

# TOLBrace™ Seismic Bracing Calculations

V8.8.144

**Project Address:** FIRE STATION 46  
26720 BOMBEROA LANE  
VALENCIA, CA  
Job #

**Contractor:**  
**Address:**  
**Phone:**  
**License:**



Calculations based on 20220 NFPA Pamphlet #13

Brace Information	TOLCO™ Brace Components																		
Maximum Brace Length <u>7' 0" (2.134 m)</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>TOLCO™ Component</th> <th>Listed Load</th> <th>Adjusted Load</th> </tr> </thead> <tbody> <tr> <td>Fig. 4L Clamp</td> <td>1000 lbs (454 kg)</td> <td>966 lbs (438 kg)</td> </tr> <tr> <td>Fig.980 - 5/8" Universal Swivel</td> <td>2100 lbs (953 kg)</td> <td>2028 lbs (920 kg)</td> </tr> <tr> <td colspan="3">See Fastener Information</td> </tr> <tr> <td colspan="3">*Calculation Based on CONCENTRIC Loading</td> </tr> <tr> <td colspan="3">*Please Note: These calculations are for TOLCO™ components only. Use of any other components voids these calculations and the listing of the assembly.</td> </tr> </tbody> </table>	TOLCO™ Component	Listed Load	Adjusted Load	Fig. 4L Clamp	1000 lbs (454 kg)	966 lbs (438 kg)	Fig.980 - 5/8" Universal Swivel	2100 lbs (953 kg)	2028 lbs (920 kg)	See Fastener Information			*Calculation Based on CONCENTRIC Loading			*Please Note: These calculations are for TOLCO™ components only. Use of any other components voids these calculations and the listing of the assembly.		
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Diameter of Brace <u>1"</u>	<h3>Seismic Brace Assembly Detail</h3>																		
Type of Brace <u>Sch.40</u>																			
Angle of Brace <u>75° Min.</u>																			
Least Rad. of Gyration <u>0.42" (11 mm)</u>																			
L/R Value <u>200</u>																			
Max Horizontal Load <u>1604 lbs (728 kg)</u>																			
Fastener Information																			
Orientation to Connecting Surface <u>NFPA Type F</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Brace Identification on Plans</th> </tr> </thead> <tbody> <tr> <td>4" BR-1</td> </tr> <tr> <td> <b>Brace Type</b>    Lateral [X]    Longitudinal [ ]    4-Way [ ] </td> </tr> </tbody> </table>	Brace Identification on Plans		4" BR-1	<b>Brace Type</b> Lateral [X]    Longitudinal [ ]    4-Way [ ]														
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Diameter <u>5/8in.</u>																			
Length <u>5 1/2in.</u>																			
Maximum Load <u>960 lbs (435 kg)</u>																			
Prying Factor <u>N/A</u>																			

Sprinkler System Load Calculation (Fpw = CpWp)					
Cp = 1.27					
Diameter	Type	Length	Total Length	Weight Per Unit Length	Total Weight
4" (100 mm)	Sch. 10	25 ft (7.6 m)	25 ft (7.6 m)	11.78 lb/ft (17.53 kg/m)	294 lbs (133 kg)
1.25" (32 mm)	Sch. 40	80 ft (24.4 m)	80 ft (24.4 m)	2.93 lb/ft (4.36 kg/m)	234 lbs (106 kg)
Subtotal Weight					528 lbs (240 kg)
Wp (incl. 15%)					607 lbs (275 kg)
Main Size	Type/Sch.	Spacing (ft)	Total (Fpw)		771 lbs (350 kg)
4"	Sch. 10	25	Maximum Fpw per 18.5.5.2 (if applicable)		793 lb (359 kg)

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Brace Identification	4" BR-1
Brace Type (Per NFPA#13)	NFPA Type F
Braced Pipe (ft)	4" Sch.10 Steel Pipe
Spacing of Brace	25' 0" (7.62 m)
Orientation of Brace	Lateral
Bracing Material	1" Sch.40
Maximum Brace Length	7' 0" (2.13 m)
Slenderness Ratio used for Load Calculation	200
True Angle of Brace for Calculation	75°
Type of Fastener	5/8in. x 5 1/2in. Thru Bolt
Length of Fastener	5 1/2in.

## Summary of Pipe within Zone of Influence

4" Sch.10 Steel Pipe (101.6 mm)	25 ft (7.6 m)
1.25" Sch.40 Steel Pipe (31.75 mm)	80 ft (24.4 m)

G-Factor Used 1.27

Allowance for Heads and Fittings 15%

### Conclusions

Total Adjusted Load of Pipe in Zone of Influence 772 lbs (350 kg)

Material Capacity 1604 lbs (728 kg)

Fastener Capacity 960 lbs (435 kg)

Fig. 4L Clamp 966 lbs (438 kg)

Fig.980 - 5/8" Universal Swivel 2028 lbs (920 kg)

Structural Member 6X STRUCTURAL MEMBER OR WOOD BLOCKING

Calculations prepared by JK

\* The description of the Structural Member is for informational purposes only.  
TOLBrace™ software calculates the brace assembly only, not the structure it is attached to.  
Calculated with TOLBrace™ 8  
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ADDENDUM #2 - APRIL 24, 2026

# TOLBrace™ Seismic Bracing Calculations

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Length <u>5 1/2in.</u>																			
Maximum Load <u>960 lbs (435 kg)</u>																			
Prying Factor <u>N/A</u>	<b>Brace Identification on Plans</b> 4" BR-2 <b>Brace Type</b> Lateral [ <input type="checkbox"/> ]    Longitudinal [X]    4-Way [ <input type="checkbox"/> ]																		

Sprinkler System Load Calculation (Fpw = CpWp)					
Cp = 1.27					
Diameter	Type	Length	Total Length	Weight Per Unit Length	Total Weight
4" (100 mm)	Sch. 10	40 ft (12.2 m)	40 ft (12.2 m)	11.78 lb/ft (17.53 kg/m)	471 lbs (214 kg)
Subtotal Weight					471 lbs (214 kg)
Wp (incl. 15%)					542 lbs (246 kg)
Main Size	Type/Sch.	Spacing (ft)	Total (Fpw)		688 lbs (312 kg)
4"	Sch. 10	40	Maximum Fpw per 18.5.5.2 (if applicable)		N/A

# TOLBrace™ Seismic Calculations

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Brace Identification	4" BR-2
Brace Type (Per NFPA#13)	NFPA Type F
Braced Pipe (ft)	4" Sch.10 Steel Pipe
Spacing of Brace	40' 0" (12.19 m)
Orientation of Brace	Longitudinal
Bracing Material	1" Sch.40
Maximum Brace Length	7' 0" (2.13 m)
Slenderness Ratio used for Load Calculation	200
True Angle of Brace for Calculation	75°
Type of Fastener	5/8in. x 5 1/2in. Thru Bolt
Length of Fastener	5 1/2in.

## Summary of Pipe within Zone of Influence

4" Sch.10 Steel Pipe (101.6 mm)	40 ft (12.2 m)

G-Factor Used 1.27

Allowance for Heads and Fittings 15%

### Conclusions

Total Adjusted Load of Pipe in Zone of Influence 688 lbs (312 kg)

Material Capacity 1604 lbs (728 kg)

Fastener Capacity 960 lbs (435 kg)

Fig. 4L Clamp 1932 lbs (876 kg)

Fig.980 - 5/8" Universal Swivel 2028 lbs (920 kg)

Structural Member 6X STRUCTURAL MEMBER OR WOOD BLOCKING

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ADDENDUM #2 - APRIL 24, 2026



26720 Bombero Lane  
Valencia, CA 91381  
Latitude, Longitude: 34.414576, -118.6023581



Date	6/27/2025, 6:24:49 AM
Design Code Reference Document	ASCE7-22
Risk Category	IV
Site Class	D

Type	Value	Description (Data)
$S_s$	2.56	The $MCE_R$ spectral response acceleration at 0.2 seconds for Site Class BC, in units of g.
$S_1$	0.87	The $MCE_R$ spectral response acceleration at 1 second for Site Class BC, in units of g.
$S_{MS}$	2.54	$S_{MS} = 1.5 \times S_{DS}$ , 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.
$S_{M1}$	1.94	$S_{M1} = 1.5 \times S_{D1}$ , the $MCE_R$ spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class.
$S_{DS}$	1.69	The design spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class, in units of g.
$S_{D1}$	1.29	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	F	Seismic design category
$PGA_M$	0.96	$PGA_M$ , the Geometric-Mean Maximum Considered Earthquake ( $MCE_G$ ) peak ground acceleration for the user-specified Site Class, in units of g
$T_S$	0.763	$T_S = S_{D1}/S_{DS}$ , in seconds, for construction of the two-period design spectrum
$T_0$	0.153	$T_0 = 0.2 \times T_S$ , in seconds, for construction of the two-period design response spectrum
$T_L$	8	$T_L$ , the long-period transition period, in seconds, for construction of the two-period design response spectrum