TOLBrace™ Seismic Bracing Calculations

Project Address: Larson Jeep
300 River Rd
Puyallup, WA
Job # 2220029

Contractor: Emerald Fire
Address: 11021 Cramer Rd NW
Gig Harbor, WA98329
Phone: 2538572312
Licence:

Powering Business Worldwide

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Calculations based on 2016 NFPA Pamphlet #13

Brace Information

Maximum Brace Length	7' 0" (2.134 m)
Diameter of Brace	1"
Type of Brace	Sch.40
Angle of Brace	45° Min.
Least Rad. of Gyration	0.42" (11 mm)
L/R Value	200
Max Horizontal Load	1310 lbs (594 kg)

Fastener Information

Orientation to Connecting Surface NFPA Type B

Fastener

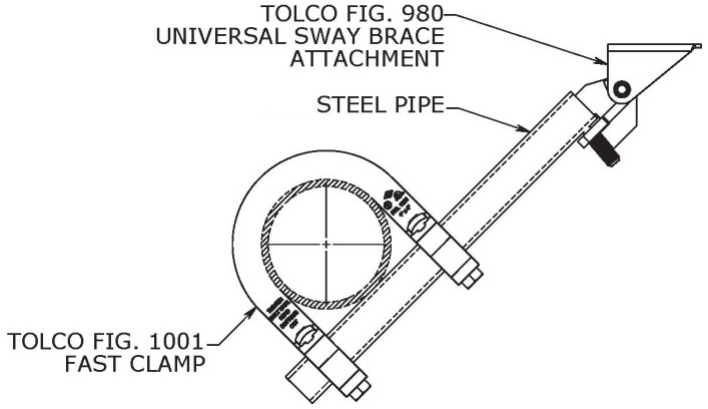
Type	Dual Through-Bolts - Fig.906
Diameter	1/2in. (13 mm)
Length	Minimum 4x Wood Member
Maximum Load	440 lbs (200 kg)
Prying Factor	N/A

TOLCO™ Brace Components

TOLCO™ Component	Listed Load	Adjusted Load
Fig. 1001 Clamp	2015 lbs (914 kg)	1425 lbs (646 kg)
Fig.980 Universal Swivel	2015 lbs (914 kg)	1425 lbs (646 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.

Seismic Brace Assembly Detail



Brace Identification on Plans Lateral

Brace Type Lateral [X] Longitudinal [ ] 4-Way [ ]

Sprinkler System Load Calculation (Fpw = CpWp)

Cp = 0.61

Diameter	Type	Length	Total Length	Weight Per Unit Length	Total Weight
4" (100 mm)	Sch. 10	13 ft (4 m)	13 ft (4 m)	11.78 lb/ft (17.53 kg/m)	153 lbs (69 kg)
1.5" (40 mm)	Sch. 10	90 ft (27.4 m)	90 ft (27.4 m)	3.04 lb/ft (4.52 kg/m)	274 lbs (124 kg)
1" (25 mm)	Sch. 40	50 ft (15.2 m)	50 ft (15.2 m)	2.05 lb/ft (3.05 kg/m)	102 lbs (46 kg)

Subtotal Weight	529 lbs (240 kg)
Wp (incl. 15%)	608 lbs (276 kg)
Total (Fpw)	371 lbs (168 kg)
Maximum Fpw per 9.3.5.5.2 (if applicable)	1635 lb (741 kg)

Main Size	Type/Sch.	Spacing (ft)
4"	Sch. 10	13

TOLBrace™ Seismic Calculations

Larson Jeep

300 River Rd

Job # 2220029

Brace Identification	Lateral
Brace Type (Per NFPA#13)	NFPA Type B
Braced Pipe (ft)	4" Sch.10 Steel Pipe
Spacing of Brace	13' 0" (3.96 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	45°
Type of Fastener	1/2 (13 mm) Dual Through-Bolts Parallel to Beam - TOLCO Fig 906
Length of Fastener	Minimum 4x Wood Member

Summary of Pipe within Zone of Influence

4" Sch.10 Steel Pipe (101.6 mm)	13 ft (4 m)
1.5" Sch.10 Steel Pipe (38.1 mm)	90 ft (27.4 m)
1" Sch.40 Steel Pipe (25.4 mm)	50 ft (15.2 m)

G-Factor Used 0.61

Allowance for Heads and Fittings	15%

Conclusions

Total Adjusted Load of Pipe in Zone of Influence	371 lbs (168 kg)
Material Capacity	1310 lbs (594 kg)
Fastener Capacity	440 lbs (200 kg)
Fig. 1001 Clamp	1425 lbs (646 kg)
Fig.980 Universal Swivel	1425 lbs (646 kg)
Structural Member	Red-L Beam

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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Brace Information

Maximum Brace Length	7' 0" (2.134 m)
Diameter of Brace	1"
Type of Brace	Sch.40
Angle of Brace	45° Min.
Least Rad. of Gyration	0.42" (11 mm)
L/R Value	200
Max Horizontal Load	1310 lbs (594 kg)

Fastener Information

Orientation to Connecting Surface NFPA Type B

Fastener

Type	Dual Through-Bolts - Fig.906
Diameter	1/2in. (13 mm)
Length	Minimum 4x Wood Member
Maximum Load	600 lbs (272 kg)
Prying Factor	N/A

TOLCO™ Brace Components

TOLCO™ Component	Listed Load	Adjusted Load
Fig. 4L Clamp	2015 lbs (914 kg)	1425 lbs (646 kg)
Fig.980 Universal Swivel	2015 lbs (914 kg)	1425 lbs (646 kg)
See Fastener Information		

*Calculation Based on CONCENTRIC Loading
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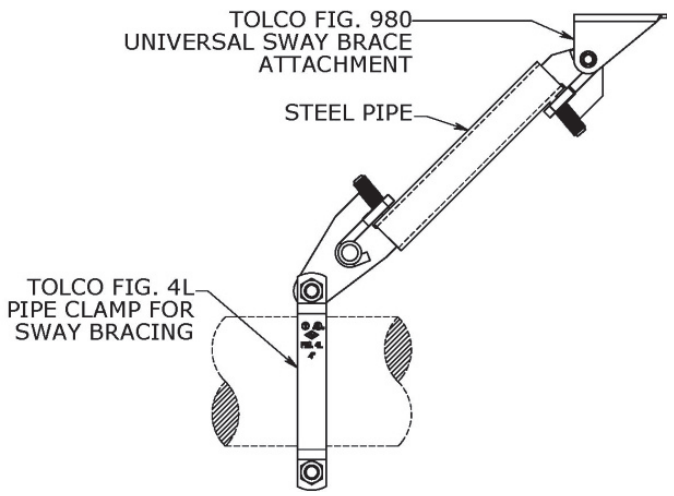
Seismic Brace Assembly Detail



Brace Identification on Plans Longitudinal

Brace Type Lateral [ ] Longitudinal [X] 4-Way [ ]

Sprinkler System Load Calculation (Fpw = CpWp)

Cp = 0.61

Diameter	Type	Length	Total Length	Weight Per Unit Length	Total Weight
4" (100 mm)	Sch. 10	60 ft (18.3 m)	60 ft (18.3 m)	11.78 lb/ft (17.53 kg/m)	707 lbs (321 kg)

Subtotal Weight	707 lbs (321 kg)
Wp (incl. 15%)	813 lbs (369 kg)
Total (Fpw)	496 lbs (225 kg)
Maximum Fpw per 9.3.5.5.2 (if applicable)	N/A

Main Size	Type/Sch.	Spacing (ft)
4"	Sch. 10	60

TOLBrace™ Seismic Calculations

Larson Jeep

300 River Rd

Job # 2220029

Brace Identification	Longitudinal
Brace Type (Per NFPA#13)	NFPA Type B
Braced Pipe (ft)	4" Sch.10 Steel Pipe
Spacing of Brace	60' 0" (18.29 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	45°
Type of Fastener	1/2 (13 mm) Dual Through-Bolts Perpendicular to Beam - TOLCO Fig 9C
Length of Fastener	Minimum 4x Wood Member

Summary of Pipe within Zone of Influence

4" Sch.10 Steel Pipe (101.6 mm)	60 ft (18.3 m)

G-Factor Used 0.61	
Allowance for Heads and Fittings	15%
Conclusions	
Total Adjusted Load of Pipe in Zone of Influence	496 lbs (225 kg)
Material Capacity	1310 lbs (594 kg)
Fastener Capacity	600 lbs (272 kg)
Fig. 4L Clamp	1425 lbs (646 kg)
Fig.980 Universal Swivel	1425 lbs (646 kg)
Structural Member	Red-L Beam

Calculations prepared by Kyran Gibson

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Calculated with TOLBrace™ 8
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