

INSTALLATION REQUIREMENTS FOR LATERAL PRESSURE OF STUDS at 16" o.c. with Bracing Distance from 4-ft to 8-ft

Stud Section	Stud Thickness mil (ga.)	FastBridge Type	Lateral Pressure (psf) and Bracing Distance (ft)																																			
			5psf				10psf				20psf				25psf				30psf				35psf				40psf				50psf							
			4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	4'	5'	6'	7'	8'	
362S162	20 (33)	FB43	1*				1*				1* 2*				1* 2*				2*				2*				2*				2*				2*			
	18 (43)		1*				1*				1* 2*				1* 2*				2*				2*				2*				2*							
	16 (54)		1*				1*				1* 2*				2*				2*				2*				2*											
	16 (54)	FB68	1*				1*				1*				1*				1*				1*				1*				1*							
	14 (68)		1*				1*				1*				1*				1*				1*				1*											
12 (97)	1*				1*				1*				1*				1*				1*				1*													
362S200	20 (33)	FB43	1*				1*				2*				2*				2*				2*				2*				2*							
	18 (43)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
	16 (54)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
	16 (54)	FB68	1*				1*				1*				1*				1*				1*				1*											
	14 (68)		1*				1*				1*				1*				1*				1*				1*											
12 (97)	1*				1*				1*				1*				1*				1*				1*													
362S250	20 (33)	FB43	1*				1*				2*				2*				2*				2*				2*				2*							
	18 (43)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
	16 (54)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
	16 (54)	FB68	1*				1*				1*				1*				1*				1*				1*											
	14 (68)		1*				1*				1*				1*				1*				1*				1*											
12 (97)	1*				1*				1*				1*				1*				1*				1*													
400S162	20 (33)	FB43	1*				1*				1* 2*				1* 2*				2*				2*				2*				2*							
	18 (43)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
	16 (54)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
	16 (54)	FB68	1*				1*				1*				1*				1*				1*				1*											
	14 (68)		1*				1*				1*				1*				1*				1*				1*											
12 (97)	1*				1*				1*				1*				1*				1*				1*													
400S200	20 (33)	FB43	1*				1*				2*				2*				2*				2*				2*				2*							
	18 (43)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
	16 (54)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
	16 (54)	FB68	1*				1*				1*				1*				1*				1*				1*											
	14 (68)		1*				1*				1*				1*				1*				1*				1*											
12 (97)	1*				1*				1*				1*				1*				1*				1*													
400S250	20 (33)	FB43	1*				1*				2*				2*				2*				2*				2*				2*							
	18 (43)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
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	16 (54)	FB68	1*				1*				1*				1*				1*				1*				1*											
	14 (68)		1*				1*				1*				1*				1*				1*				1*											
12 (97)	1*				1*				1*				1*				1*				1*				1*													
600S162	20 (33)	FB43	1*				1*				1*				1*				1*				1*				1*				1*							
	18 (43)		1*				1*				1*				1*				1*				1*				1*											
	16 (54)		1*				1*				1*				1*				1*				1*				1*											
	16 (54)	FB68	1*				1*				1*				1*				1*				1*				1*											
	14 (68)		1*				1*				1*				1*				1*				1*				1*											
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600S200	20 (33)	FB43	1*				1*				1*				1*				1*				1*				1*				1*							
	18 (43)		1*				1*				1*				1*				1*				1*				1*											
	16 (54)		1*				1*				1*				1*				1*				1*				1*											
	16 (54)	FB68	1*				1*				1*				1*				1*				1*				1*											
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600S250	20 (33)	FB43	1*				1*				2*				2*				2*				2*				2*				2*							
	18 (43)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
	16 (54)		1*				1*				1* 2*				1* 2*				2*				2*				2*											
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12 (97)	1*				1*				1*				1*				1*				1*				1*													
800S162	18 (43)	FB43	1*				1*				1*				1*				1*				1*				1*				1*							
	16 (54)		1*				1*				1*				1*				1*				1*				1*											
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	14 (68)		1*				1*				1*				1*				1*				1*				1*											
12 (97)	1*				1*				1*				1*				1*				1*				1*													

Installation Requirement Notes:

- "1*" indicates that one #10 screw used with FB43 or FB68 FastBridge Clip provides adequate torsional restraint to the stud for the designated lateral design pressure and brace spacing.
- "2*" indicates that two #10 screw used with FB43 or FB68 FastBridge Clip provides adequate torsional restraint to the stud for the designated lateral design pressure and brace spacing.
- Blank portions of the table indicates that FB43 or FB68 FastBridge Clip do not provide adequate torsional restraint to the stud for the designated lateral design pressure and brace spacing.
- The table is for ASD lateral pressure.
- Lateral pressure to be derived using load combinations of the applicable building code
 - For IBC 2012 and later building codes, wind pressures are at design level and must be multiplied by 0.6 for ASD load combinations.
 - For IBC 2009 and earlier building codes, wind pressures are at working stress levels and may be used directly for design.



INSTALLATION REQUIREMENTS FOR LATERAL PRESSURE OF STUDS AT 24" o.c. with Bracing Distance from 4-ft to 8-ft

Stud Section	Stud Thickness mil (ga.)	FastBridge Type	Lateral Pressure (psf) and Bracing Distance (ft)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Installation Requirement Notes:

- "1*" indicates that one #10 screw used with FB43 or FB68 FastBridge Clip provides adequate torsional restraint to the stud for the designated lateral design pressure and brace spacing.
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- The table is for ASD lateral pressure.
- Lateral pressure to be derived using load combinations of the applicable building code
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FB43: FastBridge Connectors

FastBridge Model	Stud Depth (in)	Allowable Connector Capacity	No. of Screws	Stud Thickness, mils (ga)		
				33 (20)	43 (18)	54 (16)
FB43	3.625	Axial Brace Stiffness (lbs/in)	1	1140	1330	2270
			2	1220	1480	2270
		Axial Brace Strength (lbs)	1	178	210	273
			2	275	318	424
		Torsional Moment (in-lbs)	1	148	182	208
			2	331	430	556
FB43	4.00	Axial Brace Stiffness (lbs/in)	1	1030	1460	2170
			2	1190	1520	3030
		Axial Brace Strength (lbs)	1	191	213	263
			2	283	321	426
		Torsional Moment (in-lbs)	1	137	182	234
			2	403	403	498
FB43	6.00	Axial Brace Stiffness (lbs/in)	1	790	990	1730
			2	990	1160	1930
		Axial Brace Strength (lbs)	1	107	214	290
			2	263	324	450
		Torsional Moment (in-lbs)	1	166	170	172
			2	296	406	567
FB43	8.00	Axial Brace Stiffness (lbs/in)	1	-	750	1910
			2	-	750	1960
		Axial Brace Strength (lbs)	1	-	212	272
			2	-	302	438
		Torsional Moment (in-lbs)	1	-	152	343
			2	-	461	526

FB Connector Allowable Table Notes:

- Allowable loads are based on the use of cold-formed steel studs with a minimum yield strength, $F_y=33$ ksi and tensile strength, $F_u=45$ ksi for 43-mil (18-ga) or thinner and a minimum yield strength, $F_y=50$ ksi and tensile strength, $F_u=65$ ksi for 54 mil (16-ga) or thicker.
- Allowable loads are based on 54-mil (16-ga) u-channel bridging with a minimum yield strength, $F_y=33$ ksi and tensile strength, $F_u=45$ ksi.
- Allowable loads are for the bridging connection only. The strength and serviceability of the framing members is the responsibility of the designer.
- Allowable loads are based on #10 self-drilling screws with a nominal diameter of 0.190-in and a washer diameter of 0.375-in. Fasteners must have a minimum nominal shear strength of, $P_{ss}=1718$ -lbs and a nominal tensile strength of, $P_{ts} = 2654$ lbs.
- Allowable loads may not be increased for wind or seismic load.
- Allowable loads are for use when using ASD design methodology. For LRFD loads, multiply ASD allowable loads by 1.6.
- Allowable brace loads are based on ultimate test loads divided by a safety factor. Serviceability limits are not considered. Brace stiffness requirements are detailed in AISI S100 Section D3.3.
- Axial brace stiffness values apply to both ASD and LRFD designs.



FB68: FastBridge Connectors

FastBridge Model	Stud Depth (in)	Allowable Connector Capacity	No. of Screws	Stud Thickness, mils (ga)		
				54 (16)	68 (14)	97 (12)
FB68	3.625	Axial Brace Stiffness (lbs/in)	1	3410	4410	6270
			2	4010	6880	7585
		Axial Brace Strength (lbs)	1	465	520	573
			2	665	732	823
		Torsional Moment (in-lbs)	1	332	440	435
			2	735	894	1150
FB68	4.00	Axial Brace Stiffness (lbs/in)	1	3060	3440	6740
			2	3710	4670	8960
		Axial Brace Strength (lbs)	1	475	505	505
			2	676	752	878
		Torsional Moment (in-lbs)	1	382	462	564
			2	724	802	938
FB68	6.00	Axial Brace Stiffness (lbs/in)	1	2270	3240	3200
			2	2710	3870	3530
		Axial Brace Strength (lbs)	1	468	506	515
			2	682	788	885
		Torsional Moment (in-lbs)	1	294	412	670
			2	686	758	1004
FB68	8.00	Axial Brace Stiffness (lbs/in)	1	1940	2500	2530
			2	1960	2810	3015
		Axial Brace Strength (lbs)	1	463	510	517
			2	637	747	898
		Torsional Moment (in-lbs)	1	310	512	674
			2	682	788	963

FB Connector Allowable Table Notes:

- Allowable loads are based on the use of cold-formed steel studs with a minimum yield strength, $F_y=33$ ksi and tensile strength, $F_u=45$ ksi for 43-mil (18-ga) or thinner and a minimum yield strength, $F_y=50$ ksi and tensile strength, $F_u=65$ ksi for 54 mil (16-ga) or thicker.
- Allowable loads are based on 54-mil (16-ga) u-channel bridging with a minimum yield strength, $F_y=33$ ksi and tensile strength, $F_u=45$ ksi.
- Allowable loads are for the bridging connection only. The strength and serviceability of the framing members is the responsibility of the designer.
- Allowable loads are based on #10 self-drilling screws with a nominal diameter of 0.190-in and a washer diameter of 0.375-in. Fasteners must have a minimum nominal shear strength of, $P_{ss}=1718$ -lbs and a nominal tensile strength of, $P_{ts} = 2654$ lbs.
- Allowable loads may not be increased for wind or seismic load.
- Allowable loads are for use when using ASD design methodology. For LRFD loads, multiply ASD allowable loads by 1.6.
- Allowable brace loads are based on ultimate test loads divided by a safety factor. Serviceability limits are not considered. Brace stiffness requirements are detailed in AISI S100 Section D3.3.
- Axial brace stiffness values apply to both ASD and LRFD designs.

Design Examples

Example-1: Exterior Bearing-Wall Stud

Input

- 2012 IBC (ASCE 7-10 & AISI S100-07 w/ S2-10 Supplement)
- 800S200-68 (50-ksi) studs at 16" o.c., 10 ft. tall
- Bracing at 5-ft o.c. (Mid-point bracing)
- Nominal axial stud strength, $P_n=6800$ lbs (2008 AISI Manual, Table III-8)
- Distance from shear center to mid-plane of web, $m=0.796$ -in (2008 AISI Manual, Table I-2)
- Wind Design Pressure = 25psf

Laterally-Loaded Stud Design

Design Load tributary to brace:

$$W=(0.6)(25)(16/12)(5) = 100 \text{ lbs}$$

Note - IBC 2012 load combinations for ASD include a factor of 0.6 for wind loads.

Required flange force (AISI S100 Eq. D3.2.1-3)

$$P = 1.5(m/d)W = 1.5(0.796/8)100 = 14.93 \text{ lbs}$$

Torsional Moment

$$M = P(d) = 14.93(8) = 119.4 \text{ in-lbs}$$

From Allowable Loads Table for 8-in deep 68-mil stud,

Select FastBridge FB68 clip with One #10 fasteners

Allowable Torsional Moment = 512 in-lbs > 119.4 in-lbs **OK**

Axially-Loaded Stud Design

Required brace strength (AISI S100 Eq. D3.3-1)

$$P = 0.01(P_n) = 0.01(6800) = 68 \text{ lbs.}$$

For ASD, divide by 1.5 (2008 AISI Cold-Formed Steel Design Manual, Pg. III-54)

$$(68)/(1.5) = 45.3 \text{ lbs.}$$

Required brace stiffness (AISI S100 Eq. D3.3-2)

$$\beta = 2[4-(2/n)](P_n)/(L) = 2[4-(2/1)](6800)/(60) = 453 \text{ lbs/in}$$

From Allowable Loads Table for 8-in deep 68-mil stud,

Select FastBridge FB68 clip with One #10 fasteners

Allowable brace strength = 510 lbs > 68 lbs. **OK**

Brace stiffness = 2500 lbs/in > 453 lbs/in. **OK**

Example-2: Curtain-Wall Stud

Input

- 2012 IBC (ASCE 7-10 & AISI S100-07 w/ S2-10 Supplement)
- 362S162-43 (33-ksi) studs at 16" o.c., 10 ft. tall
- Bracing at 5-ft o.c. (Mid-point bracing)
- Wind Design Pressure = 34psf

Select CDBS-FB clip using design table

ASD wind pressure:

$$P=(0.6)(34) = 20.4\text{-psf}$$

Note - IBC 2012 load combinations for ASD include a factor of 0.6 for wind loads.

For 362S162-43 stud with FastBridge FB43 connector, 20-psf wind pressure w/ 5-ft bracing distance,

FastBridge FB43 with One-#10 fasteners **OK**

GENERAL NOTES:

- Bridging connectors may also be designed using Allowable Loads Tables
- Only lateral load has been included for clarity.
- Design of curtain wall studs should consider load combinations in accordance with the applicable building code.