

TOLBrace™ Seismic Bracing Calculations

Project Address: Gateway Step by Step
 3303 8th Ave SE
 Puyallup, WA 98372
 Job # 2210130

Contractor: Emerald Fire LLC
Address: 11505 Burnham Drive NW
 Gig Harbor, WA 98332
Phone:
Licence: EMERAF980MR



Calculations based on 2016 NFPA Pamphlet #13

Brace Information	TOLCO™ Brace Components																		
Maximum Brace Length <u>7' 0" (2.134 m)</u> Diameter of Brace <u>1"</u> Type of Brace <u>Sch.40</u> Angle of Brace <u>30° Min.</u> Least Rad. of Gyration <u>0.42" (11 mm)</u> L/R Value <u>200</u> Max Horizontal Load <u>926 lbs (420 kg)</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. 1001 Clamp</td> <td>2015 lbs (914 kg)</td> <td>1007 lbs (457 kg)</td> </tr> <tr> <td>Fig.980 Universal Swivel</td> <td>2015 lbs (914 kg)</td> <td>1007 lbs (457 kg)</td> </tr> <tr> <td colspan="3">See Fastener Information</td> </tr> <tr> <td colspan="3" style="text-align: center;">*Calculation Based on CONCENTRIC Loading</td> </tr> <tr> <td colspan="3" style="text-align: center;">*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. 1001 Clamp	2015 lbs (914 kg)	1007 lbs (457 kg)	Fig.980 Universal Swivel	2015 lbs (914 kg)	1007 lbs (457 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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	Seismic Brace Assembly Detail																		
	Brace Identification on Plans Lateral																		
	Brace Type Lateral [X] Longitudinal [] 4-Way []																		
Fastener Information																			
Orientation to Connecting Surface <u>NFPA Type D</u> Fastener Type <u>Lag-Screw</u> Diameter <u>1/2in.</u> Length <u>4-1/2in.</u> Maximum Load <u>315 lbs (143 kg)</u> Prying Factor <u>N/A</u>																			

Sprinkler System Load Calculation (Fpw = CpWp)

Cp = 0.5908

Diameter	Type	Length	Total Length	Weight Per Unit Length	Total Weight
4" (100 mm)	Sch. 10	20 ft (6.1 m)	20 ft (6.1 m)	11.78 lb/ft (17.53 kg/m)	236 lbs (107 kg)
1.5" (40 mm)	Sch. 10	26 ft (7.9 m)	26 ft (7.9 m)	3.04 lb/ft (4.52 kg/m)	79 lbs (36 kg)
1.25" (32 mm)	Sch. 10	20 ft (6.1 m)	20 ft (6.1 m)	2.52 lb/ft (3.75 kg/m)	50 lbs (23 kg)
1" (25 mm)	Sch. 40	14 ft (4.3 m)	14 ft (4.3 m)	2.05 lb/ft (3.05 kg/m)	29 lbs (13 kg)
Subtotal Weight					394 lbs (179 kg)
Wp (incl. 15%)					453 lbs (206 kg)
Main Size 4"	Type/Sch. Sch. 10	Spacing (ft) 20	Total (Fpw)		268 lbs (121 kg)
Maximum Fpw per 9.3.5.5.2 (if applicable)					1635 lb (741 kg)

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Gateway Step by Step

Job # 2210130

3303 8th Ave SE



Brace Identification	Lateral
Brace Type (Per NFPA#13)	NFPA Type D
Braced Pipe (ft)	4" Sch.10 Steel Pipe
Spacing of Brace	20' 0" (6.1 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	30°
Type of Fastener	1/2in. x 4-1/2in. Lag-Screw
Length of Fastener	4-1/2in.

Summary of Pipe within Zone of Influence

4" Sch.10 Steel Pipe (101.6 mm)	20 ft (6.1 m)
1.5" Sch.10 Steel Pipe (38.1 mm)	26 ft (7.9 m)
1.25" Sch.10 Steel Pipe (31.75 mm)	20 ft (6.1 m)
1" Sch.40 Steel Pipe (25.4 mm)	14 ft (4.3 m)

G-Factor Used 0.5908

Allowance for Heads and Fittings 15%

Conclusions

Total Adjusted Load of Pipe in Zone of Influence	268 lbs (122 kg)
Material Capacity	926 lbs (420 kg)
Fastener Capacity	315 lbs (143 kg)
Fig. 1001 Clamp	1007 lbs (457 kg)
Fig.980 Universal Swivel	1007 lbs (457 kg)
Structural Member	Min 4x Member

Calculations prepared by Kyran Gibson

* 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.
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Sprinkler System Load Calculation (Fpw = CpWp)

Cp = 0.5908

Diameter	Type	Length	Total Length	Weight Per Unit Length	Total Weight
4" (100 mm)	Sch. 10	30 ft (9.1 m)	30 ft (9.1 m)	11.78 lb/ft (17.53 kg/m)	353 lbs (160 kg)
Subtotal Weight					353 lbs (160 kg)
Wp (incl. 15%)					406 lbs (184 kg)
Main Size 4"	Type/Sch. Sch. 10	Spacing (ft) 30	Total (Fpw)		240 lbs (109 kg)
Maximum Fpw per 9.3.5.5.2 (if applicable)					N/A

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Gateway Step by Step

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3303 8th Ave SE



Brace Identification	Longitudinal
Brace Type (Per NFPA#13)	NFPA Type D
Braced Pipe (ft)	4" Sch.10 Steel Pipe
Spacing of Brace	30' 0" (9.14 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	30°
Type of Fastener	1/2in. x 4-1/2in. Lag-Screw
Length of Fastener	4-1/2in.

Summary of Pipe within Zone of Influence

4" Sch.10 Steel Pipe (101.6 mm)	30 ft (9.1 m)
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G-Factor Used 0.5908

Allowance for Heads and Fittings 15%

Conclusions

Total Adjusted Load of Pipe in Zone of Influence	240 lbs (109 kg)
Material Capacity	926 lbs (420 kg)
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