

Seismic Brace Report



Project Name East Town Crossing Apartments- Clubhouse
Date 09/29/2025
Address 2902 E PIONEER
 Puyallup, WA 98372

APPROVAL STAMP

- Approved
- Approved as Noted
- Not Approved

Remarks:

Standard NFPA 13-2019

Expires
DEC 31, 25

**WASHINGTON STATE
 CERTIFICATE OF COMPETENCY
 FIRE SPRINKLER SYSTEMS**

Joseph G. Faulkner
 9491-0699-CEG Level 3
 Sprinx Fire Protection, Inc.
 SPRINFP011LS

Joseph G. Faulkner 10/01/2025

 Signature Date

BRACE SUMMARY

Brace Name	Drawing Reference	Seismic Design Load	Structure	Brace Description	Fastener	Attachments
Lateral Brace A	FP-3.0	211 lbf.	Saw Lumber or Glue-Laminated Timbers - SG = 0.36 to 0.49	Lateral Orientation H 45° - 59° 1 NPS Sch 40	1/2" Thru-Bolt per referenced edition of NFPA 13	AF700 - 1/2" AF730 - 4 NPS
longitudinal Brace B	FP-3.0	258 lbf.	Saw Lumber or Glue-Laminated Timbers - SG = 0.36 to 0.49	Longitudinal Orientation E 45° - 59° 1 NPS Sch 40	1/2" Thru-Bolt per referenced edition of NFPA 13	AF700 - 1/2" AF730 - 4 NPS

NOTE: Per NFPA 13-2019, all load capacities listed for fasteners installed in cracked concrete have been reduced based on the prying factors listed for ASC's swivel attachments. Prying factors for NFPA fastener orientations "A" through "I" may be found in ASC's individual product submittal at asc-es.com

NFPA 13-2016 Product loads incorporate a minimum safety factor of 1.5. NFPA 13-2019 FM Product loads have been reduced to include a safety factor of 2.2 unless noted in the applicable product submittal.

The products specified within this report are limited to the capability of the sway brace assembly alone to resist the calculated seismic force resulting from user input . Point loads applied to structural elements as a result of seismic forces are not evaluated by the software. The seismic load rating of the fastener attached to a structural element is determined by one of the following: NFPA 13, UL listing, FM Global approval, or other empirical testing. The review of the of the structural element(s) as a whole and/or the entire structure and its ability to resist the seismic load(s) is beyond the scope of these seismic calculations.

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LATERAL BRACE A - SEISMIC BRACE CALCULATIONS

Seismic Project Attic Dry
Standard NFPA 13-2019
Brace Type Lateral

Brace Name Lateral Brace A
Drawing Reference FP-3.0
Approval Agency UL Listed

STRUCTURE INFORMATION

Structure Lumber/Timbers (Thru Bolt)
Substrate Saw Lumber or Glue-Laminated Timbers - SG = 0.36 to 0.49
Load Orientation N/A

BRACE INFORMATION

Brace Member 1 NPS Sch 40
Brace Length Max 7 ft 0 in
Brace Angle 45° - 59°
Least Radius of Gyration 0.421 in.
I/r Ratio Max 200
Max Horizontal Load 1,310 lbf.

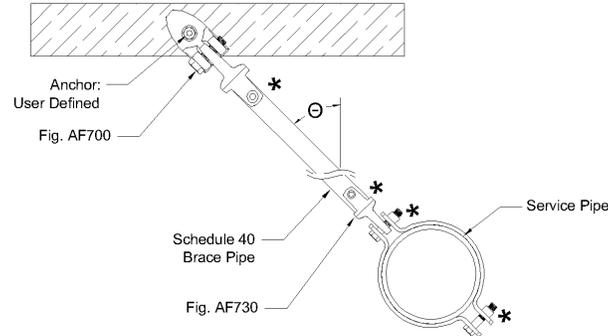
FASTENER INFORMATION

Fastener Name Thru-Bolt per referenced edition of NFPA 13
Fastener Orientation H
Fastener Diameter 1/2 in.
Nominal Embedment 1 1/2 in.
Max Horizontal Load 251 lbf.

SEISMIC BRACE ATTACHMENTS

	Model	Size	Adj. Load
Swivel Att.	AF700	1/2"	1,333 lbf.
Pipe Att.	AF730	4 NPS	1,333 lbf.

See Appendix A for alternate seismic brace attachments.
 All seismic brace attachments manufactured by ASC Engineered Solutions.



* - denotes hardware shown with the bolt head or nut broken off, as per the product installation instructions

Net Vertical Reaction Forces do not need to be addressed per NFPA 13-2019.

SPRINKLER SYSTEM LOAD CALCULATION ($F_{PW} = C_p * W_p$)

$C_p = 0.660$

Qty	Line	Description	Pipe Size/Type	Length	Weight/ft	Weight/Line	Total Weight
1	Main	Braced Pipe	4 NPS Eddy Flow	20.00 ft.	11.29 lb/ft.	225.80 lb.	225.80 lb.
1	Branch 1	Segment A	1 NPS Steel Sch 40	25.00 ft.	2.05 lb/ft.	51.25 lb.	51.25 lb.

Weakest Main Size	Spacing	Max Fpw	Total System Weight
4 NPS Eddy Flow	20 ft.	1,544 lbf.	277.05 lb.
			System Design Weight (W_p)
			319.00 lb.
			Horizontal Seismic Load (F_{pw})
			211 lbf.

LONGITUDINAL BRACE B - SEISMIC BRACE CALCULATIONS

Seismic Project Attic Dry
Standard NFPA 13-2019
Brace Type Longitudinal

Brace Name longitudinal Brace B
Drawing Reference FP-3.0
Approval Agency UL Listed

STRUCTURE INFORMATION

Structure Lumber/Timbers (Thru Bolt)
Substrate Saw Lumber or Glue-Laminated Timbers - SG = 0.36 to 0.49
Load Orientation N/A

BRACE INFORMATION

Brace Member 1 NPS Sch 40
Brace Length Max 7 ft 0 in
Brace Angle 45° - 59°
Least Radius of Gyration 0.421 in.
I/r Ratio Max 200
Max Horizontal Load 1,310 lbf.

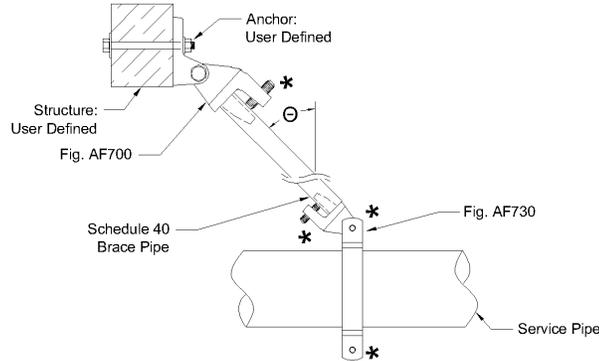
FASTENER INFORMATION

Fastener Name Thru-Bolt per referenced edition of NFPA 13
Fastener Orientation E
Fastener Diameter 1/2 in.
Nominal Embedment 1 1/2 in.
Max Horizontal Load 269 lbf.

SEISMIC BRACE ATTACHMENTS

	Model	Size	Adj. Load
Swivel Att.	AF700	1/2"	1,333 lbf.
Pipe Att.	AF730	4 NPS	1,333 lbf.

See Appendix A for alternate seismic brace attachments.
 All seismic brace attachments manufactured by ASC Engineered Solutions.



* - denotes hardware shown with the bolt head or nut broken off, as per the product installation instructions

Net Vertical Reaction Forces do not need to be addressed per NFPA 13-2019.

SPRINKLER SYSTEM LOAD CALCULATION ($F_{PW} = C_p * W_p$) $C_p = 0.660$

Qty	Line	Description	Pipe Size/Type	Length	Weight/ft	Weight/Line	Total Weight
1	Main	Braced Pipe	4 NPS Eddy Flow	30.00 ft.	11.29 lb/ft.	338.70 lb.	338.70 lb.

Total System Weight	338.70 lb.
System Design Weight (W_p)	390.00 lb.
Horizontal Seismic Load (F_{pw})	258 lbf.

Appendix A - Alternate Seismic Brace Attachments

LATERAL BRACE A

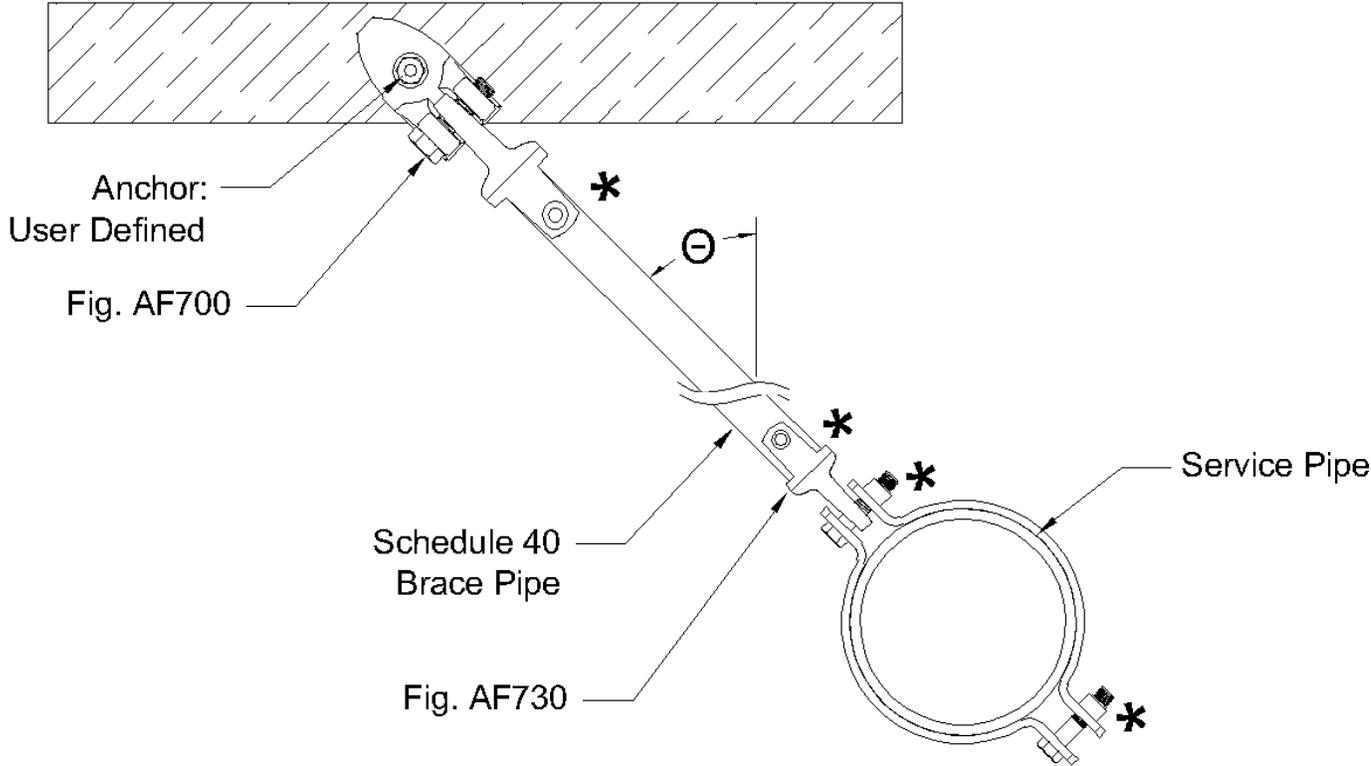
Fastener	Capacity	Nom. Embedment	Min. Edge 1 2	Swivel	Pipe Attachment
Thru-Bolt per referenced edition of NFPA 13	251 lbf.	1 1/2 in.	-- --	AF075 1 NPS x 1/2" 968 lbf.	AF035 4 NPS x 1 NPS 1,333 lbf.
Thru-Bolt per referenced edition of NFPA 13	321 lbf.	2 1/2 in.	-- --	AF075 1 NPS x 1/2" 968 lbf.	AF735 4 NPS x 1 NPS 1,333 lbf.
Thru-Bolt per referenced edition of NFPA 13	386 lbf.	3 1/2 in.	-- --	AF075 1 NPS x 1/2" 968 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	251 lbf.	1 1/2 in.	-- --	AF076 1/2" 1,237 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	321 lbf.	2 1/2 in.	-- --	AF076 1/2" 1,237 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	386 lbf.	3 1/2 in.	-- --	AF076 1/2" 1,237 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	251 lbf.	1 1/2 in.	-- --	AF077 1 NPS x 1/2" 480 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	321 lbf.	2 1/2 in.	-- --	AF077 1 NPS x 1/2" 480 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	386 lbf.	3 1/2 in.	-- --	AF077 1 NPS x 1/2" 480 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	251 lbf.	1 1/2 in.	-- --	AF771 1 NPS x 1/2" 1,414 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	321 lbf.	2 1/2 in.	-- --	AF771 1 NPS x 1/2" 1,414 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	386 lbf.	3 1/2 in.	-- --	AF771 1 NPS x 1/2" 1,414 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	321 lbf.	2 1/2 in.	-- --	AF700 1/2" 1,333 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	386 lbf.	3 1/2 in.	-- --	AF700 1/2" 1,333 lbf.	--

LONGITUDINAL BRACE B

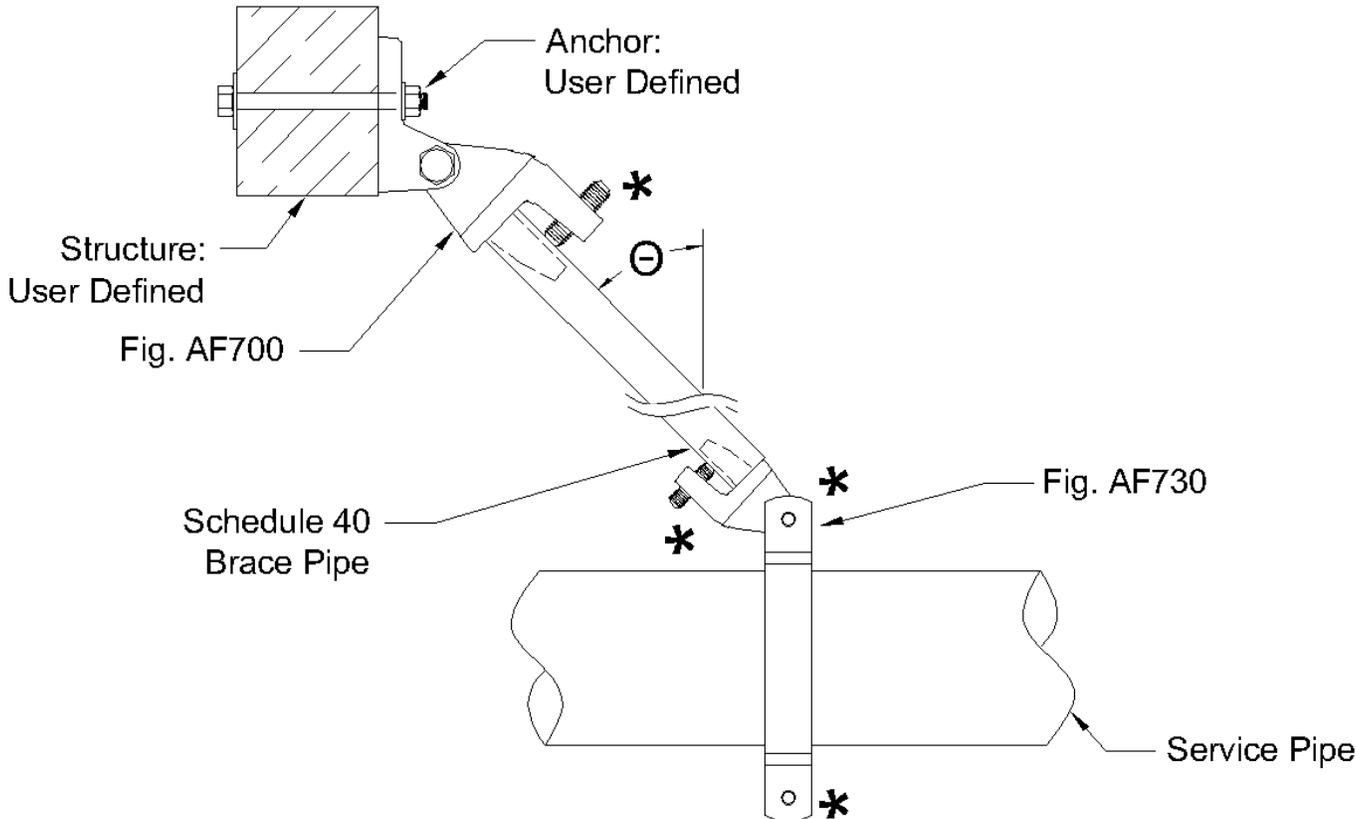
Fastener	Capacity	Nom. Embedment	Min. Edge 1 2	Swivel	Pipe Attachment
Thru-Bolt per referenced edition of NFPA 13	269 lbf.	1 1/2 in.	-- --	AF075 1 NPS x 1/2" 968 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	327 lbf.	2 1/2 in.	-- --	AF075 1 NPS x 1/2" 968 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	409 lbf.	3 1/2 in.	-- --	AF075 1 NPS x 1/2" 968 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	269 lbf.	1 1/2 in.	-- --	AF076 1/2" 1,237 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	327 lbf.	2 1/2 in.	-- --	AF076 1/2" 1,237 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	409 lbf.	3 1/2 in.	-- --	AF076 1/2" 1,237 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	269 lbf.	1 1/2 in.	-- --	AF077 1 NPS x 1/2" 480 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	327 lbf.	2 1/2 in.	-- --	AF077 1 NPS x 1/2" 480 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	409 lbf.	3 1/2 in.	-- --	AF077 1 NPS x 1/2" 480 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	269 lbf.	1 1/2 in.	-- --	AF771 1 NPS x 1/2" 1,414 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	327 lbf.	2 1/2 in.	-- --	AF771 1 NPS x 1/2" 1,414 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	409 lbf.	3 1/2 in.	-- --	AF771 1 NPS x 1/2" 1,414 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	327 lbf.	2 1/2 in.	-- --	AF700 1/2" 1,333 lbf.	--
Thru-Bolt per referenced edition of NFPA 13	409 lbf.	3 1/2 in.	-- --	AF700 1/2" 1,333 lbf.	--

Appendix B - Enlarged Images

LATERAL BRACE A



LONGITUDINAL BRACE B



** - denotes hardware shown with the bolt head or nut broken off, as per the product installation instructions*

Appendix C - C_p Calculations

BRACE CALCULATION DATA

Brace Name	Brace Ref	Method	C _p	S _s	Site	F _a	S _{DS}	Z	H
Lateral Brace A	FP-3.0	A	0.660	1.420	--	--	--	--	--
longitudinal Brace B	FP-3.0	A	0.660	1.420	--	--	--	--	--

CALCULATION METHODS

- A** C_p calculated per NFPA 13-2019 Table 18.5.9.3
- B** C_p entered by user
- C** C_p calculated per ASCE/SEI 7-16 per NFPA 13-2019 Section 18.5.9.4

LEGEND

- F_{pw}** Seismic Horizontal Design Force
- C_p** Seismic Coefficient per NFPA
- S_s** Short Period MCEr Spectral Response Acceleration
- F_a** Site Coefficient. See Tables Below.
- S_{DS}** Short Period Spectral Acceleration
- a_p** Component Amplification Factor. Taken as 2.5 for Fire Sprinkler Applications
- R_p** Component Response Modification Factor. Taken as 4.5 for Fire Sprinkler Applications
- I_p** Component Importance Factor. Taken as 1.5 for Fire Sprinkler Applications
- W_p** Component Operating Weight. Taken as the weight of the Fire Sprinkler System in the ZOI plus 15%
- z** Height in the structure where the component attaches to the structure. Height is relative to the base of the structure and shall not be taken as less than 0 and shall not be larger than "H".
- H** Average roof height of the structure relative to the base

EQUATIONS...

$$F_{pw} = C_p W_p$$

$$\text{Where: } C_p = 0.7 * \frac{0.4 a_p S_{DS} I_p}{R_p} \left(1 + 2 \frac{Z}{H} \right)$$

$$\text{Where: } S_{DS} = \frac{2}{3} F_a S_s$$

$$C_{p \max} = 0.7 * 1.6 S_{DS} I_p$$

$$C_{p \min} = 0.7 * 0.3 S_{DS} I_p$$

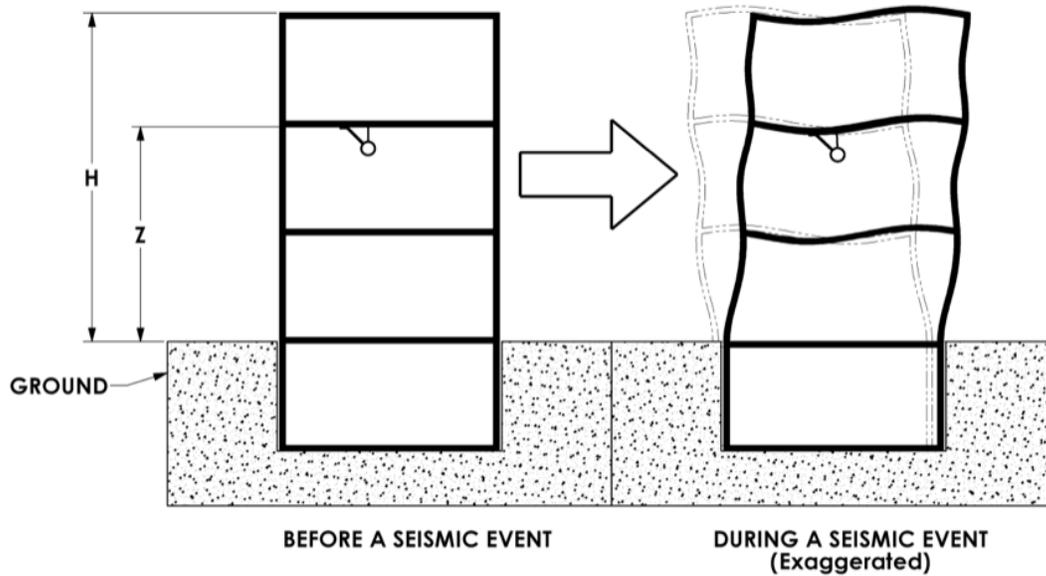
SITE COEFFICIENT, F_A PER ASCE/SEI 7-16

	$S_s \leq 0.25$	$S_s = 0.5$	$S_s = 0.75$	$S_s = 1$	$S_s = 1.25$	$S_s \geq 1.5$
A	0.8	0.8	0.8	0.8	0.8	0.8
B	0.9	0.9	0.9	0.9	0.9	0.9
C	1.3	1.3	1.2	1.2	1.2	1.2
D	1.6	1.4	1.2	1.1	1	1
E	2.4	1.7	1.3	1.2	1.2	1.2

Use straight-line interpolation for intermediate values of S_s .

SITE CLASSIFICATION PER ASCE/SEI 7-16

Site Class	Ground Structure
A	Hard Rock
B	Rock
C	Very Dense Soil and Soft Rock
D	Stiff Soil
E	Soft Clay Soil



Appendix D - Bill of Materials

Project Name East Town Crossing Apartments- Clubhouse
Code Requirements NFPA 13-2019
Last Updated September 29, 2025

QUANTITY	FIGURE NUMBER	PRODUCT	DESCRIPTION
0		1/2" Thru-Bolt per referenced edition of NFPA 13	Fastener
0	AF700	1/2" AF700 Universal Swivel Attachment	AF700 - 1/2"
0	AF730	4 NPS AF730 Longitudinal & Lateral Seismic Clamp	AF730 - 4 NPS

Announcement
ASCE 7-22 is now available.



2902 Pioneer Wy E, Puyallup, WA 98372, USA

Latitude, Longitude: 47.18416029999999, -122.2541991



Date	9/29/2025, 8:42:49 AM
Design Code Reference Document	ASCE7-22
Risk Category	II
Site Class	Default

Type	Value	Description (Data)
S_S	1.42	The MCE_R spectral response acceleration at 0.2 seconds for Site Class BC, in units of g.
S_1	0.43	The MCE_R spectral response acceleration at 1 second for Site Class BC, in units of g.
S_{MS}	1.57	$S_{MS} = 1.5 \times S_{DS}$, the Risk-Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class.
S_{M1}	0.92	$S_{M1} = 1.5 \times S_{D1}$, the MCE_R spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class.
S_{DS}	1.05	The design spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class, in units of g.
S_{D1}	0.61	The design spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class, in units of g.

Type	Value	Description (Data Contd.)
SDC	D	Seismic design category
PGA_M	0.56	PGA_M , the Geometric-Mean Maximum Considered Earthquake (MCE_G) peak ground acceleration for the user-specified Site Class, in units of g
T_S	0.584	$T_S = S_{D1}/S_{DS}$, in seconds, for construction of the two-period design spectrum
T_0	0.117	$T_0 = 0.2 \times T_S$, in seconds, for construction of the two-period design response spectrum
T_L	6	T_L , the long-period transition period, in seconds, for construction of the two-period design response spectrum

Type	Value	Description (Underlying Data and Metadata)
PGA _{uh}	See underlying data for Site Classes C, CD, and D	Probabilistic uniform-hazard (2%-in-50-years), geometric-mean peak ground acceleration, in units of g.
PGA _{84th}	See underlying data for Site Classes C, CD, and D	Deterministic 84th-percentile, geometric-mean peak ground acceleration (without deterministic lower limit), in units of g.
V _{S30}	260	The shear-wave velocity used for the user-specified Site Class, in units of m/s
Spatial Interpolation Method	linearloglinear	Identifier for spatial interpolation method used to obtain values for location of interest from underlying gridded values: "linearloglinear" for bilinear of natural logarithm of values.
PGA _{dFloor}		Deterministic lower limit peak ground acceleration (PGA _G) for the user-specified Site Class, in units of g.
riskTargetedSpectrum		Probabilistic risk-targeted, maximum direction response spectrum (for 1%-in-50-years collapse risk)
eightyFourthSpectrum		Deterministic 84 th -percentile, maximum-direction response spectrum (without deterministic lower limit)

Period T(s)	Design Spectrum Ordinates (g)	MCE _R Spectrum Ordinates (g)
6	0.1	0.15
6.05	0.1	0.15
6.1	0.099	0.15
6.15	0.097	0.15
6.2	0.095	0.14
6.25	0.094	0.14
6.3	0.092	0.14
6.35	0.091	0.14
6.4	0.09	0.13
6.45	0.088	0.13
6.5	0.087	0.13
6.55	0.086	0.13
6.6	0.084	0.13
6.65	0.083	0.12
6.7	0.082	0.12
6.75	0.081	0.12
6.8	0.079	0.12
6.85	0.078	0.12
6.9	0.077	0.12
6.95	0.076	0.11
7	0.075	0.11

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Probabilistic & Deterministic

Period T(s)	Risk Targeted Spectrum Ordinates (g)	84 th Spectrum Ordinates(g)
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