

REVISIONS

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NORWALK LA MIRADA UNIFIED SCHOOL DISTRICT  
LA MIRADA HIGH SCHOOL NEW  
FOOTBALL STADIUM PROJECT  
13520 ADELEFA DRIVE, LA MIRADA, CA 90638

DSA # 03-120551

**NAC**  
ARCHITECTURE

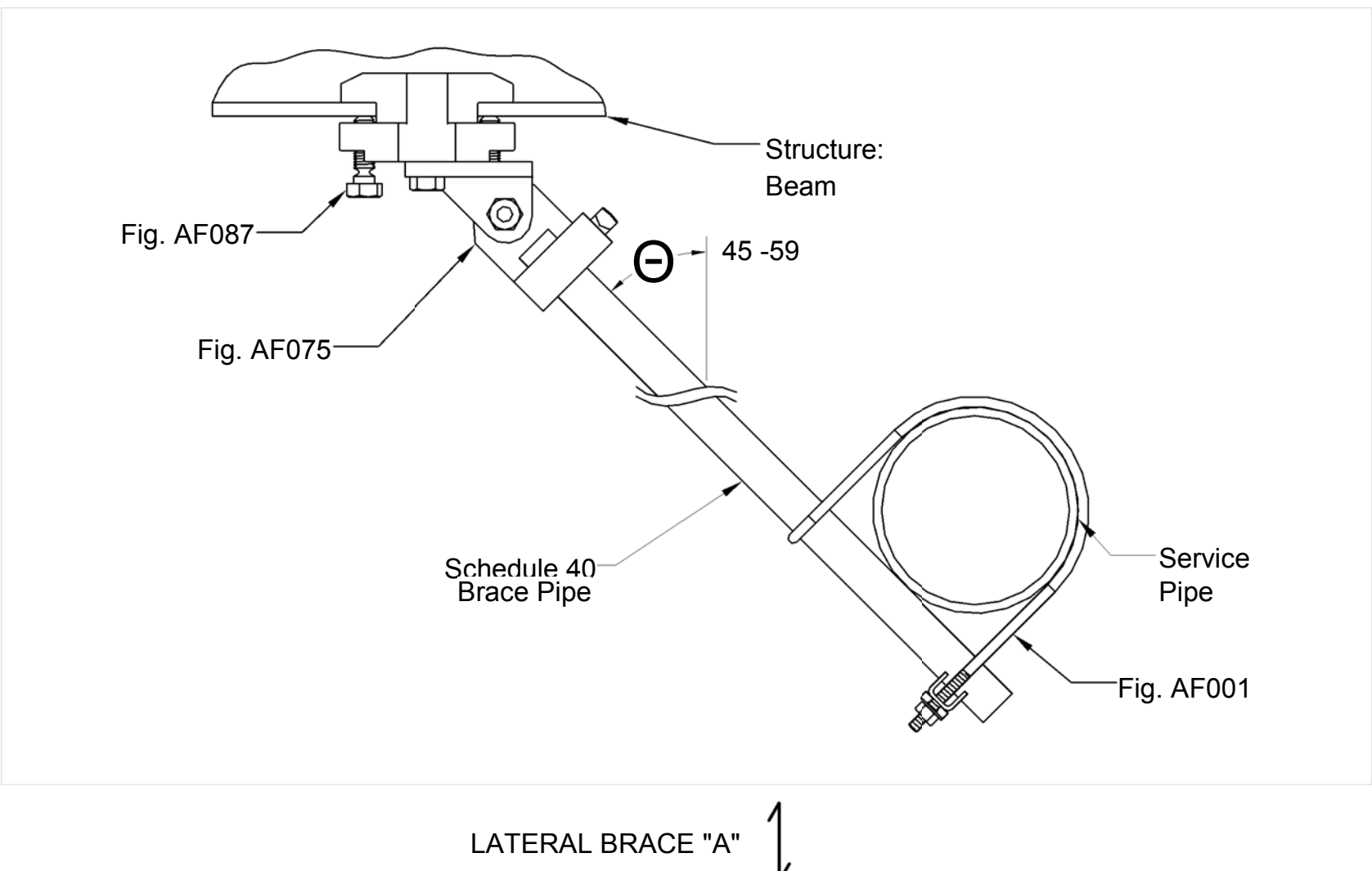
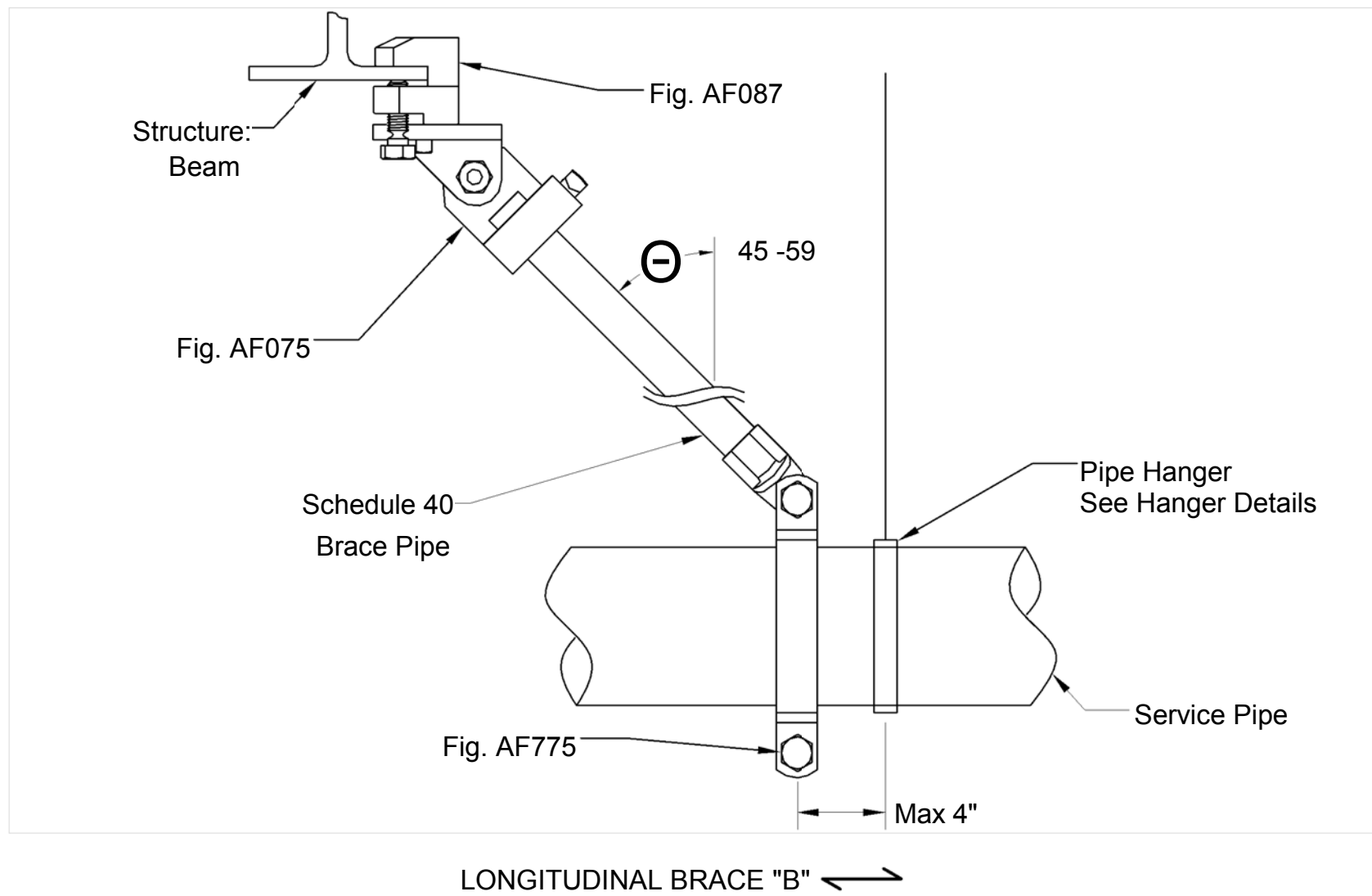
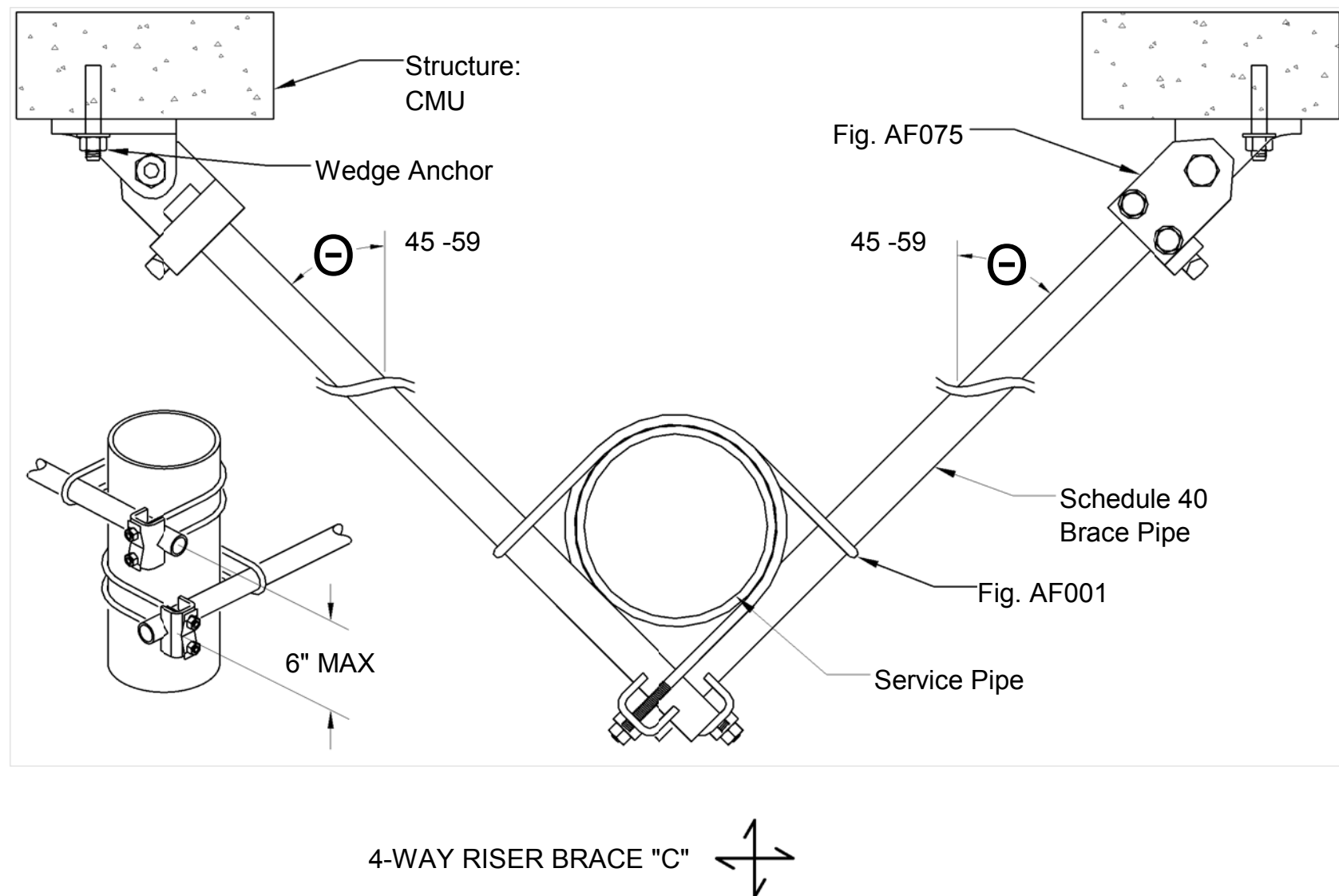
NAC NO. 161-19015  
DATE 12/10/2020

DSA BACKCHECK  
SUBMISSION

FIRE SPRINKLER DETAILS

**FP5.01**

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1 SEISMIC BRACE DETAILS  
NTS

A - SEISMIC BRACE CALCULATIONS

Project Name	La Mirada High School	Brace Name	A
Seismic Project	New Field House	Drawing Reference	FP3.10
Project Address	13520 Adelfa Drive La Mirada, CA 90638	Standard	NFPA-13 2016
Brace Type	Lateral	Approval Agency	UL Listed

STRUCTURE INFORMATION

Structure	I-Beam/Joist
Substrate	Horizontal Beam Flange
Thickness	0.25 in.
Load Orientation	Parallel to Beam

BRACE INFORMATION

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

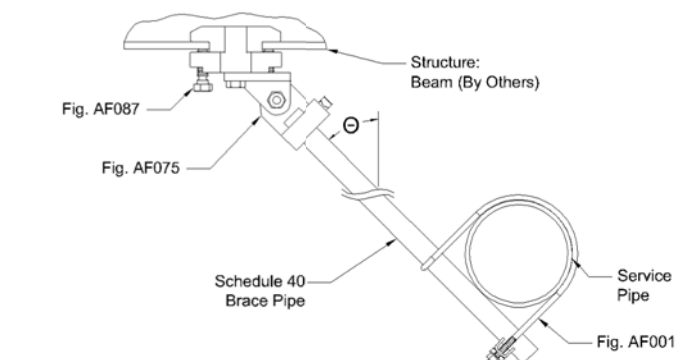
FASTENER INFORMATION

Fastener Orientation	N/A
Fastener Type	N/A
Fastener Diameter	N/A
Fastener Embedment Min	N/A
Max Horizontal Load	N/A

SEISMIC BRACE ATTACHMENTS

Model	Size	Load Rating
AF087	N/A	990 lb.
AF075	1/2"x1"	1,424 lb.
AF001	4"x1"	707 lb.

See Appendix A for alternate seismic brace attachments.  
All seismic brace attachments manufactured by Anvil International LLC.



Net Vertical Reaction Forces do not need to be addressed per NFPA 13 2016 Section 9.3.5.10.

SPRINKLER SYSTEM LOAD CALCULATION ( $F_{pw} = C_p * W_p$ )  
 $C_p = 0.766$

Qty	Line	Description	Diameter	Pipe Type	Length	Weight per ft	Weight
1	Main	Braced Pipe	4 NPS	Steel Sch 10	30.00 ft.	11.78 lb/ft.	353.40 lb.
1	Branch 1	Segment A	1 NPS	Steel Sch 40	43.00 ft.	2.05 lb/ft.	88.15 lb.
		Segment B	1 1/4 NPS	Steel Sch 40	36.00 ft.	2.93 lb/ft.	105.48 lb.
		Segment C	1 1/2 NPS	Steel Sch 40	6.00 ft.	3.61 lb/ft.	21.66 lb.
Weakest Main Size		Spacing	Max Fpw	Total System Weight =		568.69 lb.	
4 Steel Sch 10		30 ft.	1,071 lb.	System Design Weight (W <sub>s</sub> ) =		654 lb.	
				Horizontal Seismic Load (F <sub>pw</sub> ) =		501 lb.	

B - SEISMIC BRACE CALCULATIONS

Project Name	La Mirada High School	Brace Name	B
Seismic Project	New Field House	Drawing Reference	FP3.10
Project Address	13520 Adelfa Drive La Mirada, CA 90638	Standard	NFPA-13 2016
Brace Type	Longitudinal	Approval Agency	UL Listed

STRUCTURE INFORMATION

Structure	I-Beam/Joist
Substrate	Horizontal Beam Flange
Thickness	0.25 in.
Load Orientation	Perpendicular to Beam

BRACE INFORMATION

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

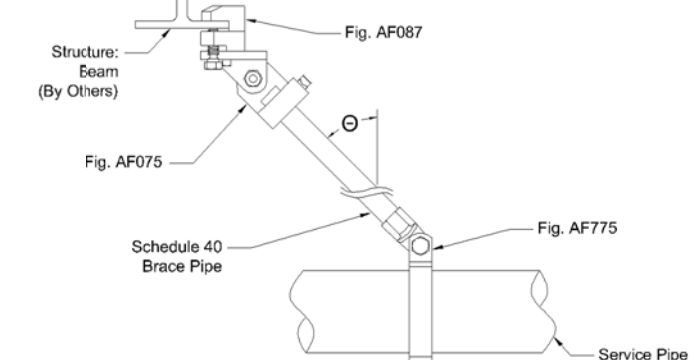
FASTENER INFORMATION

Fastener Orientation	N/A
Fastener Type	N/A
Fastener Diameter	N/A
Fastener Embedment Min	N/A
Max Horizontal Load	N/A

SEISMIC BRACE ATTACHMENTS

Model	Size	Load Rating
AF087	N/A	990 lb.
AF075	1/2"x1"	1,424 lb.
AF775	4"x1"	707 lb.

See Appendix A for alternate seismic brace attachments.  
All seismic brace attachments manufactured by Anvil International LLC.



Net Vertical Reaction Forces do not need to be addressed per NFPA 13 2016 Section 9.3.5.10.

SPRINKLER SYSTEM LOAD CALCULATION ( $F_{pw} = C_p * W_p$ )  
 $C_p = 0.766$

Qty	Line	Description	Diameter	Pipe Type	Length	Weight per ft	Weight
1	Main	Braced Pipe	4 NPS	Steel Sch 10	30.00 ft.	11.78 lb/ft.	353.40 lb.
		Total System Weight =		353.40 lb.			
		System Design Weight ( $W_s$ ) =		407 lb.			
		Horizontal Seismic Load ( $F_{pw}$ ) =		312 lb.			

C - SEISMIC BRACE CALCULATIONS

Project Name	La Mirada High School	Brace Name	C
Seismic Project	New Field House	Drawing Reference	FP3.10
Project Address	13520 Adelfa Drive La Mirada, CA 90638	Standard	NFPA-13 2016
Brace Type	Riser / 4-Way Brace Assembly - Wall Condition	Approval Agency	UL Listed

STRUCTURE INFORMATION

Structure	Cracked Concrete
Substrate	Normal Weight Cracked Concrete - 3000 psi
Thickness	N/A
Load Orientation	N/A

BRACE INFORMATION

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

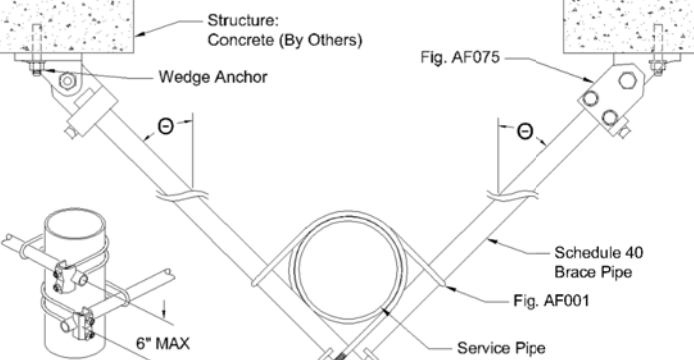
FASTENER INFORMATION

Fastener Orientation	B & D
Fastener Type	Wedge Anchor
Fastener Diameter	1/2 in.
Fastener Embedment Min	3 5/8 in.
Max Horizontal Load	305 lb.

SEISMIC BRACE ATTACHMENTS

Model	Size	Load Rating
N/A	N/A	N/A
AF075	1/2"x1"	1,007 lb.
AF001	4"x1"	500 lb.

See Appendix A for alternate seismic brace attachments.  
All seismic brace attachments manufactured by Anvil International LLC.



SPRINKLER SYSTEM LOAD CALCULATION ( $F_{pw} = C_p * W_p$ )  
 $C_p = 0.766$

Qty	Line	Description	Diameter	Pipe Type	Length	Weight per ft	Weight
1	Main	Braced Pipe	4 NPS	Steel Sch 10	25.00 ft.	11.78 lb/ft.	294.50 lb.
Weakest Main Size		Spacing	Max Fpw	Total System Weight =		294.50 lb.	
4 Steel Sch 10		25 ft.	1,307 lb.	System Design Weight ( $W_s$ ) =		339 lb.	
				Horizontal Seismic Load ( $F_{pw}$ ) =		260 lb.	

Appendix C -  $C_p$  Calculations

BRACE CALCULATION DATA

Brace Name	Brace Ref	Method	$C_p$	$S_s$	Site	$F_a$	$S_{ds}$	$z$	$h$
A	FP3.10	A	0.766	1.640	--	--	--	--	--
B	FP3.10	A	0.766	1.640	--	--	--	--	--
C	FP3.10	A	0.766	1.640	--	--	--	--	--

CALCULATION METHODS

- A  $C_p$  calculated per NFPA 13-2016 Table 9.3.5.9.3
- B  $C_p$  entered by user
- C  $C_p$  calculated per ASCE/SEI 7-10 per NFPA 13-2016 Section 9.3.5.9.4

Per NFPA 13-2016, the following values are always assumed for  $a_p$ ,  $R_p$ , and  $I_p$ :

$a_p$	$R_p$	$I_p$
2.5	4.5	1.5

LEGEND

$F_{pw}$	Seismic Horizontal Design Force
$C_p$	Seismic Coefficient per NFPA 13
$S_s$	Short Period MCE 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

$$F_{pw} = C_p W_p$$

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

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

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

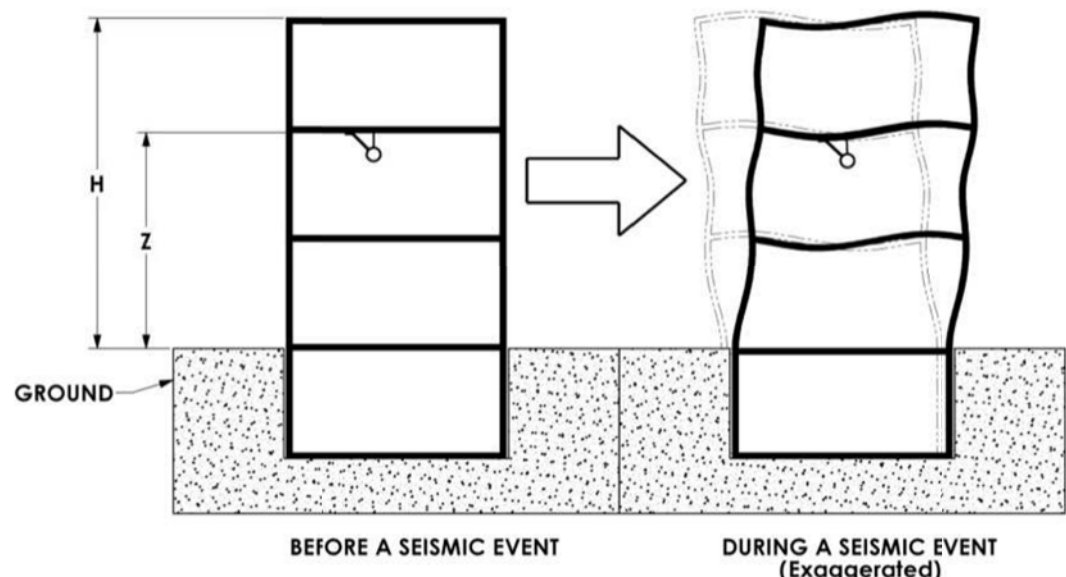
$$C_{p \text{ min}} = 0.7 * 0.3 S_{DS} I_p$$

SITE COEFFICIENT,  $F_a$  PER ASCE/SEI 7-10

Site Class	$S_s \leq 0.25$	$S_s = 0.5$	$S_s = 0.75$	$S_s = 1.0$	$S_s \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9

SITE CLASSIFICATION PER ASCE/SEI 7-10

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



2/25/2020

ATC Hazards by Location

Search Information

Address:	13520 Adelfa Dr, La Mirada, CA 90638, USA
Coordinates:	33.9080758, -118.0038328
Elevation:	207 ft
Timestamp:	2020-02-26T02:38:50.520Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	IV
Site Class:	D

ATC Hazards by Location



Basic Parameters

Name	Value	Description
$S_S$	1.64	MCEg ground motion (period=0.2s)
$S_1$	0.582	MCEg ground motion (period=1.0s)
$S_{MS}$	1.64	Site-modified spectral acceleration value
$S_{M1}$	* null	Site-modified spectral acceleration value
$S_{D8}$	1.093	Numeric seismic design value at 0.2s SA
$S_{D1}$	* null	Numeric seismic design value at 1.0s SA

\* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category

[https://hazards.atcouncil.org/#/seismic?lat=33.9080758&lng=-118.0038328&address=13520 Adelfa Dr%2C La Mirada%2C CA 90638%2C USA](https://hazards.atcouncil.org/#/seismic?lat=33.9080758&lng=-118.0038328&address=13520%20Adelfa%20Dr%2C%20La%20Mirada%2C%20CA%2090638%2C%20USA)

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