 13-2016 [Section No. 8.15.1.6 [Excluding any Sub-Sections]]

~~Sprinklers~~ Unless the requirements of 8.15.1.2.17 are met, sprinklers used in horizontal combustible concealed spaces (with a slope not exceeding 2 in 12) with combustible wood truss, wood joist construction, or bar joist construction having a combustible upper surface and where the depth of the space is less than 36 in. (900 mm) from deck to deck, from deck to ceiling, or with double wood joist construction with a maximum of 36 in. (900 mm) between the top of the bottom joist and the bottom of the upper joist shall be listed for such use.

Statement of Problem and Substantiation for Public Input

Shows that this requirement would not apply if sprinklers were omitted per 8.15.1.2.17.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 26 10:53:02 EDT 2016

Public Input No. 484-NFPA 13-2016 [New Section after 8.15.1.7]

8.15.1.7.1 The specially listed sprinklers shall be permitted to be used when the joists are spaced at dimensions other than 16 inches.

Statement of Problem and Substantiation for Public Input

Just like the need to add 8.15.1.7 to permit the use of these sprinklers outside of their listing for composite wood joists, a similar allowance is needed due to the listing restricting the spacing of composite wood joists to only 16 inches

Submitter Information Verification

Submitter Full Name:	Roland Huggins
Organization:	American Fire Sprinkler Association
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue Jun 28 12:27:28 EDT 2016

Public Input No. 483-NFPA 13-2016 [Section No. 8.15.1.7]

8.15.1.7

Sprinklers specifically listed to provide protection of combustible concealed spaces described in 8.15.1.6 shall be permitted to be used in accordance with 8.3.1.2 to protect composite wood joist construction~~ with a maximum of 36 in . (900 mm) from deck to deck, from deck to ceiling, or with double composite wood joist construction with a maximum of 36 in. (900 mm) between the top of the bottom joist and the bottom of the upper joist.~~

Statement of Problem and Substantiation for Public Input

This text is redundant and is covered by 8.15.1.6 and is referenced by this paragraph. More importantly, deleting this text avoids having to repeat the criteria from 8.15.1.6.2 on when the space also exceeds 36 inches.

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 12:21:52 EDT 2016

Public Input No. 216-NFPA 13-2016 [Section No. 8.15.5]

8.15.5 Elevator Hoistways ~~and~~ , Machine Rooms, Machinary Spaeces, 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 (600 mm) 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 in elevator machine rooms, elevator machinery spaces, 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 space, or hoistway of traction elevator is dedicated to elevator equipment only.

(2) The elevator machine room, machine room, machinery space, control room, control space, or hoistway of traction elevators are protected by smoke detectors, or other automatic fire detection, installed in accordance with *NFPA 72*.

(3) The elevator machinery space, control room, control space, or hoistway of traction elevators 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.

(4) No materials unrelated to elevator equipment are permitted to be stored in elevator machine rooms, machinery spaces, control rooms, control spaces, or hoistways of traction elevators.

(5) The elevator machinery is not of the hydraulic type.

8.15.5.4*

Automatic sprinklers in elevator machine rooms or at the tops of hoistways shall be of ordinary- or intermediate-temperature rating.

8.15.5.5*

Upright, pendent, or sidewall spray sprinklers shall be installed at the top of elevator hoistways.

8.15.5.6

The sprinkler required at the top of the elevator hoistway by 8.15.5.5 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.

8.15.5.7.1

Sprinklers shall be installed at the top and bottom of elevator hoistways where elevators utilize combustible suspension means such as noncircular elastomeric-coated or polyurethane-coated steel belts.

8.15.5.7.2

The sprinklers in the elevator hoistway 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*.

Statement of Problem and Substantiation for Public Input

The title of this section indicates Elevator Hoistways and Machine Rooms; however this sections includes other

elevator associated areas which are not included in the title and could be provided in completely separated areas outside the hoistway and machine rooms.
These additional areas/spaces are the elevator machinery spaces and the elevator control spaces indicated within this section.

Submitter Information Verification

Submitter Full Name:	Sagiv Weiss-Ishai
Organization:	San Francisco Fire Department
Affilliation:	SFFD
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 15 12:18:24 EDT 2016

Public Input No. 211-NFPA 13-2016 [Section No. 8.15.5.1]

~~8.15.5.1~~ * - –

~~Sidewall spray sprinklers shall be installed at the bottom of each elevator hoistway not more than 2 ft (600 mm) above the floor of the pit.~~

Statement of Problem and Substantiation for Public Input

See rational for PI # 210
The difference is that this proposal proposes to delete Sections 8.15.5.1 and 8.15.5.2 completely and the associated annex to section 18.15.5.1

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 210-NFPA 13-2016 [Section No. 8.15.5.2]	Has the rational for deleting this requirment
Public Input No. 212-NFPA 13-2016 [Section No. 8.15.5.2]	
Public Input No. 213-NFPA 13-2016 [Section No. A.8.15.5.1]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affilliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 14 12:35:01 EDT 2016

Public Input No. 210-NFPA 13-2016 [Section No. 8.15.5.2]

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~~ traction or hydraulic elevator hoistways .

Statement of Problem and Substantiation for Public Input

Change the term "shafts" to hoistways" to be consistent with NFPA 13 terminology.
The problem with this section is that it requires sprinklers in all hydraulic elevators pits (all hydraulic elevators contain Class III B combustible fluids per NFPA 30).
Since these fluids have very high flash point temperature it is extremely unlikely they will ever ignite in an elevator pit.
Two conditions need to occur for ignition - sufficient amount of fuel (hydraulic fluid spill or leak in the pit), and Ignition source with enough energy to be able to ignite the hydraulic fluids.
Even in a case that there will be a significant amount of hydraulic fluid in the pit - it is extremely unlikely to have an ignition source with sufficient energy to reach the very high flash point required to ignite those fluids.
I have asked the NFPA 13 TC during the last code cycle to provide data for hydraulic fluid elevator pit fires where the pit sprinkler was activated - but no data for such fires was provided. I have also conducted a limited research with many experienced elevator personnel and they confirmed they have never seen or were aware of hydraulic fluids fires in elevator pits.

Even if under extremely unlikely condition there will be an hydraulic fluids fire in an elevator pit - a standard sprinkler will not be efficient for such oil-based fire and also, the fire will be contained in a concrete/non-combustible walls of the elevator pit/hoistway.

The main problem with the pit sprinkler requirement is that the elevator code ASME A17.1 requires a fire alarm initiating device in the pit to generate Phase 1 Recall operation when sprinklers are located in the pit.
It is very difficult to install smoke or heat detectors in elevator pits (access for testing and maintenance, nuisance alarms, etc.). NFPA 72 allows the use of a dedicated water flow switch for the pit sprinkler but it does not allow a time delay for this waterflow switch which can can cause high likelihood of nuisance alarms taking the elevator out of service.

NFPA 13 permits specific areas and locations in buildings to not have sprinkler protection and hydraulic elevator pits should be included within these areas.

There is also a conflict in NFPA 13 itself regarding the intent of this sprinkler since the annex for this section indicate the intent is to protect against fires caused by derbies in the pit: Since derbies potentially could accumulate in traction elevator pits where sprinklers are not required in them since they do not contain hydraulic fluids, this is a conflict between the code section and its associated annex.

This is from NFPA 13-2016
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.

This is from NFPA 30-2012 (Class IIIB liquid)

4.3.2 Combustible liquids, as defined in 3.3.33.1 and 4.2.2,
shall be classified in accordance with the following:
(1) Class II Liquid — Any liquid that has a flash point at or

above 100°F (37.8°C) and below 140°F (60°C)
(2) Class III Liquid — Any liquid that has a flash point at or
above 140°F (60°C)
(a) Class IIIA Liquid — Any liquid that has a flash point at
or above 140°F (60°C), but below 200°F (93°C)
(b) Class IIIB Liquid — Any liquid that has a flash point at
or above 200°F (93°C)

This is from ASME A17.1-2013

2.27.3.2 Phase I Emergency Recall Operation by Fire Alarm Initiating Devices
2.27.3.2.1 In jurisdictions not enforcing the
NBCC, smoke detectors or other automatic fire detectors
in environments not suitable for smoke detectors (fire
alarm initiating devices) used to initiate Phase I
Emergency Recall Operation shall be installed in conformance with the requirements of NFPA 72, and shall be located:
(c) in the elevator hoistway, when sprinklers are located in those hoistways

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 211-NFPA 13-2016 [Section No. 8.15.5.1]	
Public Input No. 212-NFPA 13-2016 [Section No. 8.15.5.2]	
Public Input No. 213-NFPA 13-2016 [Section No. A.8.15.5.1]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
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Affilliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 14 11:32:57 EDT 2016

Public Input No. 212-NFPA 13-2016 [Section No. 8.15.5.2]

~~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.~~

Statement of Problem and Substantiation for Public Input

See rational for PI # 210
The difference is that this proposal proposes to delete Sections 8.15.5.1 and 8.15.5.2 completely and the associated annex to section 18.15.5.1

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 210-NFPA 13-2016 [Section No. 8.15.5.2]	same rational
Public Input No. 211-NFPA 13-2016 [Section No. 8.15.5.1]	same rational
Public Input No. 213-NFPA 13-2016 [Section No. A.8.15.5.1]	

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai
Organization: San Francisco Fire Department
Affilliation: SFFD
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 14 12:41:02 EDT 2016

Public Input No. 207-NFPA 13-2016 [Section No. 8.15.5.3]

8.15.5.3

Automatic fire sprinklers shall not be required in elevator machine rooms, elevator machinery spaces, 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 space, or hoistway of traction elevator is dedicated to elevator equipment only.

(2) The elevator machine room, machine room, machinery space, control room, or control ~~space, or hoistway of~~ space of traction elevators are protected by smoke detectors, or other automatic fire detection, installed in accordance with *NFPA 72*.

(3) The elevator machinery space, control room, control space, or hoistway of traction elevators 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.

(4) No materials unrelated to elevator equipment are permitted to be stored in elevator machine rooms, machinery spaces, control rooms, control spaces, or hoistways of traction elevators.

(5) The elevator machinery is not of the hydraulic type.

Statement of Problem and Substantiation for Public Input

NFPA 72 specifically prohibits the installation of smoke detectors in elevator shafts that are not sprinkler protected unless the smoke detector is installed to operate a smoke vent. The current code language is in conflict with NFPA 72. This code change removes the requirement for the smoke detector in an elevator shaft.

Submitter Information Verification

Submitter Full Name: Raymond Grill
Organization: Arup
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 12 12:11:59 EDT 2016

Public Input No. 217-NFPA 13-2016 [Section No. 8.15.5.4]

8.15.5.4*

Automatic sprinklers in elevator machine rooms ~~or~~ , elevator machinary spaces, or at the tops of hoistways shall be of ordinary- or intermediate-temperature rating.

Statement of Problem and Substantiation for Public Input

The intent of this proposal is to expand this requirement to include potential elevator machinery spaces which are not "rooms"

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai

Organization: San Francisco Fire Department

Affilliation: SFFD

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 15 12:27:38 EDT 2016

Public Input No. 218-NFPA 13-2016 [Section No. 8.15.5.5]

8.15.5.5*

Upright, pendent, or sidewall spray sprinklers shall be installed at the top of passenger and freight elevator hoistways.

Statement of Problem and Substantiation for Public Input

The elevator code ASME A17.1 includes two main groups of elevators: Passenger elevators and Freight elevators. While section 8.15.5 specifically address Passenger elevators, it does not specify Freight elevators.

The intent of this proposal is to specifically include Freight elevators in this requirement to ensure installation of sprinklers at the tops of all freight elevators hoistways.

Since section 8.15.5.6 specifically exempts non-combustible passenger elevators from top of hoistway sprinklers - this proposal will clarify that freight elevators are not exempt.

Submitter Information Verification

Submitter Full Name:	Sagiv Weiss-Ishai
Organization:	San Francisco Fire Department
Affilliation:	SFFD
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 15 12:31:56 EDT 2016

Public Input No. 5-NFPA 13-2015 [Section No. 8.15.5.7.2]

8.15.5.7.2

The sprinklers in the elevator hoistway 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* .~~ *UL 2556 Wire and Cable Test Methods (Tri-national standard, with NMX-J-556-ANCE-2013 and CSA 22.2 No. 2556-13). The suspension means shall not continue to burn for more than 60 seconds, nor shall the indicator flag be burned more than 25%.*

RATIONALE: The current requirements make reference to the FT-1 rating when tested to vertical burn test requirements of UL 62 and UL 1581 standards. Since UL 62 ands UL 1581 standards are more applicable to Flexible Electrical Wire & Cables and there are no design criteria for noncircular elastomeric-coated or polyurethane-coated steel belts addressed by ASME A17.1, a reference to UL 2556 is more appropriate for the FT-1 rating

Statement of Problem and Substantiation for Public Input

The current requirements make reference to the FT-1 rating when tested to the vertical burn test requirements of UL 62 and UL 1581 standards. Since UL 62 and UL 1581 standards are more applicable to Flexible Electrical Wire & Cables and there are no design criteria for noncircular elastomeric-coated or polyurethane-coated steel belts addressed by ASME A17.1, a reference to UL 2556 is more appropriate for the FT-1 rating.

Submitter Information Verification

Submitter Full Name: Lawrence Taylor
Organization: Schindler and NEII
Affilliation: national Elevator Industry Inc. (NEII)
Street Address:
City:
State:
Zip:
Submittal Date: Mon Dec 21 09:57:05 EST 2015

Public Input No. 382-NFPA 13-2016 [Section No. 8.15.7.1]

8.15.7.1*

Unless the requirements of 8.15.7.2, 8.15.7.3, or 8.15.7.4 are met, sprinklers shall be installed under exterior projections exceeding 4 ft (1.2 m) in width.

Add new annex A.8.15.7.1.

Sprinkler protection under exterior projections should not be required to spray beyond the support beam on the exterior edge of the exterior projection. An additional line of sprinklers on the exterior edge is not required due to obstruction rules. This is considered a reasonble level of protection since sprinklers are located between the structure and the exterior edge.

Statement of Problem and Substantiation for Public Input

Quite often, an additional line of sprinklers is required beyond the support beam of a canopy. The sprinklers are located where the obstruction rules cannot be met for the support beam where the standard requires an additional line of sprinklers. A fire involving the exterior edge of the canopy is not likely to progress into the structure since sprinklers are present.

Submitter Information Verification

Submitter Full Name: Thomas Wellen

Organization: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Sun Jun 26 12:07:25 EDT 2016

Public Input No. 466-NFPA 13-2016 [Section No. 8.15.7.1]

8.15.7.1

Unless the requirements of 8.15.7.2, 8.15.7.3, or 8.15.7.4 are met, sprinklers shall be installed under exterior ~~projections exceeding~~ projections exceeding 4 ft (1.2 m) in width not used for storage .

Statement of Problem and Substantiation for Public Input

The task group for overhangs is submitting this language.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 10:02:10 EDT 2016

Public Input No. 141-NFPA 13-2016 [Section No. 8.15.7.2]

8.15.7.2*

Sprinklers shall be permitted to be omitted where the exterior canopies, roofs, porte-cocheres, balconies, decks, floors above and similar projections are constructed with materials that are noncombustible, limited-combustible, or fire retardant–treated wood as defined in NFPA 703, or where the projections are constructed utilizing a noncombustible frame, limited-combustibles, or fire retardant–treated wood with an inherently flame-resistant fabric overlay as demonstrated by Test Method 2 in accordance with NFPA 701.

Statement of Problem and Substantiation for Public Input

The standard is currently vague as to whether areas open to the elements but below projected floor area above is required to be sprinklered. The body of the standard does not contain such a requirement, and there is only a reference that such spaces "should" be sprinklered in the annex. This change will clarify that projected floor area above an exterior space is not required to be sprinklered unless it is of combustible construction. A related annex change addresses that such spaces should be also be sprinklered if such open areas are used for storing or handling combustibles. An example of such a space would be a covered walkway between two portions of a university building containing a bookstore, where the covered space could easily be used for "sidewalk sales" especially at the beginning and end of the school year.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 140-NFPA 13-2016 [Section No. A.8.15.7.2]	Annex section providing additinal commmentary on the topic.

Submitter Information Verification

Submitter Full Name: Chris Born

Organization: Clark Nexsen Inc

Street Address:

City:

State:

Zip:

Submittal Date: Tue May 24 13:46:56 EDT 2016

Public Input No. 400-NFPA 13-2016 [New Section after 8.15.7.4]

8.15.7.4.1

Parapet walls and railings shall not be included when calculating the 50 percent openess of the corridor.

Statement of Problem and Substantiation for Public Input

Many times a parapet wall is used verses an open railing. This should not be calculated when determining the 50 percent open.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 27 12:22:31 EDT 2016

Public Input No. 395-NFPA 13-2016 [New Section after 8.15.7.5]

8.15.7.6

Sprinklers shall not be required in porte cocheres that are not physically attached to the building.

Statement of Problem and Substantiation for Public Input

Many times the porte-cochere assembly will extend over the entry to a building but will not be connected physically. Many times AHJ's will require sprinklers in and below these because there is no minimum separation distance requirement stated in NFPA 13.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 27 11:25:53 EDT 2016

Public Input No. 452-NFPA 13-2016 [New Section after 8.15.7.5]

8.15.7.5.1

Loading and unloading of trucks and trailers on loading docks shall not be considered storage.

Statement of Problem and Substantiation for Public Input

Many loading docks have covered overhangs to prevent rain from damaging materials while being unloaded. If these canopies are non combustible, sprinkler protection should not be required

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 09:20:28 EDT 2016

Public Input No. 468-NFPA 13-2016 [New Section after 8.15.7.5]

8.15.7.5.1

When overhangs, small loading docks, covered platforms and similar small unheated areas are required to be protected they shall be protected in accordance with 8.17.5.1

8.15.7.5.1.1 They shalll be permitted to be protected with a dry system.

8.15.7.5.1.2 They shall be permitted to protected with dry type sprinklers installed in accordance with their listing.

8.15.7.5.1.3 They shall be permitted to be protected by standard dry pendent sprinklers extending through the wall from wet sprinkler piping in an adjacent heated area istalled at a 45 degree angle.

8.15.7.5.1.3.1 Sprinklers shall be spaced no greater than 12 ft (3.7m) on center.

8.15.7.5.1.3.2 Sprinklers shall be permitted to protect those areas not exceeding 7 1/2 ft (2.3m) in width.

Delete section A.8.15.7 annex language and move Figure A.8.15.7 to A.8.15.7.1.3

Statement of Problem and Substantiation for Public Input

Results from the overhang task group.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 10:13:43 EDT 2016

Public Input No. 142-NFPA 13-2016 [Section No. 8.15.7.5]

8.15.7.5 *

Sprinklers shall be installed under exterior projections greater than 2 ft (600 mm) wide over areas where combustibles are stored.

8.15.7.5.1

Detatched exterior canopies over areas where combustibles are stored shall be greater than 10 feet from the building.

Statement of Problem and Substantiation for Public Input

Canopies and overhangs are being constructed off the building 1 inch to get around the attached portion of the code so that it would not require a fire sprinkler. There needs to be a distance for the separation of free standing canopies next to the sprinklered building that have combustibles under them. The use of grills is 10 feet, tent separations is 10 feet, parking from fireworks is 10 feet, so I considered 10 feet as a safe distance. 1 or 2 inches off the building does not safely protect the occupants or the building.

Submitter Information Verification

Submitter Full Name: C David Raborn

Organization: City of Cape Coral Fire Department

Affilliation: City of Cape Coral Bureau of Life Safety- Fire Marshal

Street Address:

City:

State:

Zip:

Submittal Date: Wed May 25 08:31:11 EDT 2016

Public Input No. 464-NFPA 13-2016 [Section No. 8.15.7.5]

8.15.7.5 *

Sprinklers shall be installed under all exterior projections greater ~~than 2 ft (600 mm) wide over areas where~~ than 4 ft (1.2 m) where combustibles are stored.

Statement of Problem and Substantiation for Public Input

This is the result of a task group in regards to protection of overhangs.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 09:55:29 EDT 2016

Public Input No. 115-NFPA 13-2016 [Section No. 8.15.11.2]

8.15.11.2

Sprinklers shall not be required in electrical equipment rooms where all of the following conditions are met:

(1) The room is dedicated to electrical equipment only.

(2) Only dry-type electrical equipment is used.

(3) Equipment is installed in a 2-hour fire-rated enclosure including protection for penetrations.

(4) No ~~combustible~~ storage is permitted to be stored in the room.

Additional Proposed Changes

File Name	Description	Approved
PC_120.pdf	13-PC_120	

Statement of Problem and Substantiation for Public Input

This Public Input appeared as “Reject but Hold” in Public Comment No. 120 of the (A2015 cycle) Second Draft Report.

Obviously non combustible storage will not burn. However, any storage should not be allowed as it may lead to storage of combustibles.

Submitter Information Verification

Submitter Full Name:	TC ON AUT-SSI
Organization:	NFPA
Affilliation:	TC on Sprinkler System Installation Criteria
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon May 16 09:38:00 EDT 2016

Public Comment No. 120-NFPA 13-2014 [Section No. 8.15.11.2]

8.15.11.2

Sprinklers shall not be required in electrical equipment rooms where all of the following conditions are met:

(1) The room is dedicated to electrical equipment only.

(2) Only dry-type electrical equipment is used.

(3) Equipment is installed in a 2-hour fire-rated enclosure including protection for penetrations.

(4) ~~No combustible storage~~ No storage is permitted to be stored in the room.

Statement of Problem and Substantiation for Public Comment

Obviously non combustible storage will not burn. However, any storage should not be allowed as it may lead to storage of combustibles.

Related Item

Public Input No. 11-NFPA 13-2013 [Section No. 8.15.11.2]

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Street Address:
City:
State:
Zip:
Submittal Date: Fri Apr 18 13:52:55 EDT 2014

Committee Statement

Committee Action: Rejected but held

Resolution: This concept is new material and was not addressed in the first draft via revision, CI or PI.

Public Input No. 562-NFPA 13-2016 [New Section after 8.15.20.1]

8.15.20.1.1 Unless hydraulically calculated, each one-inch outlet shall supply a maximum of one sprinkler head providing protection below a ceiling, and if necessary, a maximum of one head above the ceiling. Such sprinkler head(s) shall have a k-factor equal to the k-factor of existing upright sprinklers.

8.15.20.1.2 Unless otherwise hydraulically calculated, a one-inch outlet shall be allowed to supply a maximum of two sprinkler heads where the two sprinkler heads protect areas that are physically separated by a ceiling, walls and/or doors with a minimum lintel depth of 8 in (203 mm) and maximum total area of door openings into the room of 50 ft2 (4.6 m2). The sprinklers shall have a k-factor equal to the k-factor of existing upright sprinklers.

8.15.20.1.3 When approved, sprinkler heads installed under a ceiling may have a k factor less than the overhead sprinklers, provided the occupancy hazard classification for the area under the ceiling is less than the classification that the overhead sprinklers are designed for.

8.15.20.1.4 Flexible sprinkler hose drops shall be proven by hydraulic calculations.

Statement of Problem and Substantiation for Public Input

1) Each one-inch outlet can supply one sprinkler without affecting the hydraulic design of the existing sprinkler system, so there is no adverse effect on the existing system.
2) A one-inch outlet can supply two sprinklers when separated by a ceiling, walls and/or doors because it is anticipated that only one of the sprinklers will discharge at one time, and it will not adversely affect the system. Thus, if the one inch-outlet supplies a sprinkler head above the ceiling, then the outlet can supply a maximum of one additional head below the ceiling, with the ceiling providing the separation between separate sprinklered areas. If the one-inch outlet supplies no heads above the ceiling, then the one-inch outlet can supply a maximum of two heads below the ceiling, so long as those two heads are located in separate areas that are separated by walls and doors. This limitation of a maximum of two heads from 1-inch supply corresponds to the pipe schedule method. The maximum area of openings provision is adapted from NFPA 13R, with the intent of eliminating the practice of using a beam with depth greater than 8 inches to attempt to create a separate room.
3) Proposed sections 8.15.20.1.1 and 8.15.20.1.2 require that sprinklers below the ceiling have the same k factor as heads above the ceiling. This is to allow heads below the ceiling to go in without hydraulic calculations. Heads of a lesser k factor may not be acceptable in all cases. For instance, if the water supply pressures are not sufficient to cover an occupancy with k=5.6 heads, the calculated design could use k=8.0 or larger heads. In this case, allowing k=5.6 heads to be installed under ceilings without calculations could lead to having insufficient pressure at the head for proper coverage. However, where the overhead system is designed for a higher classification type, a lesser k factor may be acceptable without calculations. For instance, where there is a warehouse with ESFR or other larger orifice heads, it is acceptable to handle areas such as office and bathroom additions, without requiring the office and bathroom heads to be ESFR or other large orifice head.
4) This addresses the issue of flexible sprinkler drops that are added as part of tenant improvement or other work where the flexible sprinkler hose supplies heads below ceilings. Due to the equivalent length issues that are characteristic of flexible sprinkler hose, it is necessary to require that systems using flexible sprinkler hose drops be proven by hydraulic calculation.

Submitter Information Verification

Submitter Full Name: Lynn Nielson
Organization: City Of Henderson
Affilliation: Self
Street Address:
City:
State:
Zip:

Submittal Date: Wed Jun 29 11:34:47 EDT 2016

Public Input No. 363-NFPA 13-2016 [Section No. 8.15.23.3 [Excluding any Sub-Sections]]

Where there is a noncombustible space above a noncombustible or limited-combustible drop ceiling that is sprinklered because it is open to an adjacent sprinklered ~~space on only one side and~~ space and where there is no possibility for storage above the drop ceiling, the sprinkler system shall be permitted to extend only as far into the space as 0.6 times the square root of the design area of the sprinkler system in the adjacent space.

Statement of Problem and Substantiation for Public Input

There is no reason to limit the presence of an opening over an unprotected ceiling space to only one side. As long as all open sides are protected using the same criteria of extending the sprinkler protection 0.6 x the square root of the design above the space, this would adequately cool the ceiling jet from an adjacent fire and protect the space above the ceiling. Example: A noncombustible office building with a mechanical room that does not have a ceiling and walls in the mechanical room do not go all the way to the underside of the roof deck. The current language in the standard would require the entire area above the ceiling to be provided with sprinkler protection until full height walls were encountered. The requirement is excessive and unnecessary.

Submitter Information Verification

Submitter Full Name: e Parks Moore

Organization: S&S Sprinkler Company LLC

Street Address:

City:

State:

Zip:

Submittal Date: Fri Jun 24 15:19:50 EDT 2016

Public Input No. 610-NFPA 13-2016 [New Section after 8.15.24.1]

TITLE OF NEW CONTENT

8.15.24.2 When the cloud is located such that the deflector(s) of sprinkler(s) in the cloud are within 12" of the upper ceiling, additional sprinklers above the cloud are not required if the opening width is less than or equal to 1 in./foot of cloud height.

Additional Proposed Changes

File Name	Description	Approved
Summary_of_FDS_Simulations_updated.pdf	Summary data for FDS simulations of clouds within 12" of the upper ceiling	

Statement of Problem and Substantiation for Public Input

The added guidance on when sprinklers may be omitted above clouds is beneficial, but this guidance does not address when the cloud is very close to the upper ceiling. This is not meant to disparage the extensive efforts necessary to generate the initial cloud guidance, but instead to offer a potential extension of that guidance. With NFPA 13 already allowing sprinkler deflectors to be up to 12" below a ceiling, is it adequate to simply provide sprinklers in the cloud (and not above) if the cloud is 12" or less from the upper ceiling. Fire modeling results indicated that the allowable gap of 0.5" per foot of ceiling height for clouds could be extended to 1" per foot of ceiling height with negligible impact on sprinkler activation times. Please refer to the attached summary data of these fire modeling efforts.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 611-NFPA 13-2016 [Section No. 8.15.24.1]	

Submitter Information Verification

Submitter Full Name: Chris Born

Organization: Clark Nexsen Inc

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 17:56:47 EDT 2016

Public Input No. 164-NFPA 13-2016 [Section No. 8.15.24.1]

8.15.24.1*

Sprinklers shall be permitted to be omitted above cloud ceilings where

~~both~~
all of the following apply:

(1) * The combined total area of the openings around the cloud

~~and the maximum sprinkler protection area meet the requirements of 8.15.1.2.1.2 and~~
are less than or equal to 20% of the area of the ceiling, construction feature, or plane used to determine the boundaries of the compartment.

(2) Where gaps are more than 4 ft (1.2m) long, the width shall not exceed 8 inches (200mm).

(3) The width of the gap and the maximum sprinkler protection area shall meet Table 8.15.24.1 .

(4) The requirements of 8.15.24.2 are met.

Table 8.15.24.1 Maximum Sprinkler Protection Area Based on Ceiling Cloud Width and Opening Width

Ceiling Cloud — Minimum Width Dimension (ft)	Maximum Area (ft^2) — Opening Width ≤0.5 in./ ft of Ceiling Height	Maximum Area (ft^2) — Opening Width ≤0.75 in./ ft of Ceiling Height	Maximum Area (ft^2) — Opening Width ≤1 in./ ft of Ceiling Height
2–<2.5	175	70	NP
2.5–4	225	120	70
>4	225	150	150

Statement of Problem and Substantiation for Public Input

Sending the user back to the concealed space rules is inappropriate. The space above drop ceilings are not concealed spaces and to send the user back there creates confusion. All of the information necessary to deal with cloud ceilings should be in section 8.15.24. My intent was to consolidate it all here. Hopefully, I correctly did that. There was no intent to change any of the rules.

Submitter Information Verification

Submitter Full Name: Kenneth Isman

Organization: University of Maryland

Street Address:

City:

State:

Zip:

Submittal Date: Thu May 26 16:04:03 EDT 2016

Public Input No. 515-NFPA 13-2016 [Section No. 8.15.24.1]

8.15.24.1*

Sprinklers shall be permitted to be omitted above cloud ceilings where both of the following apply:

(1) * The openings around the cloud and the maximum sprinkler protection area meet the requirements ~~of~~ of 8.15.1.2.1. ~~2~~ 3 and Table 8.15.24.1

(2) The requirements of 8.15.24.2 are met.

Table 8.15.24.1 Maximum Sprinkler Protection Area Based on Ceiling Cloud Width and Opening Width

Ceiling Cloud — Minimum Width Dimension (ft)	Maximum Area (ft^2) — Opening Width ≤0.5 in./ ft of Ceiling Height	Maximum Area (ft^2) — Opening Width ≤0.75 in./ ft of Ceiling Height	Maximum Area (ft^2) — Opening Width ≤1 in./ ft of Ceiling Height
2–<2.5	175	70	NP
2.5–4	225	120	70
>4	225	150	150

Statement of Problem and Substantiation for Public Input

This section references 8.15.1.1.2 but should reference 8.15.1.1.3. Section 8.15.1.1.2 is about the size of allowable small opening into concealed spaces. The appropriate section is 8.15.1.1.3 which is about the allowable size of the openings to cloud ceilings.This was submitted to NFPA as an Errata. This PI is in case this erratum is not corrected.

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 21:39:30 EDT 2016

Public Input No. 611-NFPA 13-2016 [Section No. 8.15.24.1]

8.15.24.1*

Sprinklers shall be permitted to be omitted above cloud ceilings where both of the following apply:

(1) * The openings around the cloud and the maximum sprinkler protection area meet the requirements of 8.15.1.2.1.2 and Table 8.15.24.1

(2) The requirements of 8.15.24.~~2~~3 are met.

Table 8.15.24.1 Maximum Sprinkler Protection Area Based on Ceiling Cloud Width and Opening Width

Ceiling Cloud — Minimum Width Dimension (ft)	Maximum Area (ft^2) — Opening Width ≤0.5 in./ ft of Ceiling Height	Maximum Area (ft^2) — Opening Width ≤0.75 in./ ft of Ceiling Height	Maximum Area (ft^2) — Opening Width ≤1 in./ ft of Ceiling Height
2–<2.5	175	70	NP
2.5–4	225	120	70
>4	225	150	150

Statement of Problem and Substantiation for Public Input

This is a numbering change to coordinate with another public input which proposes added guidance on clouds located within 12" of the upper ceiling.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 610-NFPA 13-2016 [New Section after 8.15.24.1]	

Submitter Information Verification

Submitter Full Name: Chris Born
Organization: Clark Nexsen Inc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 18:09:14 EDT 2016

Public Input No. 516-NFPA 13-2016 [Section No. 8.15.24.2.1.1]

~~8.15.24.2.1.1~~ –

~~Where extended coverage sprinklers are used, the maximum distance between sprinklers shall not exceed 16 ft (4.9 m).~~

Additional Proposed Changes

File Name	Description	Approved
8.15.24.2.1_-_8.15.24.2.3.1.docx	This document shows how these section will read	

Statement of Problem and Substantiation for Public Input

Section 8.15.24.2.3 contradicts section 8.15.24.1.1. We are concerned with the area of protection as well as spacing in this section (specifically where the table allows for larger design areas than are permitted for OH occupancies) . This change will address this oversight
See uploaded document

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 517-NFPA 13-2016 [Section No. 8.15.24.2.3]	
Public Input No. 518-NFPA 13-2016 [New Section after 8.15.24.2.3]	

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jun 28 21:44:37 EDT 2016

Public Input No. 518-NFPA 13-2016 [New Section after 8.15.24.2.3]

TITLE OF NEW CONTENT

8.15.24.2.3.1 Where extended coverage sprinklers are used, the maximum distance between sprinklers shall not exceed 16 ft

Additional Proposed Changes

File Name	Description	Approved
8.15.24.2.1_-_8.15.24.2.3.1.docx	This is how these sections will read	

Statement of Problem and Substantiation for Public Input

Section 8.15.24.2.3 contradicts section 8.15.24.1.1. We are concerned with the area of protection as well as spacing in this section (specifically where the table allows for larger design areas than are permitted for OH occupancies) . This change will address this oversight
See uploaded document.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 516-NFPA 13-2016 [Section No. 8.15.24.2.1.1]	same issue
Public Input No. 517-NFPA 13-2016 [Section No. 8.15.24.2.3]	same issue

Submitter Information Verification

Submitter Full Name: Roland Asp
Organization: National Fire Sprinkler Association
Affilliation: NFSA E&S Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 21:49:29 EDT 2016

Public Input No. 517-NFPA 13-2016 [Section No. 8.15.24.2.3]

8.15.24.2.3

Maximum spacing and area of protection shall not exceed the maximum requirements of Table 8.6.2.2.1(a) for light hazard and Table 8.6.2.2.1(b) for ordinary hazard.

Additional Proposed Changes

File Name	Description	Approved
8.15.24.2.1_-_8.15.24.2.3.1.docx	This is how these sections will read	

Statement of Problem and Substantiation for Public Input

Section 8.15.24.2.3 contradicts section 8.15.24.1.1. We are concerned with the area of protection as well as spacing in this section (specifically where the table allows for larger design areas than are permitted for OH occupancies) . This change will address this oversight

See uploaded document

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 516-NFPA 13-2016 [Section No. 8.15.24.2.1.1]	same issue
Public Input No. 518-NFPA 13-2016 [New Section after 8.15.24.2.3]	

Submitter Information Verification

Submitter Full Name: Roland Asp

Organization: National Fire Sprinkler Association

Affilliation: NFSA E&S Committee

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 21:46:36 EDT 2016

Public Input No. 171-NFPA 13-2016 [New Section after 8.15.26]

8.15.27 Vestibules.

Sprinkler protection shall not be required within entrance vestibules of noncombustible construction, that do not contain combustibles and are 150 square feet or less in area.

Statement of Problem and Substantiation for Public Input

It is often very challenging to route piping to a vestibule, especially when the vestibule is located partially or wholly on the interior side of the exterior wall in a high space such as an atrium. Additionally, when the vestibule is located entirely on the exterior side of the facade it can be difficult to route piping within the heated envelope of the building. With concerns about freeze protection, required testing of dry sprinklers, antifreeze systems, and the impact of penetrations through the building envelope on energy consumption, there are maintenance and operational benefits in not sprinklering these relatively small spaces.

The normal flow of pedestrian traffic naturally limits the presence of combustibles, and this proposal goes further be explicitly stating the provision is not applicable if there are combustibles present. Therefore, the proposal contemplates virtually no fuel load. Furthermore, the likelihood of an occupant becoming trapped within the vestibule is remote. Accordingly, this proposal does not have a significant impact on property protection or life safety.

Submitter Information Verification

Submitter Full Name: Chris Born

Organization: Clark Nexsen Inc

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 01 18:21:13 EDT 2016

Public Input No. 555-NFPA 13-2016 [New Section after 8.15.26]

Window/ Exposure Sprinklers

Combined all sections which have requriements for Window sprinklers and Exposure sprinkler into one section.

Statement of Problem and Substantiation for Public Input

During the reorganization there is an opportunity to combined the requirements for window sprinklers and exposure sprinkler systems into one section. Currently these requirements are found in multiple sections throughout the document.

Submitter Information Verification

Submitter Full Name: Kevin Kelly
Organization: Victaulic
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 10:08:26 EDT 2016

Public Input No. 566-NFPA 13-2016 [New Section after 8.16.1.1.1]

8.16.1.1.1.4 Valve rooms shall be lighted and heated.

8.16.1.1.1.5 The source of heat shall be of a permanently installed type.

Statement of Problem and Substantiation for Public Input

This amendment is a copy of Section 7.2.5.2.2. Section 7.2.5.2.2 provides requirements for dry pipe valves, but the code does not provide the same requirements for other system valve rooms. This amendment would require that valve rooms be provided with light and heat. This amendment would require that the heating system for valve rooms be provided permanently installed. This would prohibit plug-in systems that can be easily removed after obtaining the Certificate of Occupancy.

Submitter Information Verification

Submitter Full Name: Lynn Nielson
Organization: City Of Henderson
Affilliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 11:46:26 EDT 2016

Public Input No. 47-NFPA 13-2016 [Section No. 8.16.1.1.2.2]

8.16.1.1.2.2

Floor control valves in high-rise buildings ~~and valves controlling flow to sprinklers in circulating closed loop systems~~ shall comply with 8.16.1.1.2.1 (1) or 8.16.1.1.2.1 (2).

Statement of Problem and Substantiation for Public Input

Circulating closed loops were removed from NFPA 13 last cycle. This is clean up of left over language.

Submitter Information Verification

Submitter Full Name:	Peter Schwab
Organization:	Wayne Automatic Fire Sprinkler
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Thu Feb 18 09:47:21 EST 2016

Public Input No. 608-NFPA 13-2016 [New Section after 8.16.1.1.3]

8.16.1.1.3.1 (New) A check valve shall be installed in each system riser or water supply connection.

Type your content here ...

Statement of Problem and Substantiation for Public Input

Each system should have a check valve installed to prevent water from draining out of the system when piping or other componentscould be under maintenance or repair.

Submitter Information Verification

Submitter Full Name: Cecil Bilbo

Organization: Academy of Fire Sprinkler Tech

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 17:30:29 EDT 2016

Public Input No. 568-NFPA 13-2016 [Section No. 8.16.1.2.5]

8.16.1.2.5

Means shall be provided downstream of all pressure-reducing valves for flow tests at sprinkler system demand. Such means shall consist of a tee outlet downstream of the pressure reducing valve identical in size to the sprinkler system feed, available for connection to field testing devices, or other method approved by the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

The purpose of this amendment is to prescribe a method for testing PRV control valves in fire sprinkler systems. This is a low-cost option that will allow for testing during construction and during maintenance testing. The designer is permitted to submit alternate methods for providing means to test the PRV, which can be approved by the AHJ if the alternate means provides the same ability to test both during construction and during maintenance.

Submitter Information Verification

Submitter Full Name:	Lynn Nielson
Organization:	City Of Henderson
Affilliation:	Self
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 11:53:12 EDT 2016

Public Input No. 506-NFPA 13-2016 [Section No. 8.16.2.4.6.3]

8.16.2.4.6.3

Main drain connections shall be sized in accordance with 8.~~12~~ 16 .2. 4.2 .

Statement of Problem and Substantiation for Public Input

Editorial correction.

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Solutions

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 20:46:23 EDT 2016

Public Input No. 507-NFPA 13-2016 [Section No. 8.16.2.5.3.4]

8.16.2.5.3.4

Auxiliary drains are not required for pipe drops supplying dry pendent sprinklers installed in accordance with 7.2.2, 7 . 3.25 and 7.7.3.4 .

Statement of Problem and Substantiation for Public Input

This proposal is offered because Section 8.16.2.5.3 also covers auxiliary drains on preaction systems as well as dry pipe systems.
Additionally, the word “required” is proposed to be inserted, for editorial correction.

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: PLC Fire Safety Solutions
Street Address:
City:
State:
Zip:

Submittal Date: Tue Jun 28 20:48:36 EDT 2016

Public Input No. 607-NFPA 13-2016 [New Section after 8.16.6]

8.16.6.1 A remotely located inspector's test connection shall be permitted to be used to comply with 7.1.5.

Statement of Problem and Substantiation for Public Input

This section will ensure that an inspector's test connection can serve the purposes for venting as required by the committee.

Submitter Information Verification

Submitter Full Name: Cecil Bilbo

Organization: Academy of Fire Sprinkler Tech

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 17:22:00 EDT 2016

Public Input No. 276-NFPA 13-2016 [Section No. 8.16.6]

8.16.6* Air Venting.

The vent required by 7.1.5 shall be located near a high point in the system to allow air to be removed from that portion of the system by one of the following methods:

(1) Manual valve, minimum ½ in. (15 mm) size

(2) Automatic air vent

(3) Other approved means <u>including remote inspectors test valve.</u>

Statement of Problem and Substantiation for Public Input

Spell out the option of moving the inspectors test valve to the remote part of the system to provide dual functionality.

Submitter Information Verification

Submitter Full Name: Daniel Wake

Organization: Victaulic Company of America

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 23 15:39:42 EDT 2016

Public Input No. 612-NFPA 13-2016 [Section No. 8.16.6]

8.16.6* Air Venting.

The vent required by 7.1.5 shall be located near a high point in the system to allow air to be removed from that portion of the system by one of the following methods:

(1) ~~Manual valve, minimum $^{1}/_{2}$ in. (15 mm) size~~

(2) Automatic air vent

(3) Other approved means

Statement of Problem and Substantiation for Public Input

The use of a manual valve does no good unless someone checking the pressure gauge every day. This past June in Phoenix, AZ there were approx 20 fire sprinkler that had failures due to over pressure and related to hot weekend were the daily temperature was over 115. The failure include fittings, and sprinkler heads, the Phoenix Fire witness several system were the pressure gauge was reading over 250 psi.and in some cases over 300 psi.

Unless you have trained personal that understand fire sprinkler systems and increase of pressure due to weather, these failure will increase not just in Phoenix, The problem is a big issue where you have warehouses that have no AC and may be using only swamp cooler or fan only.

Submitter Information Verification

Submitter Full Name: Joe McElvaney

Organization: City of Phoenix Fire Departmen

Affilliation: Self

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 18:49:31 EDT 2016

Public Input No. 569-NFPA 13-2016 [Section No. 8.17.2.3]

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 when the fire department connection has three or fewer 2-1/2 in (65 mm) inlets, and shall be a minimum of 6 in. (150 mm) for fire engine connections when the fire department connection has four or more 2-1/2 in (65 mm) inlets .

(2) Pipe size shall be a minimum of 6 in. (150 mm) for fire boat connections.

(3) For hydraulically calculated systems, the pipe size shall be permitted to be less than 4 in. (100 mm), but not less than the largest riser being served by that connection.

Statement of Problem and Substantiation for Public Input

Connections shall be sized due to flow rate of the system. The additional size of 6-inch for larger flow systems follows the sizes provided for manufactured connections. For 3-inlet fire department connections, the outlet can be found in both 4-inch and 6-inch. For 4-inlet connections, the outlet can be found in 6-inch only.

Submitter Information Verification

Submitter Full Name: Lynn Nielson
Organization: City Of Henderson
Affilliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 12:11:22 EDT 2016

Public Input No. 614-NFPA 13-2016 [Section No. 8.17.2.3]

8.17.2.3* Size.

The size of the pipe for the fire department connection shall be not less than the largest riser served by the fire department connection ~~in accordance with one of the following:~~

~~(1) Pipe size shall be a minimum of~~
~~4 in~~
~~4 in . (~~
~~100 mm~~
~~100 mm) for fire engine connections.~~
~~(2) Pipe size shall be a minimum of~~
~~6 in~~
~~6 in . (~~
~~150 mm~~
~~150 mm) for fire boat connections.~~

~~(3) For hydraulically calculated systems, the pipe size shall be permitted to be less than 4 in 4 in . (100 mm 100 mm), but not less than the largest riser being served by that connection.~~ in accordance with one of the following:

Statement of Problem and Substantiation for Public Input

The current wording would allow a warehouse supplied by an 8" or 10" main to have its FDC piping 4" in diameter. Should the fire department need to supply the system the 4" diameter piping may be inadequate. The piping between the FDC and the system can be long and incorporate several fittings to offset the piping This proposal will improve the ability of the sprinkler system to control a fire.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 615-NFPA 13-2016 [Section No. A.8.17.2.3]	

Submitter Information Verification

Submitter Full Name: James Feld
Organization: University of California
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 20:10:19 EDT 2016

Public Input No. 570-NFPA 13-2016 [New Section after 8.17.2.4]

8.17.2.4.1.3 The fire department connection shall be located not less than 18 in (457 mm) and not more than 4 ft (1.2 m) above the level of the adjacent grade or access level.

Statement of Problem and Substantiation for Public Input

The purpose of this amendment is to codify the language dictating the height of the fire department connection. The language used in this proposal comes from the annex to Section 8.17.2. Further, this code is repeated as code language in NFPA 14. Adding this as code language will assist with review and inspections of fire department connection installations.

Submitter Information Verification

Submitter Full Name:	Lynn Nielson
Organization:	City Of Henderson
Affilliation:	Self
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 12:15:57 EDT 2016

Public Input No. 508-NFPA 13-2016 [Section No. 8.17.2.4.1.2]

~~8.17.2.4.1.2~~ –

~~The fire department connection shall be permitted to be connected to main piping on the system it serves.~~

Statement of Problem and Substantiation for Public Input

As per Section 8.17.2.4.3, for multiple systems, the fire department connection shall be connected between the supply control valves and the system control valves. Therefore the current 8.17.2.4.1.2 deals with single systems and should therefore be part of Section 8.17.2.4.2, which deals with single systems.

Further, the current text of 8.17.2.4.1.2 implies that the FDC is permitted to be connected to the mains of any system, when in fact, that should only be done on wet or deluge systems, because for dry and preaction systems, it should be connected at the system riser as per 8.17.2.4.2 (2) and (3).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 509-NFPA 13-2016 [New Section after 8.17.2.4.2]	

Submitter Information Verification

Submitter Full Name: Larry Keeping
Organization: PLC Fire Safety Solutions
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 20:51:59 EDT 2016

Public Input No. 509-NFPA 13-2016 [New Section after 8.17.2.4.2]

8.17.2.4.2.1

The fire department connection shall be permitted to be connected to main piping on the wet pipe or deluge system it serves.

Statement of Problem and Substantiation for Public Input

As per Section 8.17.2.4.3, for multiple systems, the fire department connection shall be connected between the supply control valves and the system control valves. Therefore the current 8.17.2.4.1.2 deals with single systems and should therefore be part of Section 8.17.2.4.2, which deals with single systems.

Further, the current text of 8.17.2.4.1.2 implies that the FDC is permitted to be connected to the mains of any system, when in fact, that should only be done on wet or deluge systems, because for dry and preaction systems, it should be connected at the system riser as per 8.17.2.4.2 (2) and (3).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 508-NFPA 13-2016 [Section No. 8.17.2.4.1.2]	

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Solutions

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 20:58:12 EDT 2016

Public Input No. 431-NFPA 13-2016 [Section No. 8.17.3.1]

8.17.3.1

A pressure gauge with a connection not smaller than ¼ in. (6 mm) shall be installed at the system main drain, at each main drain associated with a floor control valve, above and below each alarm check valve or system riser check valve, and on the inlet and outlet side of each pressure-reducing valve.

Statement of Problem and Substantiation for Public Input

This text is missing from the section on gauges but appears in 7.1.1.2. Proposed for consistency.

Submitter Information Verification

Submitter Full Name:	Jason Gill
Organization:	Fire & Life Safety America
Affilliation:	AFSA
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Mon Jun 27 22:32:36 EDT 2016

Public Input No. 617-NFPA 13-2016 [Section No. 8.17.3.4]

8.17.3.4

Gauges shall be installed to permit removal ~~and~~ without removing any other equipment, device, or piping.

Add a new section:

8.17.3.5 Gauges shall be located where they will not be subject to freezing.

Statement of Problem and Substantiation for Public Input

The section is divided because it deals with two separate requirements - removal of the pressure gauge and freeze protection. The addition of “without removing any other equipment, device, or piping” is necessary as current wording is too vague. Some installations require the system to be shut down in order to remove the pressure gauge as there is valve trim piping preventing the removal of the gauge..

Submitter Information Verification

Submitter Full Name: James Feld

Organization: University of California

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 20:45:00 EDT 2016

Public Input No. 54-NFPA 13-2016 [New Section after 8.17.4.1.4]

8.17.4.1.5

When the alarm test connection is not located on the end of the most distant sprinkler pipe in the upper story, hydraulic calculations shall be performed to verify that the size of the orifice used on the alarm test connection will give a flow equal to or less than one sprinkler, located the most hydraulically remote from the waterflow detection device, and of a type having the smallest K-factor installed on the system.

Statement of Problem and Substantiation for Public Input

The current language allows an alarm test connection to be installed anywhere on a system, so long as it is downstream of the waterflow detection device it is intended to test. These alarm test connections, or combination test and drain valves, are typically located on the base of the riser or a floor control assembly, directly adjacent to and downstream of the waterflow detection device. The common practice of designers/installers is to use an orifice size on the test connection that corresponds to the smallest K-factor sprinkler installed on the system (e.g. 1/2 inch orifice for a 5.6 K sprinkler).

The problem is that due to friction and elevation pressure losses, a higher pressure always exists at the alarm test connection than at the single sprinkler head that is flowing. Therefore, when the alarm test connection is opened to test the waterflow detection device, and the alarm test connection orifice is the same size as the smallest K-factor sprinkler, the higher pressure experienced at the alarm test connection results in a higher water flow passing through the waterflow detection device, thereby not properly testing the waterflow detection device to ensure it activates upon the activation of a single most hydraulically remote sprinkler head.

Since I have been doing the sprinkler system plan reviews for our jurisdiction the last 3 years, I have required the designer/installer to use an orifice size that is smaller than the smallest K-factor sprinkler on the system (when the test connection is not installed on the end of the most distant sprinkler in the upper story). Usually they comply without argument when I explain my reasoning, but other times they strongly resist.

In September of 2015 there was a kitchen fire in a dwelling unit of a fully sprinklered 2-story multi-family occupancy in our jurisdiction. The building and sprinkler system were built approximately 10 years ago, prior to sprinkler plan reviews/inspections being performed by me. The sprinklers for the 2nd floor dwelling units are supplied by sprinkler piping on the floor below. The fire unit was located on the end of the building, farthest from the sprinkler system riser. The fire alarm system supervised waterflow detection device and alarm test connection for the entire system are located on the base of the riser. The activation of a single sprinkler in the kitchen controlled the fire. The dwelling unit occupant called 911. Fire companies responded, manually extinguished the fire, and then closed the sprinkler system water control valve and drained the system. It was estimated the sprinkler had been flowing for approximately 20 minutes between initial activation and system shutdown. Fire companies reported the building's fire alarm system had not activated (the dwelling units have local smoke detectors and system heat detectors) although it should have due to the sprinkler system activation. The fire alarm system monitoring company reported not receiving a waterflow alarm although they should have due to the sprinkler system activation. A review of our records indicated the waterflow detection device was tested and activated properly every year during annual fire alarm testing. During subsequent testing with the fire alarm company, the alarm test connection was opened approximately 20 times, the waterflow detection device activated within 30 seconds of water flow each time, which in turn activated the building's fire alarm system and sent a signal to the monitoring company. Further examination revealed that the orifice installed in the alarm test connection was equal in diameter to the sprinkler that had activated in the dwelling unit (and also the smallest K-factor on the system). It was determined that the alarm test connection provided a flow higher than the single dwelling unit sprinkler head located approximately 200 ft horizontally and 1 floor above the base of the riser (where the alarm test connection is located), and therefore the waterflow detection device had never been properly tested and did not activate during the incident when subjected to the lower flow provided by the single remotely located sprinkler.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 55-NFPA 13-2016 [Section No. 6.8.1]	

Submitter Information Verification

Submitter Full Name: James Richardson
Organization: Lisle Woodridge Fire District
Street Address:
City:
State:
Zip:
Submittal Date: Thu Feb 18 15:35:47 EST 2016

Public Input No. 587-NFPA 13-2016 [New Section after 8.17.4.5.1]

TITLE OF NEW CONTENT

Type your content here ...

8.17.4.5.1.1 The arrangement required in 8.17.4.5.1 shall be serviceable, without requiring the owner to modify the system to perform the test.

Additional Proposed Changes

File Name	Description	Approved
CBROWNING_Proposal_1_6-22-16_NFPA_13_2019.docx	Public Input from Chase Browning	

Statement of Problem and Substantiation for Public Input

Substantiation: The proposed new section 8.17.4.5.1.1 is intended to clarify the intent of section 8.17.4.5.1. The commentary in the NFPA 13 Handbook describes that, 'Reversing the check valve orientation is unacceptable for new systems because it is unlikely that property owners will undertake such effort and expense to conduct this important test.' If the intent is to have a serviceable arrangement, then the standard should clarify that.

Submitter Information Verification

Submitter Full Name: David Hague
Organization: National Fire Protection Assoc
Affilliation: For Chase Browning.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 15:19:34 EDT 2016

NFPA Public Comment Form
(For Proposing Revisions to the First Draft)

NOTE: All Public Comments must be received by 5:00 pm EST/EDST on the published Public Comment Closing Date.

For further information on the standards-making process, please contact the Codes and Standards Administration at 617-984-7249 or visit www.nfpa.org/codes.

For technical assistance, please call NFPA at 1-800-344-3555

FOR OFFICE USE ONLY

Log #:

Date Rec'd:

Date 6-22-16 **Name** Chase Browning **Tel. No.** 541-601-8045

Company Medford Fire-Rescue **Email** chase.browning@cityofmedford.org

Street Address 200 S. Ivy #180 **City** Medford **State** OR **Zip** 97501

Please indicate organization represented (if any)

1. (a) NFPA Document Title NFPA 13 **NFPA No. & Year** 13 - 2019

(b) Section/Paragraph

2. Identify First Revision and/or Input to which Comment relates: No(s). Add a new section under 8.17.4.5.1

2. Public Comment Recommends (check one): ☒ new text ☐ revised text ☐ deleted text

3. Proposed Text of Public Comment (include proposed new or revised wording, or identification of wording to be deleted): [Note: Proposed text should be in legislative format showing proposed changes to the First Draft; i.e., use underscore to denote wording to be inserted (<u>inserted wording</u>) and strike-through to denote wording to be deleted (~~deleted wording~~).]

Add a new section after 8.17.4.5.1 to read as follows:

8.17.4.5.1* Backflow Prevention Valves. Means shall be provided downstream of all backflow prevention valves for forward flow tests at a minimum flow rate of the system demand including hose allowance where applicable.

<u>**8.17.4.5.1.1** The arrangement required in 8.17.4.5.1 shall be serviceable, without requiring the owner to modify the system to perform the test.</u>

4. Statement of Problem and Substantiation for Public Comment: (Note: State the problem that would be resolved by your recommendation; give the specific reason for your Public Comment, including copies of tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.)

<u>**Substantiation:**</u> The proposed new section <u>**8.17.4.5.1.1**</u> is intended to clarify the intent of section **8.17.4.5.1**. The commentary in the NFPA 13 Handbook describes that, '*Reversing the check valve orientation is unacceptable for new systems because it is unlikely that property owners will undertake such effort and expense to conduct this important test.*' If the intent is to have a serviceable arrangement, then the standard should clarify that.

5. Copyright Assignment

(a) ☒ **I am the author of the text or other material (such as illustrations, graphs) proposed in the Public Comment.**

(b) ☐ **Some or all of the text or other material proposed in this Public Comment was not authored by me. Its source is as follows:** (please identify which material and provide complete information on its source)

Signature (Required)

PLEASE USE SEPARATE FORM FOR EACH PUBLIC COMMENT
To: Secretary, Standards Council National Fire Protection Association
1 Batterymarch Park · Quincy, MA 02169-7471 OR
Fax to: (617) 770-3500 OR Email to: publicinput_comments@nfpa.org

7/1/2016

Public Input No. 621-NFPA 13-2016 [New Section after 8.17.4.5.2]

8.17.4.5.1.1

The arrangement required in 8.17.4.5.1 shall be serviceable, without requiring the owner to modify the system to perform the test.

Statement of Problem and Substantiation for Public Input

The proposed new section 8.17.4.5.1.1 is intended to clarify the intent of section 8.17.4.5.1. The commentary in the NFPA 13 Handbook describes that, ‘Reversing the check valve orientation is unacceptable for new systems because it is unlikely that property owners will undertake such effort and expense to conduct this important test.’ If the intent is to have a serviceable arrangement, then the standard should clarify that.

Submitter Information Verification

Submitter Full Name: Chase Browning

Organization: Medford Fire Rescue

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 30 13:23:36 EDT 2016

Public Input No. 386-NFPA 13-2016 [Section No. 25.1]

25.1 Approval of Sprinkler Systems and Private Fire Service Mains.

The installing contractor shall do the following:

(1) Notify the authority having jurisdiction and the property owner or the property owner's authorized representative of the time and date testing will be performed

(2) Perform all required acceptance tests *(see Section 25.2)*

(3) Complete and sign the appropriate contractor's material and test certificate(s) *(see Figure 25.1)*

(4) Remove all caps and straps prior to placing the sprinkler system in service

Figure 25.1 Contractor's Material and Test Certificate for Aboveground Piping.

Add to the form under Property adress:

New installation? Y/N

Modification? Y/N If yes, complete applicable portions of the form. Provide a description of the scope of work on Page 3.

Contractor's Material and Test Certificate for Aboveground Piping

PROCEDURE
Upon completion of work, inspection and tests shall be made by the contractor's representative and witnessed by the property owner or their authorized agent. All defects shall be corrected and system left in service before contractor's personnel finally leave the job.

A certificate shall be filled out and signed by both representatives. Copies shall be prepared for approving authorities, owners, and contractor. It is understood the owner's representative's signature in no way prejudices any claim against contractor for faulty material, poor workmanship, or failure to comply with approving authority's requirements or local ordinances.

Property name			Date
Property address			
Plans	Accepted by approving authorities (names)		
	Address		
	Installation conforms to accepted plans	❑ Yes	❑ No
	Equipment used is approved If no, explain deviations	❑ Yes	❑ No
Instructions	Has person in charge of fire equipment been instructed as to location of control valves and care and maintenance of this new equipment? If no, explain	❑ Yes	❑ No
	Have copies of the following been left on the premises?	❑ Yes	❑ No
	1. System components instructions	❑ Yes	❑ No
	2. Care and maintenance instructions	❑ Yes	❑ No
	3. NFPA 25	❑ Yes	❑ No
Location of system	Supplies buildings		

Sprinklers

Make	Model	Year of manufacture	Orifice size	Quantity	Temperature rating

Pipe and fittings
Type of pipe
Type of fittings

Alarm valve or flow indicator

Alarm device			Maximum time to operate through test connection	
Type	Make	Model	Minutes	Seconds

Dry pipe operating test

Dry valve			Q. O. D.		
Make	Model	Serial no.	Make	Model	Serial no.

	Time to trip through test connection[a,b]		Water pressure	Air pressure	Trip point air pressure	Time water reached test outlet[a,b]		Alarm operated properly	
	Minutes	Seconds	psi	psi	psi	Minutes	Seconds	Yes	No
Without Q.O.D.									
With Q.O.D.									

If no, explain

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[a] Measured from time inspector's test connection is opened.
[b] NFPA 13 only requires the 60-second limitation in specific sections.

Deluge and preaction valves

Operation ❑ Pneumatic ❑ Electric ❑ Hydraulics

Piping supervised ❑ Yes ❑ No | Detecting media supervised ❑ Yes ❑ No

Does valve operate from the manual trip, remote, or both control stations? ❑ Yes ❑ No

Is there an accessible facility in each circuit for testing? ❑ Yes ❑ No | If no, explain

Make	Model	Does each circuit operate supervision loss alarm?		Does each circuit operate valve release?		Maximum time to operate release	
		Yes	No	Yes	No	Minutes	Seconds

Pressure-reducing valve test

Location and floor	Make and model	Setting	Static pressure		Residual pressure (flowing)		Flow rate
			Inlet (psi)	Outlet (psi)	Inlet (psi)	Outlet (psi)	Flow (gpm)

Backflow device forward flow test

Indicate means used for forward flow test of backflow device: ____

When means to test device was opened, was system flow demand created? ❑ Yes ❑ No ❑ N/A

Test description

Hydrostatic: Hydrostatic tests shall be made at not less than 200 psi (13.8 bar) for 2 hours or 50 psi (3.4 bar) above static pressure in excess of 150 psi (10.3 bar) for 2 hours. Differential dry pipe valve clappers shall be left open during the test to prevent damage. All aboveground piping leakage shall be stopped.

Pneumatic: Establish 40 psi (2.7 bar) air pressure and measure drop, which shall not exceed 1½ psi (0.1 bar) in 24 hours. Test pressure tanks at normal water level and air pressure and measure air pressure drop, which shall not exceed 1½ psi (0.1 bar) in 24 hours.

Tests

All piping hydrostatically tested at ____ psi (____ bar) for ____ hours | If no, state reason

Dry piping pneumatically tested ❑ Yes ❑ No

Equipment operates properly ❑ Yes ❑ No

Do you certify as the sprinkler contractor that additives and corrosive chemicals, sodium silicate or derivatives of sodium silicate, brine, or other corrosive chemicals were not used for testing systems or stopping leaks? ❑ Yes ❑ No

Drain test | Reading of gauge located near water supply test connection: ____ psi (____ bar) | Residual pressure with valve in test connection open wide: ____ psi (____ bar)

Underground mains and lead-in connections to system risers flushed before connection made to sprinkler piping

Verified by copy of the Contractor's Material and Test Certificate for Underground Piping. ❑ Yes ❑ No | Other | Explain

Flushed by installer of underground sprinkler piping ❑ Yes ❑ No

If powder-driven fasteners are used in concrete, has representative sample testing been satisfactorily completed? ❑ Yes ❑ No | If no, explain

Blank testing gaskets

Number used	Locations	Number removed

Welding

Welding piping ❑ Yes ❑ No

If yes . . .

Do you certify as the sprinkler contractor that welding procedures used complied with the minimum requirements of AWS B2.1, ASME Section IX *Welding and Brazing Qualifications*, or other applicable qualification standard as required by the AHJ? ❑ Yes ❑ No

Do you certify that all welding was performed by welders or welding operators qualified in accordance with the minimum requirements of AWS B2.1, ASME Section IX *Welding and Brazing Qualifications*, or other applicable qualification standard as required by the AHJ? ❑ Yes ❑ No

Do you certify that the welding was conducted in compliance with a documented quality control procedure to ensure that (1) all discs are retrieved; (2) that openings in piping are smooth, that slag and other welding residue are removed; (3) the internal diameters of piping are not penetrated; (4) completed welds are free from cracks, incomplete fusion, surface porosity greater than 1⁄16 in. (1.6 mm) diameter, undercut deeper than the lesser of 25% of the wall thickness or 1⁄32 in. (0.8 mm); and (5) completed circumferential butt weld reinforcement does not exceed 3⁄32 in. (2.4 mm)? ❑ Yes ❑ No

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Cutouts (discs)

Do you certify that you have a control feature to ensure that all cutouts (discs) are retrieved? ❑ Yes ❑ No

Hydraulic data nameplate

Nameplate provided ❑ Yes ❑ No | If no, explain

Sprinkler contractor removed all caps and straps? ❑ Yes ❑ No

Remarks

Date left in service with all control valves open

Signatures

Name of sprinkler contractor

Tests witnessed by

The property owner or their authorized agent (signed)	Title	Date
For sprinkler contractor (signed)	Title	Date

Additional explanations and notes

 NFPA 13 (p. 3 of 3)

Statement of Problem and Substantiation for Public Input

There is no indication on the form for system modifications or additions. The subsequent forms will cause confusion and will not indicated the scope of work completed.

Submitter Information Verification

Submitter Full Name:	Thomas Wellen
Organization:	American Fire Sprinkler Association
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Sun Jun 26 14:36:41 EDT 2016

Public Input No. 45-NFPA 13-2016 [Section No. 25.1]

25.1 Approval of Sprinkler Systems and Private Fire Service Mains.

The installing contractor shall do the following:

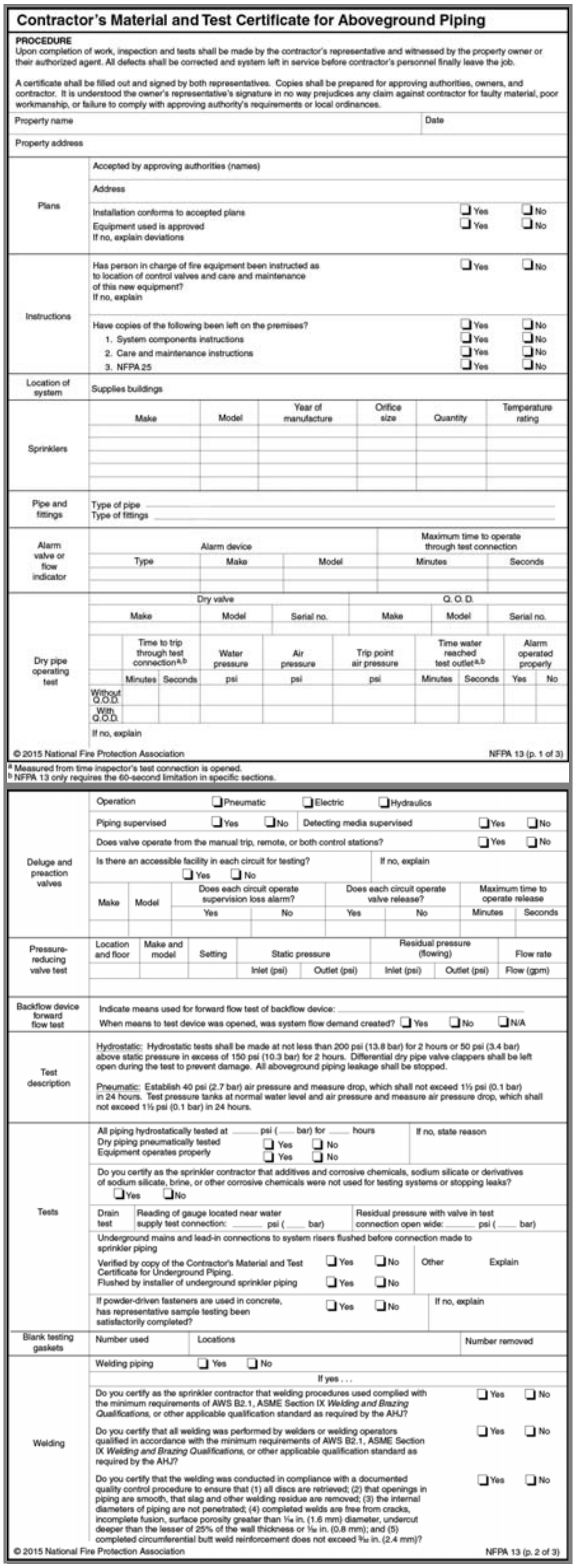
(1) Notify the authority having jurisdiction and the property owner or the property owner's authorized representative of the time and date testing will be performed

(2) Perform all required acceptance tests *(see Section 25.2)*

(3) Complete and sign the appropriate contractor's material and test certificate(s) *(see Figure 25.1)*

(4) Remove all caps and straps prior to placing the sprinkler system in service

Figure 25.1 Contractor's Material and Test Certificate for Aboveground Piping.



Contractor's Material and Test Certificate for Aboveground Piping

PROCEDURE

Upon completion of work, inspection and tests shall be made by the contractor's representative and witnessed by the property owner or their authorized agent. All defects shall be corrected and system left in service before contractor's personnel finally leave the job.

A certificate shall be filled out and signed by both representatives. Copies shall be prepared for approving authorities, owners, and contractor. It is understood the owner's representative's signature in no way prejudices any claim against contractor for faulty material, poor workmanship, or failure to comply with approving authority's requirements or local ordinances.

Property name | Date

Property address

Plans
Accepted by approving authorities (names)
Address
Installation conforms to accepted plans ❑ Yes ❑ No
Equipment used is approved ❑ Yes ❑ No
If no, explain deviations

Instructions
Has person in charge of fire equipment been instructed as to location of control valves and care and maintenance of this new equipment? ❑ Yes ❑ No
If no, explain
Have copies of the following been left on the premises? ❑ Yes ❑ No
1. System components instructions ❑ Yes ❑ No
2. Care and maintenance instructions ❑ Yes ❑ No
3. NFPA 25 ❑ Yes ❑ No

Location of system
Supplies buildings

Sprinklers

Make	Model	Year of manufacture	Orifice size	Quantity	Temperature rating

Pipe and fittings
Type of pipe
Type of fittings

Alarm valve or flow indicator

Alarm device			Maximum time to operate through test connection	
Type	Make	Model	Minutes	Seconds

Dry pipe operating test

Dry valve			Q. O. D.		
Make	Model	Serial no.	Make	Model	Serial no.

	Time to trip through test connection[a,b]		Water pressure	Air pressure	Trip point air pressure	Time water reached test outlet[a,b]		Alarm operated properly	
	Minutes	Seconds	psi	psi	psi	Minutes	Seconds	Yes	No
Without Q.O.D.									
With Q.O.D.									

If no, explain

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[a] Measured from time inspector's test connection is opened.
[b] NFPA 13 only requires the 60-second limitation in specific sections.

Deluge and preaction valves
Operation ❑ Pneumatic ❑ Electric ❑ Hydraulics
Piping supervised ❑ Yes ❑ No Detecting media supervised ❑ Yes ❑ No
Does valve operate from the manual trip, remote, or both control stations? ❑ Yes ❑ No
Is there an accessible facility in each circuit for testing? ❑ Yes ❑ No If no, explain

Make	Model	Does each circuit operate supervision loss alarm?		Does each circuit operate valve release?		Maximum time to operate release	
		Yes	No	Yes	No	Minutes	Seconds

Pressure-reducing valve test

Location and floor	Make and model	Setting	Static pressure		Residual pressure (flowing)		Flow rate
			Inlet (psi)	Outlet (psi)	Inlet (psi)	Outlet (psi)	Flow (gpm)

Backflow device forward flow test
Indicate means used for forward flow test of backflow device:
When means to test device was opened, was system flow demand created? ❑ Yes ❑ No ❑ N/A

Test description
Hydrostatic: Hydrostatic tests shall be made at not less than 200 psi (13.8 bar) for 2 hours or 50 psi (3.4 bar) above static pressure in excess of 150 psi (10.3 bar) for 2 hours. Differential dry pipe valve clappers shall be left open during the test to prevent damage. All aboveground piping leakage shall be stopped.

Pneumatic: Establish 40 psi (2.7 bar) air pressure and measure drop, which shall not exceed 1½ psi (0.1 bar) in 24 hours. Test pressure tanks at normal water level and air pressure and measure air pressure drop, which shall not exceed 1½ psi (0.1 bar) in 24 hours.

Tests
All piping hydrostatically tested at ____ psi (____ bar) for ____ hours
Dry piping pneumatically tested ❑ Yes ❑ No
Equipment operates properly ❑ Yes ❑ No
If no, state reason
Do you certify as the sprinkler contractor that additives and corrosive chemicals, sodium silicate or derivatives of sodium silicate, brine, or other corrosive chemicals were not used for testing systems or stopping leaks? ❑ Yes ❑ No
Drain test: Reading of gauge located near water supply test connection: ____ psi (____ bar) | Residual pressure with valve in test connection open wide: ____ psi (____ bar)
Underground mains and lead-in connections to system risers flushed before connection made to sprinkler piping
Verified by copy of the Contractor's Material and Test Certificate for Underground Piping. ❑ Yes ❑ No
Flushed by installer of underground sprinkler piping ❑ Yes ❑ No
Other Explain
If powder-driven fasteners are used in concrete, has representative sample testing been satisfactorily completed? ❑ Yes ❑ No If no, explain

Blank testing gaskets
Number used | Locations | Number removed

Welding
Welding piping ❑ Yes ❑ No
If yes . . .
Do you certify as the sprinkler contractor that welding procedures used complied with the minimum requirements of AWS B2.1, ASME Section IX *Welding and Brazing Qualifications*, or other applicable qualification standard as required by the AHJ? ❑ Yes ❑ No
Do you certify that all welding was performed by welders or welding operators qualified in accordance with the minimum requirements of AWS B2.1, ASME Section IX *Welding and Brazing Qualifications*, or other applicable qualification standard as required by the AHJ? ❑ Yes ❑ No
Do you certify that the welding was conducted in compliance with a documented quality control procedure to ensure that (1) all discs are retrieved; (2) that openings in piping are smooth, that slag and other welding residue are removed; (3) the internal diameters of piping are not penetrated; (4) completed welds are free from cracks, incomplete fusion, surface porosity greater than 1⁄16 in. (1.6 mm) diameter, undercut deeper than the lesser of 25% of the wall thickness or 1⁄32 in. (0.8 mm); and (5) completed circumferential butt weld reinforcement does not exceed 3⁄32 in. (2.4 mm)? ❑ Yes ❑ No

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Cutouts (discs)	Do you certify that you have a control feature to ensure that all cutouts (discs) are retrieved? ❑ Yes ❑ No		
Hydraulic data nameplate	Nameplate provided ❑ Yes ❑ No	If no, explain	
Sprinkler contractor removed all caps and straps? ❑ Yes ❑ No			
Remarks	Date left in service with all control valves open		
Signatures	Name of sprinkler contractor		
	Tests witnessed by		
	The property owner or their authorized agent (signed)	Title	Date
	For sprinkler contractor (signed)	Title	Date
Additional explanations and notes			

 NFPA 13 (p. 3 of 3)

Statement of Problem and Substantiation for Public Input

Change the test certificate to state "Have copies of the following been provided to the owner or owner's representative". Currently it states Have copies of the following been left on the premises.
Several AHJ's in South Florida have been requiring a copy of NFPA 25 to be left in each building on apartment complexes.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Sun Feb 14 15:42:01 EST 2016

Public Input No. 434-NFPA 13-2016 [New Section after 25.2.1.3]

TITLE OF NEW CONTENT

25.2.1.3.1

The requirements of 8.16.4.1 shall not apply to hydrostatic testing.

Statement of Problem and Substantiation for Public Input

The requirements for freeze protection are not intended to apply during the installation and testing of a wet-pipe system. However, some local fire marshals prohibit testing systems with water when outside temperatures are below 40 degrees and permanent heat is not present. Section 25.2.1.3 allows testing with air but does not address the issue entirely since the various prescriptions for freeze protection are not intended to apply to a system under construction.

Submitter Information Verification

Submitter Full Name: Jason Gill
Organization: Fire & Life Safety America
Affilliation: AFSA
Street Address:
City:
State:
Zip:

Submittal Date: Mon Jun 27 23:39:50 EDT 2016

Public Input No. 265-NFPA 13-2016 [New Section after 25.2.2]

TITLE OF NEW CONTENT

Type your content here ...

New 25.2.2.3 Pipe or tube specifically investigated for suitability in Dry Pipe and Double Interlock Preaction System(s) and listed for this service, shall be permitted to be tested in accordance with their listing limitations.

Statement of Problem and Substantiation for Public Input

CPVC is currently listed for use in Dry Pipe Systems, but cannot be used when pressures exceed 15 psi. This changes provides a listed alternative to the 40 psi leakage test.

Submitter Information Verification

Submitter Full Name: Mark Fessenden

Organization: Tyco Fire Protection Products

Street Address:

City:

State:

Zip:

Submittal Date: Thu Jun 23 14:38:53 EDT 2016

Public Input No. 418-NFPA 13-2016 [Section No. 25.2.2.2]

25.2.2.2

Where systems are installed in spaces that are capable of being operated at temperatures below 32°F (0°C), air or nitrogen gas pressure leakage tests required in 25.2.2 shall be conducted at the lowest nominal temperature of the space.

Delete 25.2.2 in it entirety.

Statement of Problem and Substantiation for Public Input

Almost all dry pipe systems and some double-interlocked systems are installed in areas that are normally below 32 degrees F in the winter. However, most of these are installed in a time when temperatures are much warmer. This allows for proper hydrostatic testing and other items. While I understand the intent of this requirement, it does not make practical sense in most applications. This requirement needs to be deleted unless it can be modifies or moved to the annex.

Submitter Information Verification

Submitter Full Name: John Denhardt

Organization: Strickland Fire Protection In

Affilliation: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 27 18:00:14 EDT 2016

Public Input No. 467-NFPA 13-2016 [New Section after 25.2.3.3.2]

TITLE OF NEW CONTENT

Type your content here ...25.2.3.3.3 Double Interlock Preaction Systems shall calculate for water delivery in accordance with section 7.3.2.3

Statement of Problem and Substantiation for Public Input

Addresses the difference between double and single interlock Preaction System delivery testing

Submitter Information Verification

Submitter Full Name: James Fantauzzi
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Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 10:04:40 EDT 2016

Public Input No. 353-NFPA 13-2016 [Section No. 25.2.4.1]

25.2.4.1

Each pressure-reducing valve shall be tested upon completion of installation to ensure proper operation under full flow and no-flow conditions.

Statement of Problem and Substantiation for Public Input

NFPA 25 - 13.5.1.2 states a full flow test shall be conducted on each valve at the 5 year interval mark. This proposal would have the NFPA 13 language line up with the NFPA 25 language.

Submitter Information Verification

Submitter Full Name: Ahmed Saleh

Organization: Victaulic Company of America

Street Address:

City:

State:

Zip:

Submittal Date: Fri Jun 24 09:44:55 EDT 2016

Public Input No. 364-NFPA 13-2016 [Section No. 25.2.4.4]

25.2.4.4

The results shall include the static and residual inlet pressures, static and residual outlet pressures, and the minimum (15gpm) and maximum flow rate.

Statement of Problem and Substantiation for Public Input

This is to ensure that the pressure reducing valve will operate at both ends of the flow requirements.

Submitter Information Verification

Submitter Full Name: Daniel Wake

Organization: Victaulic Company of America

Street Address:

City:

State:

Zip:

Submittal Date: Fri Jun 24 15:46:00 EDT 2016

Public Input No. 414-NFPA 13-2016 [New Section after 25.2.6]

25.3 Automated Inspection and Testing Devices and Equipment*

25.3.1 Automated inspection and testing devices and equipment installed on the sprinkler system shall be tested to ensure the desired result of the automated inspection or test is realized.

25.3.1.1 Automated inspection devices and equipment shall prove to be as effective as a visual examination.

25.3.1.2 Automated testing devices and equipment shall produce the same action required by this standard to test a device.

25.3.1.2.1 The testing shall discharge water where required by this standard and NFPA 25.

25.3.2 Failure of automated inspection and testing devices and equipment shall not impair the operation of the system unless indicated by an audible and visual trouble signal in accordance with NFPA 72.

25.3.3 Failure of a system or component to pass automated inspection and testing devices and equipment shall result in an audible and visual trouble signal in accordance with NFPA 72.

25.3.4 Failure of automated inspection and testing devices and equipment shall result in an audible and visual trouble signal in accordance with NFPA 72.

Statement of Problem and Substantiation for Public Input

Technology now allows for automated inspection and testing of systems and components. When the devices and equipment are installed for that purpose, they need to be tested to make sure they provide the desired result for future inspections and tests. NFPA 25 has language describing how the device or equipment can be used and their limitations as they apply to the periodic testing of systems and components. NFPA 13 needs to provide the original acceptance test criteria for these devices and equipment.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 411-NFPA 13-2016 [New Section after 3.3.2]	
Public Input No. 412-NFPA 13-2016 [New Section after 3.3.7]	
Public Input No. 413-NFPA 13-2016 [Section No. 6.1.1.5]	

Submitter Information Verification

Submitter Full Name: Terry Victor
Organization: Tyco Simplex Grinnell
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 27 16:41:10 EDT 2016

Public Input No. 48-NFPA 13-2016 [Section No. 25.3]

~~25.3 Circulating Closed Loop Systems.~~

~~25.3.1~~

~~For sprinkler systems with non–fire protection connections, additional information shall be appended to the contractor's material and test certificate for aboveground piping shown in Figure 25.1 as follows:~~

(1) ~~Certification that all auxiliary devices, such as heat pumps, circulating pumps, heat exchangers, radiators, and luminaires, if a part of the system, have a pressure rating of at least 175 psi or 300 psi (12.1 bar or 20.7 bar) if exposed to pressures greater than 175 psi (12.1 bar).~~

(2) ~~All components of sprinkler system and auxiliary system have been pressure tested as a composite system in accordance with 25.2.2 .~~

(3) ~~Waterflow tests have been conducted and waterflow alarms have operated while auxiliary equipment is in each of the possible modes of operation.~~

(4) ~~With auxiliary equipment tested in each possible mode of operation and with no flow from sprinklers or test connection, waterflow alarm signals did not operate.~~

(5) ~~Excess temperature controls for shutting down the auxiliary system have been properly field tested.~~

~~25.3.2~~

~~Discharge tests of sprinkler systems with non–fire protection connections shall be conducted using system test connections described in 6.8.1 .~~

~~25.3.3~~

~~Pressure gauges shall be installed at critical points and readings shall be taken under various modes of auxiliary equipment operation.~~

~~25.3.4~~

~~Waterflow alarm signals shall be responsive to discharge of water through system test pipes while auxiliary equipment is in each of the possible modes of operation.~~

Statement of Problem and Substantiation for Public Input

Circulating Closed loops have been removed from NFPA 13. This language no longer applies to new installations.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Thu Feb 18 09:52:06 EST 2016

Public Input No. 384-NFPA 13-2016 [Section No. 25.4]

25.4 Instructions.

The installing contractor shall provide the property owner or the property owner's authorized representative with the following:

(1) All literature and instructions provided by the manufacturer describing proper operation and maintenance of any equipment and devices installed

(2) NFPA 25*

Add new annex A.25.4(2):

A copy of NFPA 25 is not required for system alterations or additons.

Statement of Problem and Substantiation for Public Input

The standard does not differentiate between a new installation and a system alteration. Per the standard, a copy of NFPA 25 would have to be supplied each time the system is modified.

Submitter Information Verification

Submitter Full Name: Thomas Wellen
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Sun Jun 26 14:25:04 EDT 2016

Public Input No. 476-NFPA 13-2016 [Section No. 25.5]

25.5 * _ Hydraulic Design Information Sign. (Hydraulic Data Nameplate)

25.5.1

The installing contractor shall identify a hydraulically designed sprinkler system with a permanently marked weatherproof metal or rigid plastic sign secured with corrosion-resistant wire, chain, or other approved means. Such signs shall be placed at the alarm valve, dry pipe valve, preaction valve, or deluge valve supplying the corresponding hydraulically designed area.

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

Statement of Problem and Substantiation for Public Input

In chapter 25 this is referred to as the Hydraulic Design Information Sign. In other parts of the document it is referred to as a hydraulic data nameplate. The standard needs to be consistent.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 11:52:18 EDT 2016

Public Input No. 492-NFPA 13-2016 [Section No. 25.5.1]

25.5.1

~~The~~ For hydraulically designed sprinkler systems, the installing contractor shall identify ~~a hydraulically designed sprinkler system~~ each design area with a permanently marked weatherproof metal or rigid plastic sign secured with corrosion-resistant wire, chain, or other approved means. Such signs shall be placed at the alarm valve, dry pipe valve, preaction valve, or deluge valve supplying the corresponding hydraulically designed area(s) .

Statement of Problem and Substantiation for Public Input

This proposal is intended to clarify the intent of this section. The current language can lead to the assumption that only a single sign is required, or that the single most demanding design area needs to be represented with a sign. The purpose of the hydraulic design information sign is to aid in system examination after final acceptance, so adding this language helps clarify the intent. A lower hazard area, with reduced pipe sizing and design densities, may incur a change of use, and having a calc sign for each design area is important when verifying the adequacy of the system.

Submitter Information Verification

Submitter Full Name: Chase Browning

Organization: Medford Fire Rescue, Medford, Oregon2

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 14:36:37 EDT 2016

Public Input No. 579-NFPA 13-2016 [Section No. 25.5.1]

25.5.1

The installing contractor shall identify a hydraulically designed sprinkler system with a ~~permanently marked~~ machine-engraved weatherproof metal or rigid plastic sign with capitalized lettering a minimum 14 point (1/4 inch high) in Arial or similar font secured to the riser it serves with corrosion-resistant wire, chain, or other means approved ~~means~~ by the authority having jurisdiction . Such signs shall be placed at the alarm valve, dry pipe valve, preaction valve, or deluge valve supplying the corresponding hydraulically designed area. Signs located at teh system control riser shall be allowed to be combined withthe general information sign described in 25.6.

Statement of Problem and Substantiation for Public Input

This is not only required, but extremely important information for field inspection personnel to have while conducting inspections. This is in a sense the birth certificate of the sprinkler system and gives the Inspector immediate knowledge of what the sprinkler system is capable of producing. Rather than do research after the fact and leave a hazard for any period of time, an Inspector will have a very good general idea of how high storage can be within a building as well as what type(s) of commodities can be properly protected and to what height. It is essential that this permanent record be just that and remain permanently on the property and always be legible. For years, these plates have been installed as a sticker using permanent marker or a metal plate using a scribing tool. The areas where these signs are hung are generally dusty and/or exposed to the extreme heat or cold. Our findings have shown that permanent marker is good for less than five (5) years when these are regularly exposed to these conditions. Two other problems are consistently noted with these plates being installed with permanent marker or a scribing tool. The first deals with those written in permanent marker. Not everyone prints well and the information required often cannot be written small and legibly enough with a permanent marker or a scribing tool to make the information permanently readable. The same applies to the scribing tools as well as the fact that most scribing tools etch very thin lines that again are not readable. People often make mistakes with these also which leads to other issues with their readability.

Submitter Information Verification

Submitter Full Name: Lynn Nielson
Organization: City Of Henderson
Affilliation: Self
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 13:15:18 EDT 2016

Public Input No. 51-NFPA 13-2016 [New Section after 25.5.2]

25.5.3

Where pipe sizes are based on a calculation for a single floor in a multi-story building, a single hydraulic design information sign shall be acceptable.

Statement of Problem and Substantiation for Public Input

On multi-story buildings with typical floors, it is common practice to calculate the highest typical floor and provide a single data plate for that calculation. Providing calculations and signs for every floor is overkill.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Thu Feb 18 10:04:41 EST 2016

Public Input No. 52-NFPA 13-2016 [New Section after 25.5.2]

25.5.4

In buildings with sprinkler systems supplied by a fire pump, it shall be acceptable to place the hydraulic design information signs in the pump room.

Statement of Problem and Substantiation for Public Input

This is a logical place to locate the hydraulic Design Information Signs and is common practice, especially as many calculations are provided to the discharge of the pump

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Thu Feb 18 10:09:44 EST 2016

Public Input No. 182-NFPA 13-2016 [Section No. 25.5.2]

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) Remote sprinkler's K factor and hydraulically calculated minimum protection area or end head pressure.

Statement of Problem and Substantiation for Public Input

This information is needed when performing modification or tenant improvements on existing sprinkler systems. Without this information an AHJ or anyone else has no way of knowing what existing system is capable of adequately supporting. Just because sprinklers in a light hazard are CAN have a protection area up to 225 sqft or ordinary hazard sprinklers CAN have a protection area up 130 sqft does not mean that an existing system was ever designed with the capacity to meet the hydraulic requirements of the maximum allowable protection areas within NFPA 13.

Submitter Information Verification

Submitter Full Name: John Deutsch
Organization: VFS Fire & Security Services
Street Address:
City:
State:
Zip:
Submittal Date: Sat Jun 04 15:31:58 EDT 2016

Public Input No. 183-NFPA 13-2016 [Section No. 25.5.2]

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 point of connection to the water supply.

(8) The available water supply static pressure, residual pressure and flow or other information used in the hydraulic calculations.

Statement of Problem and Substantiation for Public Input

This information is needed when maintenance on existing systems to determine if the water supply has changed or when performing modification or tenant improvements on existing sprinkler systems. Without this information an AHJ or anyone else has no way of knowing what existing system is was designed to. Just seeing what was required at the base or riser and what static pressure is on a gauge at the riser does not provide evidence that a system can still provide the protection that it was originally designed to have. The requirement to have flow test data is currently required by the general information sign section 25.6.2 (9) but the enforcement of the installation of this signs is not always being done whereas installation of the hydraulic design information signs usually is enforced.

Submitter Information Verification

Submitter Full Name: John Deutsch

Organization: VFS Fire & Security Services

Street Address:

City:

State:

Zip:

Submittal Date: Sat Jun 04 15:33:01 EDT 2016

Public Input No. 53-NFPA 13-2016 [Section No. 25.5.2]

25.5.2

The sign shall include the following information:

(1) Location of the design area or areas

(2) _ The size (area) of or number of sprinklers in the design area

(3) Discharge densities over the design area or areas

(4) Required flow and residual pressure demand at the base of the riser or fire pump where applicable

(5) Occupancy classification or commodity classification and maximum permitted storage height and configuration

(6) Hose stream allowance included in addition to the sprinkler demand

(7) The name of the installing contractor

Statement of Problem and Substantiation for Public Input

This is some basic information that should be included on the sign

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Thu Feb 18 11:03:22 EST 2016

Public Input No. 365-NFPA 13-2016 [New Section after 25.6]

25.6.3

Combination hydraulic design information and general information are permitted.

Statement of Problem and Substantiation for Public Input

There should be allowance to combine both data signs into one.

Submitter Information Verification

Submitter Full Name: Daniel Wake

Organization: Victaulic Company of America

Street Address:

City:

State:

Zip:

Submittal Date: Fri Jun 24 15:51:12 EDT 2016

Public Input No. 580-NFPA 13-2016 [Sections 25.6.1.1, 25.6.1.2]

Sections 25.6.1.1, 25.6.1.2

25.6.1.1

Such general information shall be provided with a ~~permanently marked~~ machine-engraved weatherproof metal or rigid plastic sign with capitalized lettering a minimum 14 point (1/4 inch high) in Arial or similar font , secured with corrosion-resistant wire, chain, or other acceptable means.

25.6.1.2

Such signs shall be placed at each system control riser, antifreeze loop, and auxiliary system control valve. Signs located at the system control riser shall be allowed to be combined with the Hydraulic Design Information Sign described in 25.5.

Statement of Problem and Substantiation for Public Input

This is a companion to the amendment for 25.5. The purpose of this amendment is to make the sign permanent to facilitate use in future years. In addition, this amendment allows for the two signs to be combined, where applicable.

Submitter Information Verification

Submitter Full Name: Lynn Nielson

Organization: City Of Henderson

Affilliation: Self

Street Address:

City:

State:

Zip:

Submittal Date: Wed Jun 29 13:20:31 EDT 2016

Public Input No. 545-NFPA 13-2016 [Section No. 26.1.3]

26.1.3

The following definitions shall be applicable to this chapter *(see Section 3.10)*:

(1) *A-Class Boundary* — A boundary designed to resist the passage of smoke and flame for 1 hour when tested in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Material*

(2) or ANSI/UL 263 Fire Tests of Building Construction Materials .

(3) *B-Class Boundary* — A boundary designed to resist the passage of flame for 1/2 hour when tested in accordance with ASTM E119

(4) or ANSI/UL 263 Fire Tests of Building Construction Materials .

(5) *Central Safety Station* — A continuously manned control station from which all of the fire control equipment is monitored. If this station is not the bridge, direct communication with the bridge shall be provided by means other than the ship's service telephone.

(6) * *Heat-Sensitive Material* — A material whose melting point is below 1700°F (925°C).

(7) *Heel* — The inclination of a ship to one side.

(8) *Heel Angle* — The angle defined by the intersection of a vertical line through the center of a vessel and a line perpendicular to the surface of the water.

(9) *International Shore Connection* — A universal connection to the vessel's fire main to which a shoreside fire-fighting water supply can be connected.

(10)* *Marine System* — A sprinkler system installed on a ship, boat, or other floating structure that takes its supply from the water on which the vessel floats.

(11)* *Marine Thermal Barrier* — An assembly that is constructed of noncombustible materials and made intact with the main structure of the vessel, such as shell, structural bulkheads, and decks. A marine thermal barrier shall meet the requirements of a B-Class boundary. In addition, a marine thermal barrier shall be insulated such that, if tested in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*

(12) or ANSI/UL 263 Fire Tests of Building Construction Materials , for 15 minutes, the average temperature of the unexposed side does not rise more than 250°F (120°C) above the original temperature, nor does the temperature at any one point, including any joint, rise more than 405°F (205°C) above the original temperature.

(13) *Supervision* — A visual and audible alarm signal given at the central safety station to indicate when the system is in operation or when a condition that would impair the satisfactory operation of the system exists. Supervisory alarms shall give a distinct indication for each individual system component that is monitored.

(14) *Survival Angle* — The maximum angle to which a vessel is permitted to heel after the assumed damage required by stability regulations is imposed.

(15) *Type 1 Stair* — A fully enclosed stair that serves all levels of a vessel in which persons can be employed.

(16) *Marine Water Supply* — The supply portion of the sprinkler system from the water pressure tank or the sea suction of the designated sprinkler system pump up to and including the valve that isolates the sprinkler system from these two water sources.

Statement of Problem and Substantiation for Public Input

Reason Statement: ASTM E 119 is a listed test referenced in Chapter 2. ANSI/UL 263 is a comparable test available for establishing fire resistance in building and construction materials and should also be listed as an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 540-NFPA 13-2016 [Section No. 2.3.8]	
Public Input No. 542-NFPA 13-2016 [Section No. 3.10.1]	
Public Input No. 541-NFPA 13-2016 [Section No. 3.3.25]	
Public Input No. 543-NFPA 13-2016 [Section No. 3.10.2]	
Public Input No. 544-NFPA 13-2016 [Section No. 3.10.9]	
Public Input No. 546-NFPA 13-2016 [Section No. A.3.10.4]	
Public Input No. 551-NFPA 13-2016 [Section No. A.26.1.3(4)]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
Organization: UL llc
Street Address:
City:
State:
Zip:
Submittal Date: Wed Jun 29 09:03:18 EDT 2016

Public Input No. 539-NFPA 13-2016 [New Section after A.1.1]

TITLE OF NEW CONTENT

A.1.1.2 Various codes and standards allow exceptions and reductions in building fire protection and other construction features when fire sprinkler systems are installed in accordance with NFPA standards. Only after appropriate analysis and evaluation of a tested mist system has been performed for the intended installation, and taking into consideration criteria other than solely firefighting performance, e.g. visibility, pressure ratings of backup systems, etc., should exceptions and reductions in building fire protection and other construction features be allowed by the AHJ. These systems are adequately described in NFPA 750.

Statement of Problem and Substantiation for Public Input

The annex text elaborates on the fact that fire sprinkler systems and water mist fire protection systems are different with different installation requirements and operating characteristics.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 96-NFPA 13-2016 [Section No. 1.1.2]	

Submitter Information Verification

Submitter Full Name:	Terry Victor
Organization:	Tyco Simplex Grinnell
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Wed Jun 29 08:10:47 EDT 2016

Public Input No. 7-NFPA 13-2015 [New Section after A.1.2]

A.1.5

It is the intent of the committee to recognize that future editions of this standard are a further refinement of this edition and earlier editions. The changes in future editions will reflect the continuing input of the fire protection community in its attempt to meet the purpose stated in this standard. Compliance with all requirements of a future edition could be considered as providing an equivalent level of system integrity and performance of the system.

Statement of Problem and Substantiation for Public Input

Many AHJ's will not recognize future editions. This annex note is intended to give guidance that use of an entire future edition of the standard could be considered an equivalency as allowed in 1.5. This language will be proposed to other sprinkler standards and has been accepted by NFPA 14 & NFPA 25.

Submitter Information Verification

Submitter Full Name: Peter Schwab
Organization: Wayne Automatic Fire Sprinkler
Street Address:
City:
State:
Zip:
Submittal Date: Tue Dec 22 10:29:28 EST 2015

Public Input No. 408-NFPA 13-2016 [New Section after A.1.6.3]

TITLE OF NEW CONTENT

A.1.7.2.1 Certain devices and equipment that may be used to perform inspection and testing procedures from a distant location are not integral to the system and don't affect system performance. Automated inspection and testing devices and equipment, such as a digital camera, may be in the riser room or attached to the system externally but are not an integral part of the system. Such devices do not need to be listed.

A.1.7.2.2 Certain devices and equipment that may be used to monitor system or component status from a distance are not integral to the system and don't affect system performance. Distance monitoring devices, such as an external thermometer, may be attached to the system externally and therefore are not subjected to system pressure. Such devices do not need to be listed.

Statement of Problem and Substantiation for Public Input

Technology now allows for monitoring certain conditions of a sprinkler system from a distance as well as automated inspection and testing procedures. When the device is external to the sprinkler system, doesn't enter the system piping and is not subject to system pressure there isn't a need to have it listed.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 405-NFPA 13-2016 [Section No. 1.7.2]	

Submitter Information Verification

Submitter Full Name: Terry Victor

Organization: Tyco Simplex Grinnell

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 27 16:15:40 EDT 2016

Public Input No. 270-NFPA 13-2016 [Section No. A.3.6.3.2]

A.3.6.3.2 Dry Sprinkler.

Under certain ambient conditions, wet pipe systems having dry pendent (or upright) sprinklers can freeze due to heat loss by conduction. Therefore, due consideration should be given to the amount of heat maintained in the heated space, the length of the ~~nipple~~ extension in the heated space, and other relevant factors.

Dry sprinklers are intended to extend into an unheated area from a wet pipe system or to be used on a dry pipe system.

Statement of Problem and Substantiation for Public Input

Nipple can be interpreted as a straight section of pipe.

Submitter Information Verification

Submitter Full Name: Brian Sloan
Organization: Victaulic
Street Address:
City:
State:
Zip:
Submittal Date: Thu Jun 23 15:24:35 EDT 2016

Public Input No. 403-NFPA 13-2016 [New Section after A.3.9.3.6]

A.3.9.3.6.1 Flue Space Maintenance . Keeping required Flue Spaces open in an operating warehouse is a challenging task for both management and forklift operators. Devices are available to assist in that effort. They typically fasten to the rack structure and provide physical barriers. See Figure A.3.9.3.6.1 (a) for a Longitudinal Flue Space device. See Figures A.3.9.3.6.1 (b) and (c) for Transverse Flue Space devices.

Figure A.3.9.3.6.1 (a) Figure A.3.9.3.6.1 (b) Figure A.3.9.3.6.1 (c)

Additional Proposed Changes

File Name	Description	Approved
PalletLongitudinal.JPG	Figure A.3.9.3.6.1 (a)	
PalletTranverse.jpg	Figure A.3.9.3.6.1 (b)	
PalletTransverseCenter.jpg	Figure A.3.9.3.6.1 (c)	

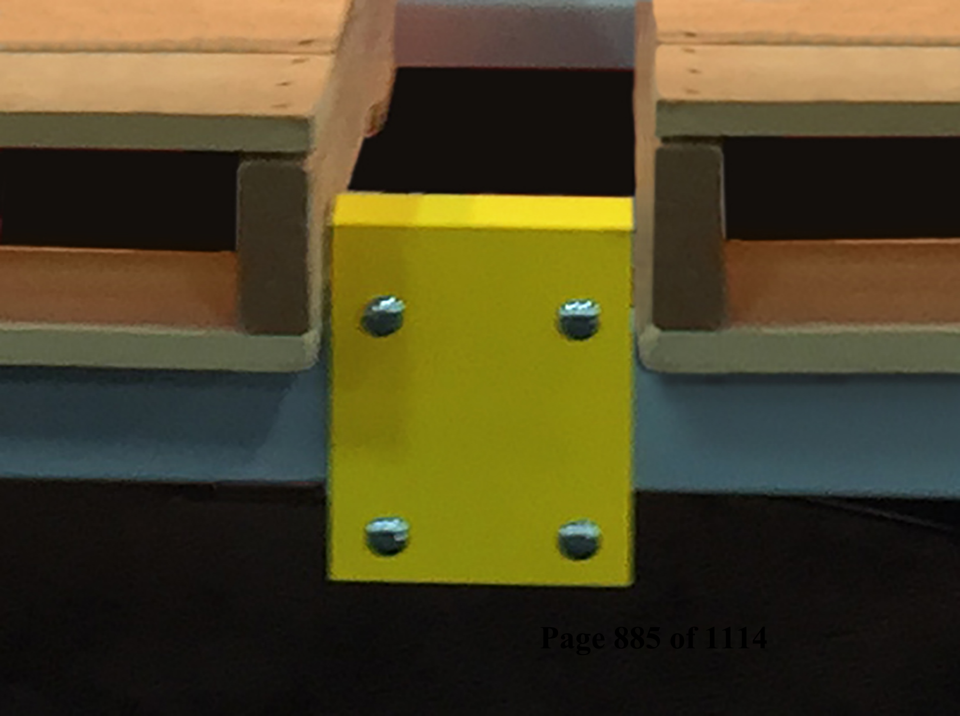
Statement of Problem and Substantiation for Public Input

Annex material to make users aware of products available in the marketplace to keep required flue spaces open.

Submitter Information Verification

Submitter Full Name: Gary Smith
Organization: DACS, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jun 27 14:29:24 EDT 2016


SKU #: 40122
PO: 35966-6231733
DESC:SWATTER,ELECTRONIC INSECT
QTY: 50 PCS
NW: 13 KGS
GW: 14 KGS
CUFT: 51X38X51.5 CM
DC:MORENO VALLEY,CA
C/NO:
MADE IN CHINA
SKU# 91200,SWIVEL BAR COUNTER STOOL
QTY : 1 PC
G.W : 6 KG
N.W : 5 KG
MEAS: 48X10X65 CM



Public Input No. 546-NFPA 13-2016 [Section No. A.3.10.4]

A.3.10.4 Heat-Sensitive Material.

The backbone of the fire protection philosophy for U.S. flagged vessels and passenger vessels that trade internationally is limiting a fire to the compartment of origin by passive means. Materials that do not withstand a 1-hour fire exposure when tested in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials* or ANSI/UL 263 Fire Tests of Building Construction Materials , are considered "heat sensitive."

Statement of Problem and Substantiation for Public Input

Reason Statement: ASTM E 119 is a listed test referenced in Chapter 2. ANSI/UL 263 is a comparable test available for establishing fire resistance in building and construction materials and should also be listed as an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 540-NFPA 13-2016 [Section No. 2.3.8]	
Public Input No. 541-NFPA 13-2016 [Section No. 3.3.25]	
Public Input No. 542-NFPA 13-2016 [Section No. 3.10.1]	
Public Input No. 543-NFPA 13-2016 [Section No. 3.10.2]	
Public Input No. 544-NFPA 13-2016 [Section No. 3.10.9]	
Public Input No. 545-NFPA 13-2016 [Section No. 26.1.3]	
Public Input No. 551-NFPA 13-2016 [Section No. A.26.1.3(4)]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
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Submittal Date: Wed Jun 29 09:09:58 EDT 2016

Public Input No. 547-NFPA 13-2016 [Section No. A.6.1.1]

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, supervisory switches, and electrically operated solenoid valves. 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*
	ANSI/UL 1486, Quick Opening Devices for Dry Pipe Valves for Fire Protection Service
	ANSI/UL 346, Waterflow Indicators for Fire Protective Signaling Systems
	FM 1042, *Waterflow Alarm Indicators (Vane Type)*
	FM 1045, *Waterflow Detector Check Valves*
	FM 1140, *Quick Opening Valves ¼ 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*
	UL 203A, Sway Brace Devices for Sprinkler System Piping
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*

Category	Standard
	FM 1631, *Adjustable and Fixed Sprinkler Fittings ½ 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*
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*
	UL 194, Gasketed Joints for Ductile-Iron Pipe and Fittings for Fire Protection Service
	FM 1620, *Pipe Joints and Anchor Fittings for Underground Fire Service Mains*

Statement of Problem and Substantiation for Public Input

Reason Statement: The proposed revisions provide updates to the list of standards in the Annex that are commonly used for Listing and are similar to some of the FM standards that are referenced.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 548-NFPA 13-2016 [Section No. F.1.2.17]	

Submitter Information Verification

Submitter Full Name: Kelly Nicolello
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Submittal Date: Wed Jun 29 09:13:20 EDT 2016

Public Input No. 604-NFPA 13-2016 [Section No. A.6.2.9.7.1]

A.6.2.9.7.1

The minimum information in the list contained in the spare sprinkler cabinet should be marked with the sprinkler identification described in 6.2.2; a general description of the sprinkler, including upright, pendent, residential, ESFR, and so forth; and the quantity of sprinklers that is to be maintained in the spare sprinkler cabinet.

An example of the list is shown in Figure A.6.2.9.7.1.

Figure A.6.2.9.7.1 Sample List.

Sprinklers Contained in this Cabinet			
Sprinkler Identification, SIN	General Description	Temperature Rating, °F	Sprinkler Quantity Maintained
TY9128	Extended Coverage, K-25, upright	155	6
VK425	Concealed pendent residential	145	6
Issued: 10/3/05	Revised:		

The Figure needs to be updated so as not to appear old. VK425 is an obsolete sprinkler. TY9128 has the wrong temperature rating. Update the date.

Statement of Problem and Substantiation for Public Input

The Figure is outdated and needs to be updated.

Submitter Information Verification

Submitter Full Name: John Denhardt
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Affilliation: American Fire Sprinkler Association
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Submittal Date: Wed Jun 29 16:50:53 EDT 2016

Public Input No. 424-NFPA 13-2016 [Section No. A.6.4.1]

A.6.4.1

Consideration of compatibility should be provided when connecting dissimilar materials.

Ductile Iron fittings that meet or exceeds ASTM B.16.3 should be permitted.

Statement of Problem and Substantiation for Public Input

Ductile iron fittings are part of usual and customary installations. Table 6.4.1 does not specifically include ductile iron fittings; however, these fittings may meet ASTM B.16.3 which is the refernce standard for malleable iron fittings. Ductile Iron fittings meeting B.16.2 should be permitted.

Submitter Information Verification

Submitter Full Name: Roland Asp

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Submittal Date: Mon Jun 27 21:51:23 EDT 2016

Public Input No. 613-NFPA 13-2016 [Section No. A.6.7.1]

A.6.7.1

The purpose of the fire department connection is to supplement the water supply . Upon arrival at the building, the fire department will connect to the FDC and pump into it to ensure there is adequate supply to the sprinkler system. In cases where the fire has progressed such that more than the required number of sprinkler have activated, the fire department should be able to supply additional water supply to control the fire while hose lines are deployed. This capability is essential not only for property protection, but also for fire fighter safety . ~~but not necessarily provide the entire sprinkler system demand. Fire department connections are not intended to deliver a specific volume of water.~~

Statement of Problem and Substantiation for Public Input

Current wording is contradictory. “Supplement” means “to add to”, or “to increase”. To say that the FDC is not intended to be capable of supplying the system demand or to not be capable of increasing the system demand defeats the purpose of having a FDC. If a sprinkler system in a warehouse is being overwhelmed by the fire, the fire department needs to be able to augment/supplement/increase the water supply to the system in order to any chance of controlling the fire.

Submitter Information Verification

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Submittal Date: Wed Jun 29 19:59:03 EDT 2016

Public Input No. 49-NFPA 13-2016 [Section No. A.6.9]

A.6.9

Table A.6.9 is a summary of the requirements for signs in NFPA 13.

Table A.6.9 Sprinkler System Signage Summary

Section	Sign Location	Sign Information/Requirements
6.7.4	Control valves Drain valves Test connection valves	Identification sign 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 Preaction valve	Number of low point drains 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 (10 bar)] Letters must be 1 in. (25 mm) in height
25.5	Alarm valve Dry pipe valve Preaction valve Deluge valve	Indicate the following: Location of the design area or areas Discharge densities over the design area or areas 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
25.6	System control riser Antifreeze loops Auxiliary systems	Indicate the following: Name and location of the facility 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. (450 mm × 450 mm) sign FDC symbol from NFPA 170 Located at connection in plain sight from shore access point
A.8.17.1	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

Removed Circulating Closed Loop from the 2nd box under sign location.

Submitter Information Verification

Submitter Full Name: Peter Schwab
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Submittal Date: Thu Feb 18 09:58:16 EST 2016

Public Input No. 57-NFPA 13-2016 [Section No. A.7.2.3.1]

~~A.7.2.3.1~~

~~The 60-second limit does not apply to dry systems with capacities of 500 gal (1900 L) or less, nor to dry systems with capacities of 750 gal (2850 L) or less if equipped with a quick-opening device.~~

Statement of Problem and Substantiation for Public Input

There is no need to repeat this language in the Annex. Sections 7.2.3.3 and 7.2.3.4 are more than adequate.

Submitter Information Verification

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Submittal Date: Tue Feb 23 09:10:31 EST 2016

Public Input No. 455-NFPA 13-2016 [New Section after A.7.2.6.3.2]

A.7.2.6.4.1

The connection from an air compressor to the dry pipe valve should be of a type recommended by the manufacturer and approved by the authority having jurisdiction, taking into consideration the pressures, temperatures and vibrations that the connection and adjacent equipment will endure.

Statement of Problem and Substantiation for Public Input

The connection from an air compressor to the dry pipe valve should be of a type recommended by the manufacturer and approved by the authority having jurisdiction, taking into consideration the pressures, temperatures and vibrations that the connection and adjacent equipment will endure.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 451-NFPA 13-2016 [Section No. 7.2.6.4.1]	

Submitter Information Verification

Submitter Full Name: Louis Guerrazzi

Organization: National Fire Sprinkler Association

Affilliation: NFSA Engineering and Standards Committee

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Submittal Date: Tue Jun 28 09:24:34 EDT 2016

Public Input No. 367-NFPA 13-2016 [Section No. A.7.6.3.6]

A.7.6.3.6

~~Systems larger than 40 gal (150 L) are~~ Systems are required by NFPA 25 ~~to check~~ to have the concentration levels checked at the supply inlet to the antifreeze system and at a remote point of the system.

Statement of Problem and Substantiation for Public Input

The current wording is erroneous. All systems are required to have a test connection at the inlet and one at the most remote portion of the system, at a minimum. There is no requirement for the number of test connections based on 40 gallon threshold.

Submitter Information Verification

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Submittal Date: Fri Jun 24 15:55:09 EDT 2016

Public Input No. 155-NFPA 13-2016 [Section No. A.7.8.2.5]

A.7.8.2.5 ~~—~~ 7 _

A major factor contributing to the introduction of moisture into the system piping is excessive air compressor operation caused by system leakage. Where excessive compressor operation is noted or ice accumulates in the air supply piping, the system should be checked for leakage and appropriate corrective action should be taken.

Statement of Problem and Substantiation for Public Input

Section 7.8.2.5 talks about a valve. This annex section does not apply to a valve. it applies to the air lines, which are in section 7.8.2.7, so this should be an annex note to 7.8.2.7. Note that the asterisk after section 7.8.2.5 should be removed if you renumber this text.

Submitter Information Verification

Submitter Full Name: Kenneth Isman
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Submittal Date: Wed May 25 16:45:19 EDT 2016

Public Input No. 156-NFPA 13-2016 [Section No. A.7.8.2.6]

A.7.8.2.6

The purpose of the check valve is to prevent evaporation of ~~prime~~ priming water into the system piping.

Statement of Problem and Substantiation for Public Input

There is no such term as "prime water"

Submitter Information Verification

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Submittal Date: Wed May 25 16:47:38 EDT 2016

Public Input No. 157-NFPA 13-2016 [Section No. A.7.8.2.7]

A.7.8.2.7.1.1

The dual lines feeding the system air entering the cold area are intended to facilitate continued service of the system when one line is removed for inspection. It should be noted that, when using a system as described in Figure A.7.8.2.4, differences in the pressures at gauge P1 and gauge P2 indicate blockage in the air supply line or other malfunctions.

Statement of Problem and Substantiation for Public Input

This annex note specifically refers to the two air lines, which are required by section 7.8.2.7.1.1, not section 7.8.2.7.

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Submittal Date: Wed May 25 16:48:35 EDT 2016

Public Input No. 202-NFPA 13-2016 [Section No. A.8.1.1(3)]

A.8.1.1(3)

Notwithstanding the obstruction rules provided in Chapter 8, it is not intended or expected that water ~~will fall on~~ must always directly spray onto the entire floor space of the occupancy.

When ~~obstructions or~~ architectural features interfere with the sprinkler's spray pattern, such as columns, angled walls, wing walls, slightly indented walls, and various soffit configurations, shadowed areas can occur. Where small shadowed areas are formed on the floor adjacent to their referenced architectural features, ~~these shadowed areas are~~ the perceived lack of sprinkler coverage is purely on paper and ~~do~~ does not take into account the dynamic variables of sprinkler discharge. While a specific 15 square foot limitation on shadow area per sprinkler is included in several of the sprinkler sections, it is understood that there may be cases where a greater allowance would be acceptable. For example, in some cases strict compliance with an obstruction rule results in a noticably larger area. Examples of shadow areas are shown in Figure A.8.1.1(3)(a) and Figure A.8.1.1(3)(b).

Figure A.8.1.1(3)(a) Shadow Area in Corridor.

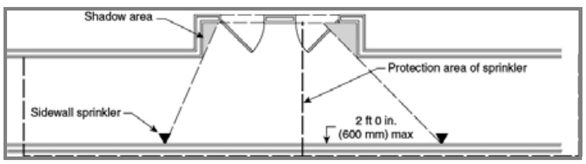
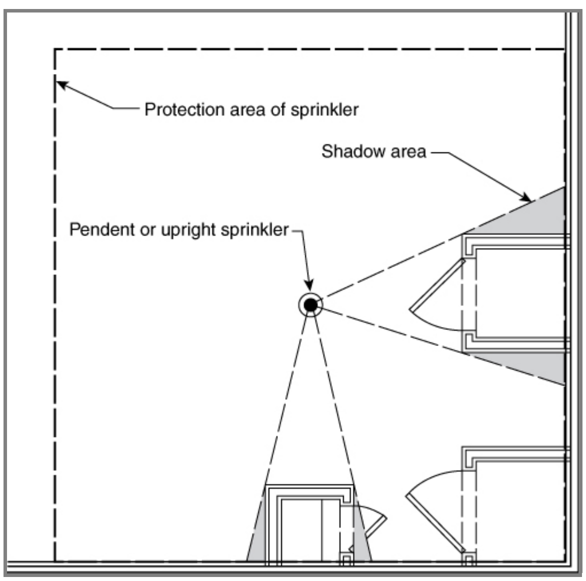


Figure A.8.1.1(3)(b) Example of Shadow Area.



Statement of Problem and Substantiation for Public Input

Attempts were made in the 2013 cycle to specify permissible "shadowing," similar to proposals that were made for NFPA 13D and NFPA 13R. The NFPA 13 technical committee rejected these proposals, based at least in part on an unwillingness to provide a specific area. Instead, language discussing the concept of shadowing was added to the Annex. While this added language indicates the committee opinion that some shadowing is acceptable, there are some AHJs that still believe that any amount of shadow is an issue. Accordingly, several proposals are made in this cycle to make it clearer that some shadowing is acceptable. This specific proposals modifies the Annex language for the following reasons:

1) Other than the word "obstructions" in the 2013 language, all other language in this section relates to architectural features. Obstructions are clearly addressed elsewhere in the standard, so it has been deleted in this section.

2) In the proposer's experience, AHJ concerns about shadowing relate to the water not spraying directly into the shadow. Accordingly, the first sentence is modified to specifically refer to that direct spray rather than "water falling."
3) The shadow areas are not "purely on paper" but are a physical reality when the AHJ walks into the space. However, the perceived areas of inadequate coverage are what is "on paper."
4) With the apparent committee concern last cycle about flexibility, wording is added that while a specific area limitation is indicated in the specific sprinkler sections it may be entirely appropriate to allow a larger shadow area in certain circumstances.

With the combination of an added definition of "shadow area," a specific acceptable area in the body of the standard and this modified Annex language the acceptability of shadowing is more strongly conveyed.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 195-NFPA 13-2016 [New Section after 3.3.20]	
Public Input No. 196-NFPA 13-2016 [New Section after 8.6.5.3.7]	
Public Input No. 197-NFPA 13-2016 [New Section after 8.7.5.3.3]	
Public Input No. 198-NFPA 13-2016 [New Section after 8.8.5.3.6]	
Public Input No. 199-NFPA 13-2016 [New Section after 8.9.5.3.3]	
Public Input No. 200-NFPA 13-2016 [New Section after 8.10.6.3.4]	
Public Input No. 201-NFPA 13-2016 [New Section after 8.10.7.3.6]	
Public Input No. 196-NFPA 13-2016 [New Section after 8.6.5.3.7]	

Submitter Information Verification

Submitter Full Name: Chris Born
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Submittal Date: Tue Jun 07 15:35:35 EDT 2016

Public Input No. 553-NFPA 13-2016 [New Section after A.8.3.2.5(1)]

A.Table 8.3.2.5(c)

Guidance for spacing around fireplaces

Additional Proposed Changes

File Name	Description	Approved
Fireplace2.pdf	These diagrams provide additional clarification.	

Statement of Problem and Substantiation for Public Input

The language provided in the table provides ambiguous information about spacing sprinklers with regard to fireplaces. These diagrams provide additional clarification. Alternatively, the Annex comment could be attached to 8.3.2.5(8).

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 550-NFPA 13-2016 [Section No. 8.3.2.5]	

Submitter Information Verification

Submitter Full Name: Robert Upson

Organization: National Fire Sprinkler Association

Affilliation: NFSA Engineering and Standards Committee

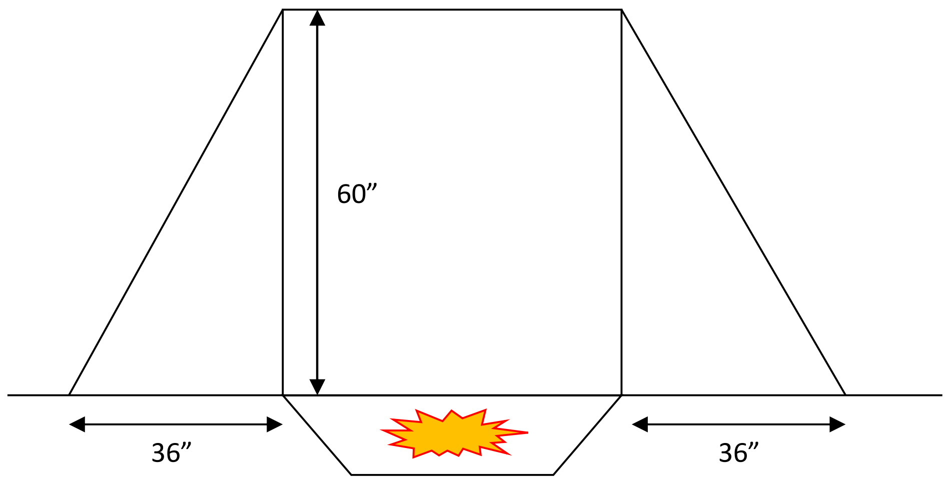
Street Address:

City:

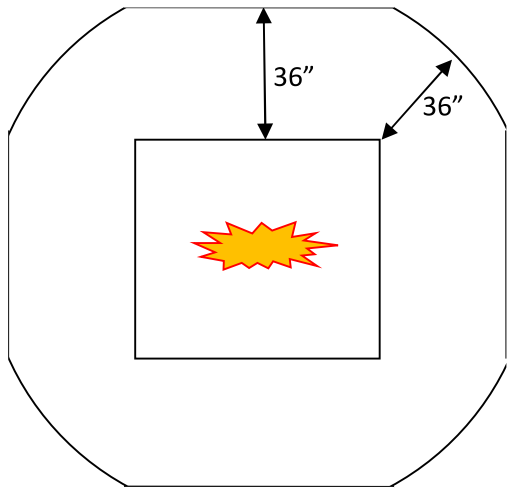
State:

Zip:

Submittal Date: Wed Jun 29 10:02:32 EDT 2016



Recessed Fireplace: 60” from open face, 36” from sides of opening



Open Fireplace: 36” from faces with radiused corners

Public Input No. 281-NFPA 13-2016 [New Section after A.8.4.9.1]

Figure A.8.4.9.1(c) Dry Sidewall Sprinkler Through Wall

Type your content here ...

Additional Proposed Changes

File Name	Description	Approved
Sidewall.JPG		

Statement of Problem and Substantiation for Public Input

This figure illustrates how to measure along the length of dry sidewall sprinkler.

Submitter Information Verification

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Organization: Victaulic

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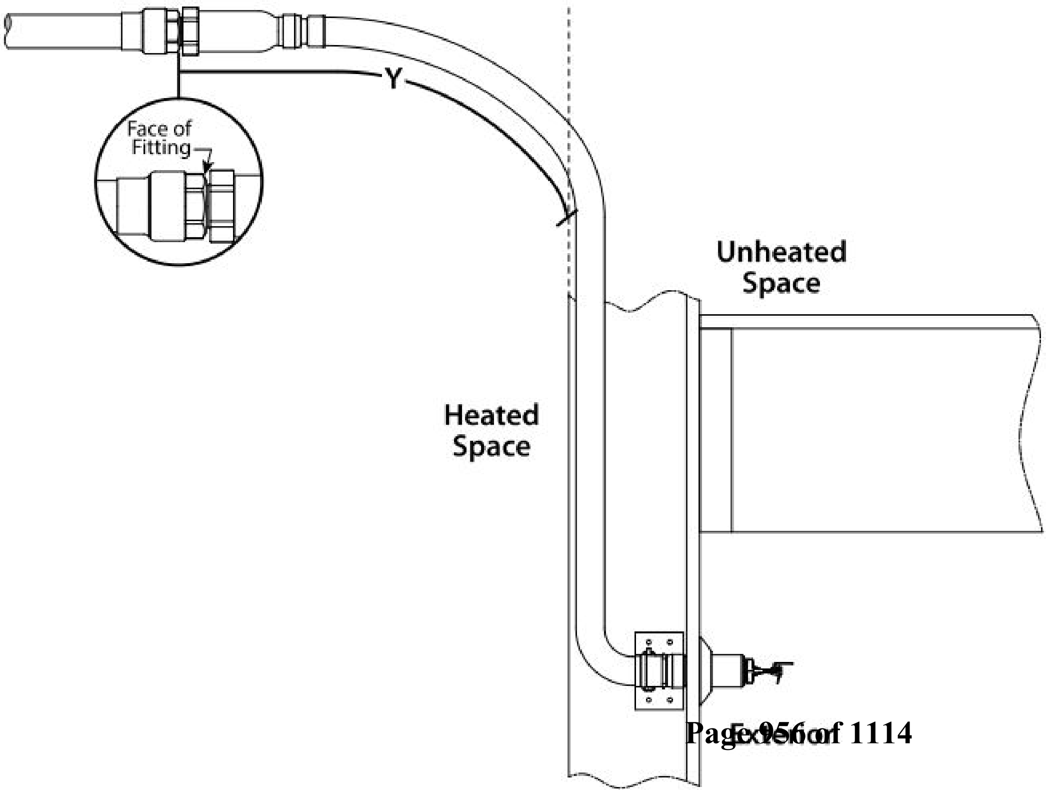
City:

State:

Zip:

Submittal Date: Thu Jun 23 15:55:09 EDT 2016


Face of
Fitting
Y
Unheated
Space
Heated
Space

Public Input No. 282-NFPA 13-2016 [New Section after A.8.4.9.1]

Figure A.8.4.9.1(d) Dry Pendent Sprinkler Through Ceiling

Type your content here ...

Additional Proposed Changes

File Name	Description	Approved
Pendent.JPG		

Statement of Problem and Substantiation for Public Input

This figure illustrates how to measure exposed length of a dry sprinkler installation.

Submitter Information Verification

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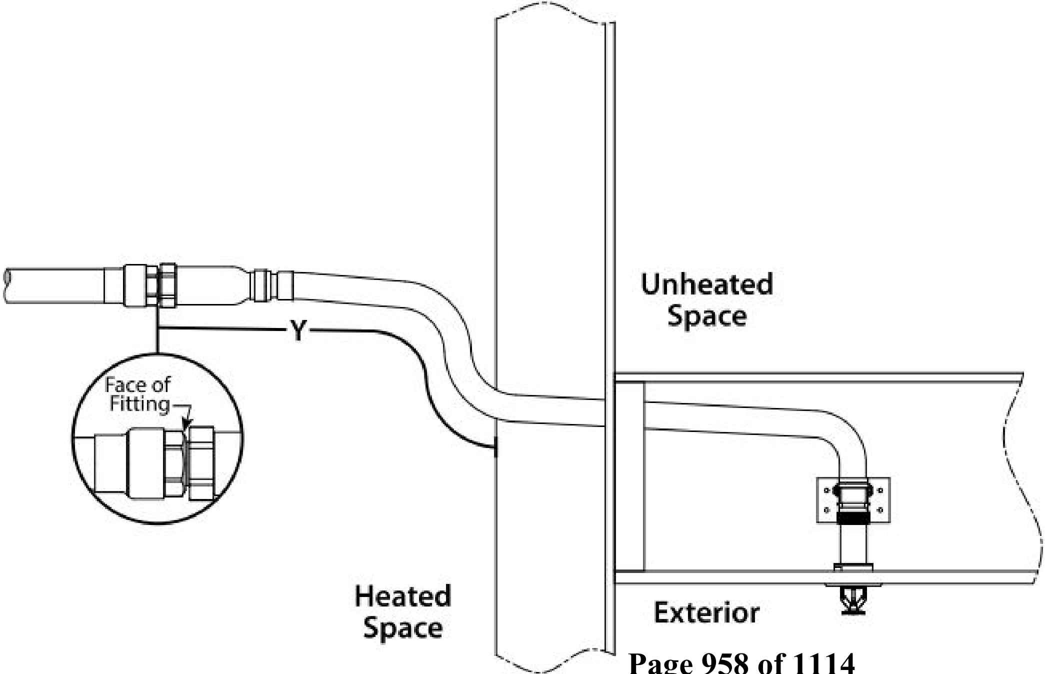
Submittal Date: Thu Jun 23 16:01:52 EDT 2016


Unheated
Space
Y
Face of
Fitting
Heated
Space
Exterior

Public Input No. 275-NFPA 13-2016 [Section No. A.8.4.9.1]

A.8.4.9.1

Dry sprinklers must be of sufficient length to avoid freezing of the water-filled pipes due to conduction along the ~~barrel~~ dry sprinkler . The values of exposed ~~barrel~~ length in Table 8.4.9.1(a) and Table 8.4.9.1(b) have been developed using an assumption of a properly sealed penetration and an assumed maximum wind velocity on the exposed sprinkler of 30 mph (48 km/h). Where higher wind velocity is expected, longer exposed ~~barrel~~ lengths will help avoid freezing of the wet piping. The total length of the ~~barrel of the~~ dry sprinkler must be longer than the values shown in Table 8.4.9.1(a) and Table 8.4.9.1(b) because the length shown in the tables is the minimum length ~~of the barrel~~ that needs to be exposed to the warmer ambient temperature in the heated space. See Figure A.8.4.9.1(a) for an example of where to measure the exposed ~~barrel~~ length for a sidewall sprinkler penetrating an exterior wall and Figure A.8.4.9.1(b) for an example of where to measure the exposed ~~barrel~~ length for a pendent sprinkler penetrating a ceiling or top of a freezer.

Figure A.8.4.9.1(a) Dry Sidewall Sprinkler Through Wall.

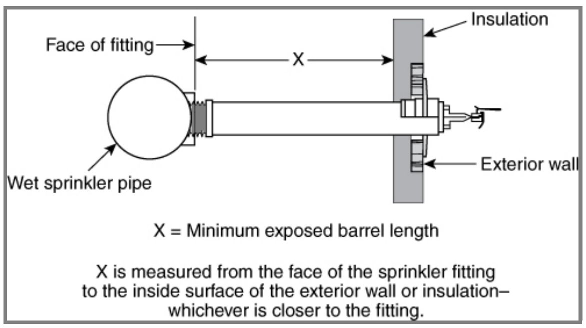
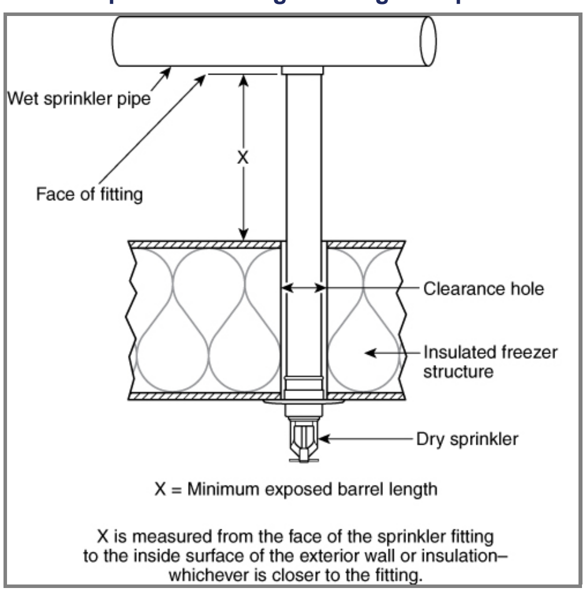


Figure A.8.4.9.1(b) Dry Pendent Sprinkler Through Ceiling or Top of Freezer.



Statement of Problem and Substantiation for Public Input

Barrel can be interpreted as a straight section of pipe.

Submitter Information Verification

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State:	
Zip:	
Submittal Date:	Thu Jun 23 15:39:06 EDT 2016

Public Input No. 280-NFPA 13-2016 [Section No. A.8.4.9.3]

A.8.4.9.3

The clearance space around the sprinkler ~~barrel~~ should be sealed to avoid leakage of air into the freezing area that could result in the formation of condensate around the sprinkler frame that could inhibit or cause premature operation. See Figure A.8.4.9.3(a) and Figure A.8.4.9.3(b).

Figure A.8.4.9.3(a) Dry Sprinkler Seal Arrangement — Seal on Exterior of Freezer Structure.

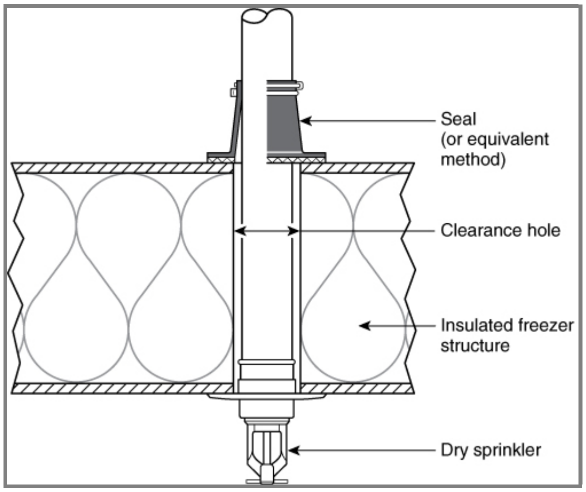
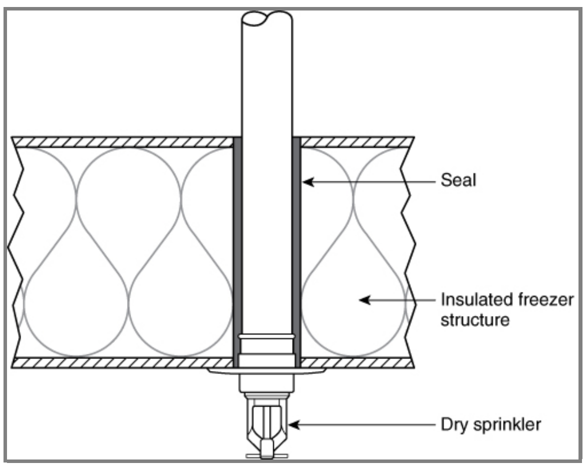


Figure A.8.4.9.3(b) Dry Sprinkler Seal Arrangement — Seal Within Freezer Structure.



Statement of Problem and Substantiation for Public Input

Barrel can be interpreted as a straight section of pipe.

Submitter Information Verification

Submitter Full Name: Brian Sloan
Organization: Victaulic
Street Address:
City:
State:
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Submittal Date: Thu Jun 23 15:51:09 EDT 2016

Public Input No. 283-NFPA 13-2016 [Section No. A.8.4.9.3]

A.8.4.9.3

The clearance space around the sprinkler barrel should be sealed to avoid leakage of air into the freezing area that could result in the formation of condensate around the sprinkler frame that could inhibit or cause premature operation. See Figure A.8.4.9.3(a) ~~and~~ , Figure A.8.4.9.3(b), Figure A . 8.4.9.3(c), and Figure A.8.4.9.3(d).

Figure A.8.4.9.3(a) Dry Sprinkler Seal Arrangement — Seal on Exterior of Freezer Structure.

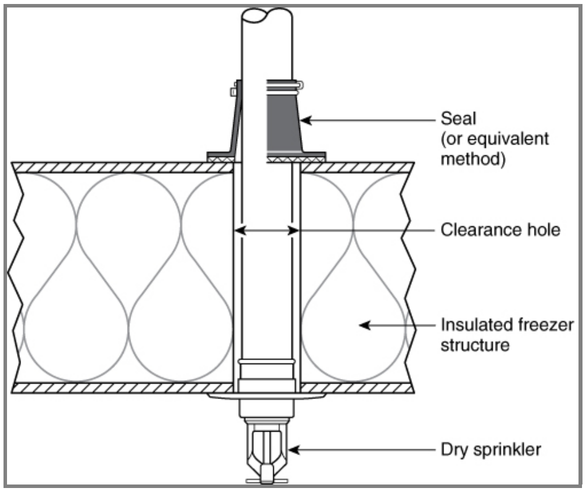
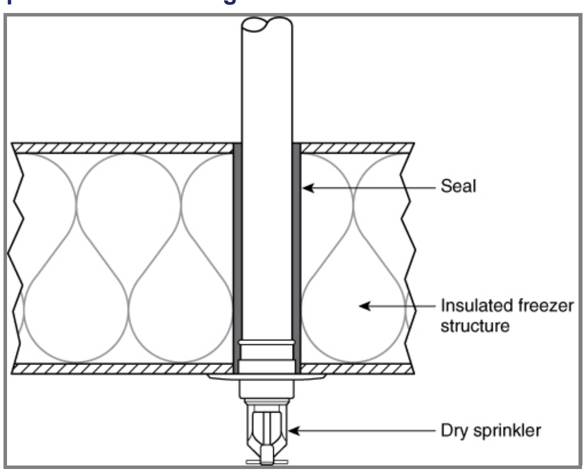


Figure A.8.4.9.3(b) Dry Sprinkler Seal Arrangement — Seal Within Freezer Structure.



Statement of Problem and Substantiation for Public Input

Added reference to additional figures being proposed.

Submitter Information Verification

Submitter Full Name: Brian Sloan
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City:
State:

Zip:	
Submittal Date:	Thu Jun 23 16:04:22 EDT 2016

Public Input No. 358-NFPA 13-2016 [New Section after A.8.5.5.3.1]

A.8.5.5.3.1.1

Where multiple levels of ducts, pipes, or other similar horizontal obstructions that are over 4 ft (1.2 m) wide are stacked vertically, additional levels of sprinkler protection between the vertical levels are not required. A single level of sprinklers beneath the lowest level of the obstruction is adequate, provided that the obstructions are noncombustible and that combustible materials are not stored between the levels.

Statement of Problem and Substantiation for Public Input

The current language in the standard is silent on how to address multiple levels of obstructions to sprinkler discharge that are over 4 feet in width. It is unnecessary to require sprinkler protection between multiple levels of noncombustible ductwork simply because each duct is over 4 feet wide.

Submitter Information Verification

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City:

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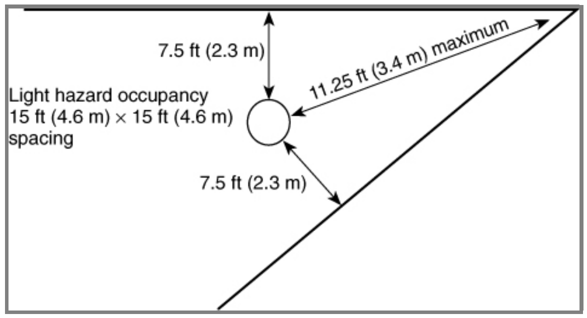
Submittal Date: Fri Jun 24 14:17:34 EDT 2016

Public Input No. 415-NFPA 13-2016 [Section No. A.8.6.3.2.3]

A.8.6.3.2.3

See Figure A.8.6.3.2.3.

Figure A.8.6.3.2.3 Maximum Distance from Walls.



The above example is shown for a light hazard occupancy. However, the irregular shape room allowance also applies to ordinary and extra hazard occupancies.

Statement of Problem and Substantiation for Public Input

The actual text in 8.6.3.2.3 is applicable to all occupancy classifications. This was confirmed with the staff liaison. However, we have had a few AHJs state that since the annex only indicates a light hazard occupancy example, this allowance only applies to a light hazard occupancy.

Submitter Information Verification

Submitter Full Name: John Denhardt

Organization: Strickland Fire Protection In

Affilliation: American Fire Sprinkler Association

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City:

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Submittal Date: Mon Jun 27 17:27:25 EDT 2016

Public Input No. 383-NFPA 13-2016 [Section No. A.8.6.4.1.3.3]

A.8.6.4.1.3.3

Generally, where applying the requirements of this section, a surface having a slope greater than or equal to 18 in 12 is needed. The effects of cold solding is not an issue provided the sprinklers are spaced greater than 6 ft apart measured along the slope.

Additional Proposed Changes

File Name	Description	Approved
Figure_8.6.4.1.3.3.pdf	Editorial revision of Figure 8.6.4.1.3.3.	

Statement of Problem and Substantiation for Public Input

The Figure 8.6.4.1.3.3 should be modified to show a slope greater than 18 in 12. The current figure shows a 12 in 12 slope and does not reflect steeply pitched. The effects of cold soldering for sprinklers should not be considered when proper sprinkler spacing is provided along the slope of the ceiling.

Submitter Information Verification

Submitter Full Name: Thomas Wellen

Organization: American Fire Sprinkler Association

Street Address:

City:

State:

Zip:

Submittal Date: Sun Jun 26 13:13:03 EDT 2016

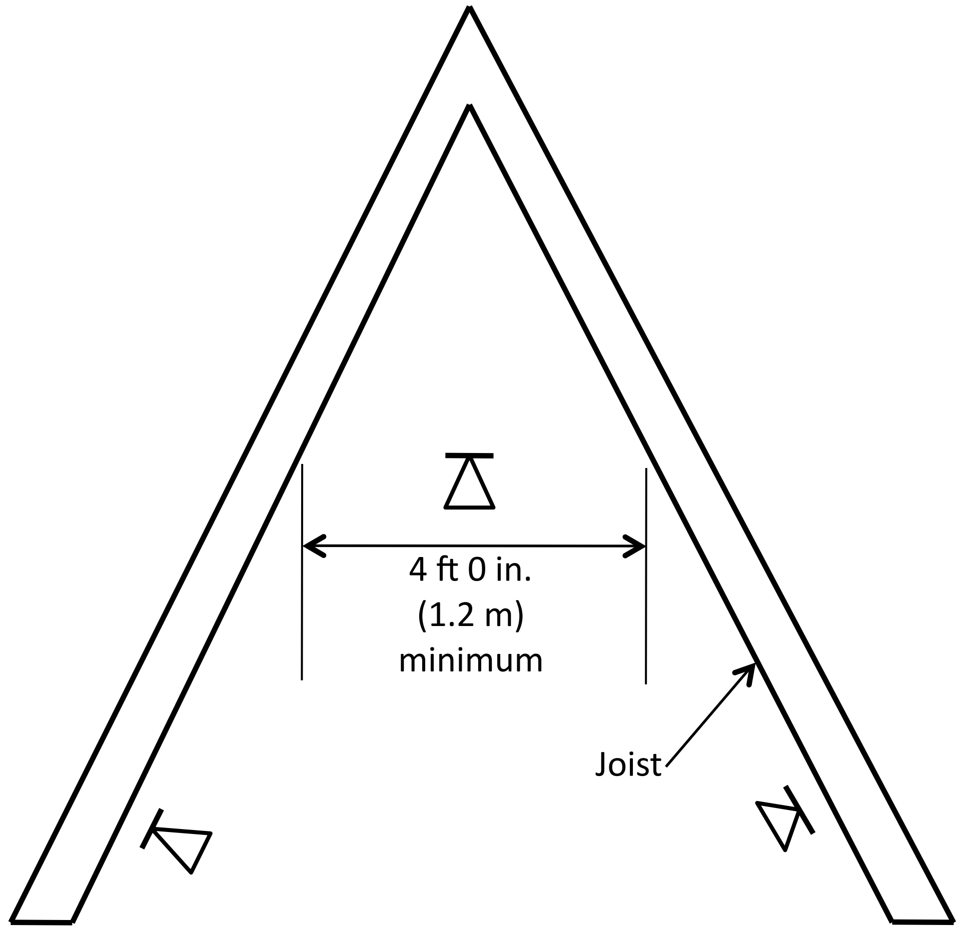

FIGURE 8.6.4.1.3.3 Horizontal Clearance for Sprinkler at Peak of Pitched Roof.

Public Input No. 500-NFPA 13-2016 [New Section after A.8.8.5.3]

A.8.5.5.3.2

When obstructions are located more than 18 in. (450 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.

Statement of Problem and Substantiation for Public Input

During the cycle leading up to the 2013 edition of the standard, Proposal 13-188 and Proposal 13-203 were accepted to revise Section 8.5.5.3.1 and Section 8.6.5.3.3 to delete the list of examples from the body of the standard and provide them in the annex instead, to conform with the Manual of style. However, the similar text in other sections such as 8.7.5.3.2, 8.8.5.3.2, 8.9.5.3.2 and 8.10.7.3.2 were not similarly revised. To accord with the other obstruction requirements within NFPA 13, those omissions should be rectified now.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 499-NFPA 13-2016 [Section No. 8.8.5.3.2]	

Submitter Information Verification

Submitter Full Name: Larry Keeping
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Street Address:
City:
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Submittal Date: Tue Jun 28 20:05:41 EDT 2016

Public Input No. 502-NFPA 13-2016 [New Section after A.8.9.5.3]

A.8.9.5.3.

When obstructions are located more than 18 in. (450 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.

Statement of Problem and Substantiation for Public Input

During the cycle leading up to the 2013 edition of the standard, Proposal 13-188 and Proposal 13-203 were accepted to revise Section 8.5.5.3.1 and Section 8.6.5.3.3 to delete the list of examples from the body of the standard and provide them in the annex instead, to conform with the Manual of style. However, the similar text in other sections such as 8.7.5.3.2, 8.8.5.3.2, 8.9.5.3.2 and 8.10.7.3.2 were not similarly revised. To accord with the other obstruction requirements within NFPA 13, those omissions should be rectified now.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 501-NFPA 13-2016 [Section No. 8.9.5.3.2]	

Submitter Information Verification

Submitter Full Name: Larry Keeping

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Street Address:

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Submittal Date: Tue Jun 28 20:24:10 EDT 2016

Public Input No. 504-NFPA 13-2016 [New Section after A.8.10.7.3]

A.8.10.7.3.2

When obstructions are located more than 18 in. (450 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, stairs , landings, and other similar obstructions. ...

Statement of Problem and Substantiation for Public Input

During the cycle leading up to the 2013 edition of the standard, Proposal 13-188 and Proposal 13-203 were accepted to revise Section 8.5.5.3.1 and Section 8.6.5.3.3 to delete the list of examples from the body of the standard and provide them in the annex instead, to conform with the Manual of style. However, the similar text in other sections such as 8.7.5.3.2, 8.8.5.3.2, 8.9.5.3.2 and 8.10.7.3.2 were not similarly revised. To accord with the other obstruction requirements within NFPA 13, those omissions should be rectified now.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 503-NFPA 13-2016 [Section No. 8.10.7.3.2]	

Submitter Information Verification

Submitter Full Name: Larry Keeping

Organization: PLC Fire Safety Solutions

Street Address:

City:

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Zip:

Submittal Date: Tue Jun 28 20:31:35 EDT 2016

Public Input No. 19-NFPA 13-2016 [Section No. A.8.15.1.2.1]

A.8.15.1.2.1

Minor quantities of combustible materials such as but not limited to cabling, nonmetallic plumbing piping, nonstructural wood, and so forth can be present in concealed spaces constructed of limited or noncombustible materials but should not typically be viewed as requiring sprinklers *(see 8.15.1.1)*. For example, it is not the intent of this section to require sprinklers, which would not otherwise be required, in the interstitial space of a typical office building solely due to the presence of the usual amount of cabling within the space. ~~The~~ The use of acoustical tile ceilings does not negate that the space above the tile is a concealed space since a tile could be removed. The threshold value at which sprinklers become necessary in the concealed space is not defined.

Statement of Problem and Substantiation for Public Input

Some AHJ's have considered the space above an acoustical ceiling to be accessible and therefore have required sprinkler protection in that space. As long as the space is not intended for storage or occupancy, it should not require sprinkler protection.

Submitter Information Verification

Submitter Full Name: Peter Schwab
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City:
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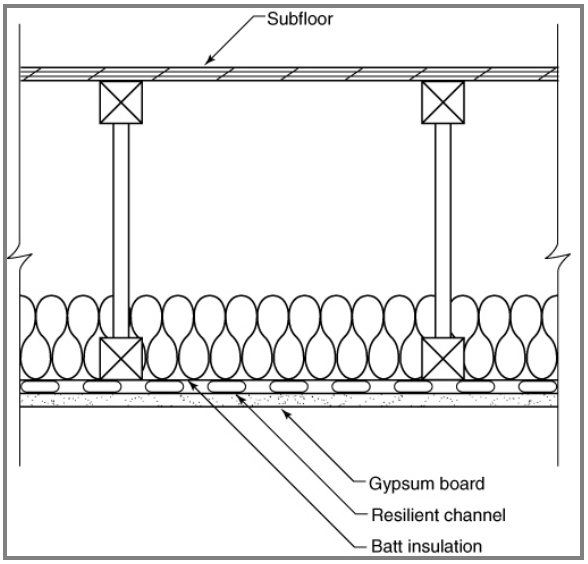
Submittal Date: Mon Jan 04 14:07:29 EST 2016

Public Input No. 486-NFPA 13-2016 [Section No. A.8.15.1.2.6]

A.8.15.1.2.6

See Figure A.8.15.1.2.6. The 31⁄2 in. (90 mm) of insulation is only required when the ceiling is not directly attached to the joist. The 160 ft3 (4.5 m3) is the volume of the individual channel excluding the portion occupied by insulation.

Figure A.8.15.1.2.6 Combustible Concealed Space Cross Section.



Statement of Problem and Substantiation for Public Input

Clarification on these nuances are needed.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 487-NFPA 13-2016 [Section No. 8.15.1.2.6]	

Submitter Information Verification

Submitter Full Name: Roland Huggins
Organization: American Fire Sprinkler Association
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jun 28 12:32:54 EDT 2016

Public Input No. 208-NFPA 13-2016 [Section No. A.8.15.1.2.11]

A.8.15.1.2.11

The allowance to omit sprinklers for fire retardant–treated wood requires a pressure-treated application. It does not apply to coated applications.

A concealed attic space, with no combustible storage, constructed of fire retardant treated wood, with limited access as required by the applicable building code, is considered a concealed space that does not require sprinkler protection.

Statement of Problem and Substantiation for Public Input

It has come to my attention that recently some inspectors doing Medicare CMS reviews of existing health care occupancies are writing up existing attics that were constructed entirely of FRT wood and complying with the concealed spaces requirements of NFPA 13 as not meeting this section of Code because such attics are not considered "concealed spaces" under their interpretation of NFPA 13 Section 8.15.1.2.11. These FRT attics were approved by the local building and fire code officials when constructed under valid permit reviews and final inspections, and by previous CMS inspections, but now are not acceptable. This is not only a major cost but also a major disruption to the existing facility and its patients. No one has provided any adverse fire or life loss in such buildings that were sprinklered under NFPA 13 applying this section of Code to the attic constructed of FRT. wood. This simple addition to the annex note would clearly explain the intent of the Sprinkler Committee on this important issue, and save the public an enormous amount of dollars and frustration when dealing with Medicare Re-certification for Life Safety/Fire Protection of such facilities.

Submitter Information Verification

Submitter Full Name: Marshall Klein

Organization: Marshall A. Klein & Associates, Inc.

Street Address:

City:

State:

Zip:

Submittal Date: Mon Jun 13 09:40:24 EDT 2016

Public Input No. 213-NFPA 13-2016 [Section No. A.8.15.5.1]

~~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

See rational for PI # 210
The is a conflict in this annex and its associated code section

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 210-NFPA 13-2016 [Section No. 8.15.5.2]	same rational
Public Input No. 211-NFPA 13-2016 [Section No. 8.15.5.1]	same rational
Public Input No. 212-NFPA 13-2016 [Section No. 8.15.5.2]	same rational

Submitter Information Verification

Submitter Full Name: Sagiv Weiss-Ishai

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Affilliation: SFFD

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City:

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Zip:

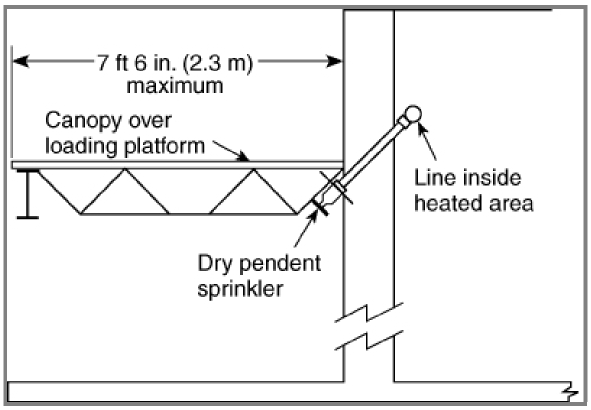
Submittal Date: Tue Jun 14 12:42:59 EDT 2016

Public Input No. 456-NFPA 13-2016 [Section No. A.8.15.7]

~~A.8.15.7~~

~~Small loading docks, covered platforms, ducts, or similar small unheated areas can be protected by dry pendent sprinklers extending through the wall from wet sprinkler piping in an adjacent heated area. Where protecting covered platforms, loading docks, and similar areas, a dry pendent sprinkler should extend down at a 45 degree angle. The width of the area to be protected should not exceed 7 - 1/2 - ft (2.3 m). Sprinklers should be spaced not over 12 ft (3.7 m) apart. Exterior projections include, but are not limited to, exterior roofs, canopies, porte-cocheres, balconies, decks, or similar projections.~~ *~~(See Figure A.8.15.7 .)~~*

~~**Figure A.8.15.7 Dry Pendent Sprinklers for Protection of Covered Platforms, Loading Docks, and Similar Areas.**~~



Statement of Problem and Substantiation for Public Input

This language needs to be deleted. This is in the annex and there are dimensions and code language that belongs in the body. In addition, installing a dry pendent in a 45 degree angle is not in accordance with its listing.

Submitter Information Verification

Submitter Full Name: Peter Schwab

Organization: Wayne Automatic Fire Sprinkler

Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 28 09:25:22 EDT 2016

Public Input No. 140-NFPA 13-2016 [Section No. A.8.15.7.2]

A.8.15.7.2

Vehicles that are temporarily parked are not considered storage. Areas located at drive-in bank windows or porte-cocheres at hotels and motels normally do not require sprinklers where there is no occupancy above, where the area is entirely constructed of noncombustible or limited-combustible materials or fire retardant–treated lumber, and where the area is not the only means of egress. ~~However, areas~~ Areas under exterior ceilings where the building is sprinklered should ~~be protected due to the occupancy above~~ not require sprinkler protection unless combustibles are stored or handled underneath .

Statement of Problem and Substantiation for Public Input

Currently the standard is at best vague regarding whether sprinkler protection is required for areas open to the elements but below the building, such as exterior walkways, patios, etc. It can be challenging to sprinkler these areas due to difficulty in routing pipes, addressing freeze protection, etc. Additionally, considerable attention is being paid to energy efficiency, maintaining the insulated perimeter of a building, etc. Sprinkler protection of areas that are generally subject just to pedestrian traffic provides minimal to no real benefit while the penetrations of the building perimeter complicate construction and potentially impair energy performance.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 141-NFPA 13-2016 [Section No. 8.15.7.2]	

Submitter Information Verification

Submitter Full Name: Chris Born
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Submittal Date: Tue May 24 13:39:03 EDT 2016

Public Input No. 470-NFPA 13-2016 [Section No. A.8.15.7.2]

~~A.~~ 8.15.7. ~~2~~ 6.1

Vehicles that are temporarily parked ~~are~~ shall not ~~considered~~ be considered storage.

A.8.15.7.6.1 Areas located at drive-in bank windows or porte-cocheres at hotels and motels normally do not require sprinklers where there is no occupancy above, where the area is entirely constructed of noncombustible or limited-combustible materials or fire retardant–treated lumber, and where the area is not the only means of egress. ~~However, areas under exterior ceilings where the building is sprinklered should be protected due to the~~

8.15.7.6.1

Sprinklers shall be required for overhangs where there is is a building or occupancy above.

Statement of Problem and Substantiation for Public Input

Move this language to the body of the standard.

Submitter Information Verification

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City:

State:

Zip:

Submittal Date: Tue Jun 28 10:44:38 EDT 2016

Public Input No. 615-NFPA 13-2016 [Section No. A.8.17.2.3]

A.8.17.2.3

The purpose of a fire department connection is to supplement the pressure to an automatic fire sprinkler system. Upon arrival at the building, the fire department will connect to the FDC and pump into it to ensure there is adequate supply to the sprinkler system. In cases where the fire has progressed such that more than the required number of sprinkler have activated, the fire department should be able to supply additional water supply to control the fire while hose lines are deployed. This capability is essential for not only property protection but also for fire fighter safety. ~~It is not the intent to size the fire department connection piping based on system demand. For multiple system risers supplied by a manifold, the fire department connection need not be larger than that for an individual system.~~

Statement of Problem and Substantiation for Public Input

Current wording is contradictory. “Supplement” means “to add to”, or “to increase”. To say that the FDC is not intended to be capable of supplying the system demand or to not be capable of increasing the system demand defeats the purpose of having a FDC. If a sprinkler system in a warehouse is being overwhelmed by the fire, the fire department needs to be able to augment/supplement/increase the water supply to the system in order to any chance of controlling the fire.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 614-NFPA 13-2016 [Section No. 8.17.2.3]	

Submitter Information Verification

Submitter Full Name: James Feld
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Submittal Date: Wed Jun 29 20:21:16 EDT 2016

Public Input No. 619-NFPA 13-2016 [Section No. A.8.17.5.2.2]

A.8.17.5.2.2

See Figure A.8.17.5.2.2(a) and Figure A.8.17.5.2.2(b).

Figure A.8.17.5.2.2(a) Acceptable Piping Arrangement for Combined Sprinkler/Standpipe System. [14:Figure A.6.3.5(a)]

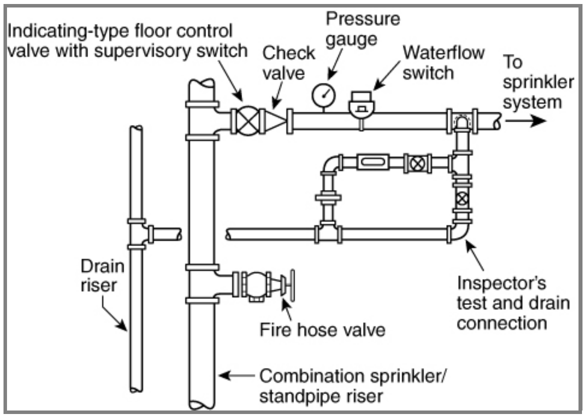
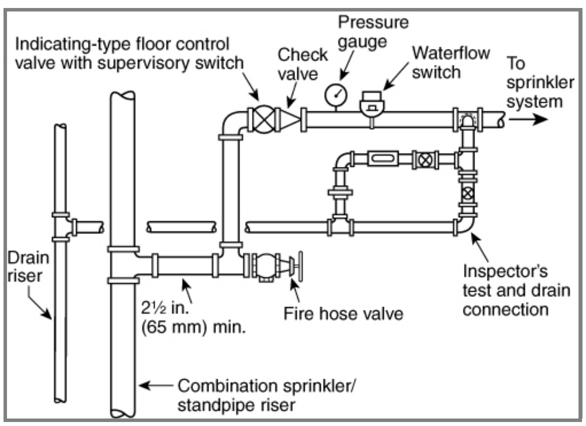


Figure A.8.17.5.2.2(b) Acceptable Piping Arrangement for Combined Sprinkler/Standpipe System. [14:Figure A.6.3.5(b)]



<u>**Revise both FIGURE A.8.17.5.2.2(a) and FIGURE A.8.17.5.2.2(b) to show an additional pressure gauge between the floor control valve and the check valve to coordinate with PI for 7.1.12 and A7.1.1.2.**</u>

Statement of Problem and Substantiation for Public Input

If the PI for 7.1.1.2/A.7.1.1.2 is accepted, these two details need to be revised to be consistent with the requirement.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 616-NFPA 13-2016 [Section No. 7.1.1.2]	

Submitter Information Verification

Submitter Full Name: James Feld

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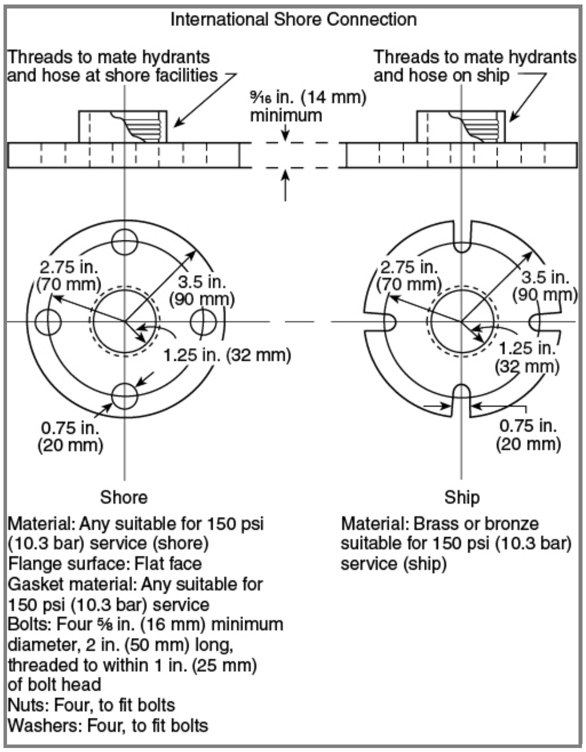
Zip:	
Submittal Date:	Wed Jun 29 20:56:37 EDT 2016

Public Input No. 551-NFPA 13-2016 [Section No. A.26.1.3(4)]

A.26.1.3(4)

The backbone of the fire protection philosophy for U.S. flagged vessels and passenger vessels that trade internationally is limiting a fire to the compartment of origin by passive means. Materials that do not withstand a 1-hour fire exposure when tested in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials* or ANSI/UL 263 Fire Tests of Building Construction Materials , are considered "heat sensitive." *[See Figure A.26.1.3(4) .]*

Figure A.26.1.3(4) International Shore Fire Connection.



Statement of Problem and Substantiation for Public Input

Reason Statement: ASTM E 119 is a listed test referenced in Chapter 2. ANSI/UL 263 is a comparable test available for establishing fire resistance in building and construction materials and should also be listed as an acceptable test.

Related Public Inputs for This Document

Related Input	Relationship
Public Input No. 540-NFPA 13-2016 [Section No. 2.3.8]	
Public Input No. 541-NFPA 13-2016 [Section No. 3.3.25]	
Public Input No. 542-NFPA 13-2016 [Section No. 3.10.1]	
Public Input No. 543-NFPA 13-2016 [Section No. 3.10.2]	
Public Input No. 544-NFPA 13-2016 [Section No. 3.10.9]	
Public Input No. 545-NFPA 13-2016 [Section No. 26.1.3]	
Public Input No. 546-NFPA 13-2016 [Section No. A.3.10.4]	

Submitter Information Verification

Submitter Full Name:	Kelly Nicolello
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Submittal Date:	Wed Jun 29 09:55:23 EDT 2016