

Cold Formed Steel Calculations

Webster ISB
St. Louis, MO

FOR
PARIC
St. Louis, MO

September 21th, 2016
McClure # 80916190-00

I hereby certify that these calculations were prepared by me or under my direct supervision. I am a Professional Structural Engineer in good standing in the State of Missouri.



9-21-16

Cody L. Dailey, P.E. S.E. MO License No.2008002145

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PROVIDE CONNECTION DETAILS AND CALCS FOR CANTILEVER STUDS FRAMING PARAPET AT GRIDS A.1 & C.3 & 5. WIND LOAD FROM CURTAINWALL IS TAKEN INTO STRUCTURE WITH SLIDE CLIP TO STRUCTURE. CANTILEVER DESIGN INCLUDES PARAPET ONLY.

VERIFY CONNECTION IN 6/S0302 AT GRID 1.7 DEVELOPS THE MOMENT DUE TO THE WIND LOAD FROM THE CURTAINWALL ABOVE.

VERIFY CONNECTION OF STUDS BELOW THE CURTAINWALL AT GRIDS A.2 & C.2 DEVELOPS THE MOMENT DUE TO THE WIND LOAD FROM THE CURTAINWALL ABOVE.

PROVIDE DESIGN FOR FRAMING AROUND PIPING GROUP NEAR GRIDS D & 8. KICKERS ARE NOT ALLOWED ALONG OPENING.

VERIFY CURTAINWALL SYSTEM DESIGN AS TO LOCATIONS OF DEAD LOAD AND WIND LOAD CONNECTIONS TO DETERMINE NEEDS OF CFMF - COORD WITH NGG.

VERIFY RECEIPT OF ASI 023.

Company

Address

City, State

Phone

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JOB NO.

SHEET NO.

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www.struware.com**Code Search****Code:** International Building Code 2009**Occupancy Category & Importance Factors:**

Occupancy Category = III

Wind factor = 1.15

Snow factor = 1.10

Seismic factor = 1.25

Building Geometry:Roof angle (θ) 0.50 / 12 2.4 deg

Building length (L) 250.0 ft

Least width (B) 150.0 ft

Mean Roof Ht (h) 65.0 ft

Parapet ht above grd 68.0 ft

Minimum parapet ht 3.0 ft

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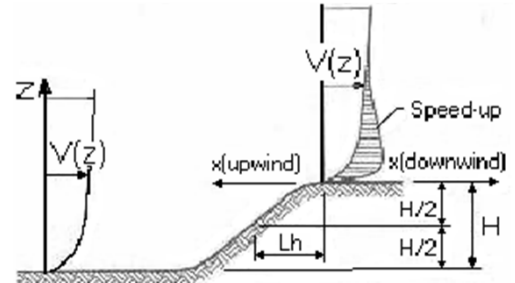
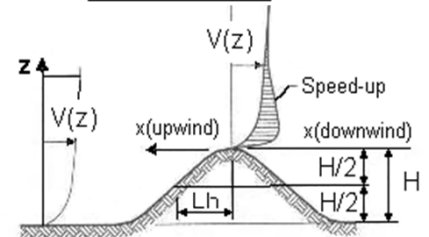
Wind Loads :

ASCE 7 - 05

Basic Wind Speed	90 mph
Importance Factor	1.15
Occupancy Category	III
Exposure Category	B
Enclosure Classif.	Enclosed Building
Internal pressure	+/-0.18
Directionality (Kd)	0.85
Kh case 1	0.874
Kh case 2	0.874
Type of roof	Monoslope

Topographic Factor (Kzt)

Topography	Flat
Hill Height (H)	80.0 ft
Half Hill Length (Lh)	100.0 ft
Actual H/Lh =	0.80
Use H/Lh =	0.50
Modified Lh =	160.0 ft
From top of crest: x =	50.0 ft
Bldg up/down wind?	downwind
H/Lh = 0.50	K ₁ = 0.000
x/Lh = 0.31	K ₂ = 0.792
z/Lh = 0.41	K ₃ = 1.000
At Mean Roof Ht:	
Kzt = (1+K ₁ K ₂ K ₃) ² =	1.00

**ESCARPMENT****2D RIDGE or 3D AXISYMMETRICAL HILL****Gust Effect Factor**

h =	65.0 ft
B =	150.0 ft
/z (0.6h) =	39.0 ft

Flexible structure if natural frequency < 1 Hz (T > 1 second).

However, if building h/B < 4 then probably rigid structure (rule of thumb).

h/B = 0.43 Therefore, probably rigid structure

G = 0.85 Using rigid structure default**Rigid Structure**

$\bar{e}$ =	0.33
ℓ =	320 ft
Z_{min} =	30 ft
c =	0.30
g_Q, g_v =	3.4
L_z =	338.3 ft
Q =	0.82
I_z =	0.29
G =	0.82

Flexible or Dynamically Sensitive Structure

Natural Frequency (η_1) =	0.0 Hz		
Damping ratio (β) =	0		
β/b =	0.45		
β/α =	0.25		
V_z =	61.9		
N_1 =	0.00		
R_n =	0.000		
R_h =	28.282	η =	0.000
R_B =	28.282	η =	0.000
R_L =	28.282	η =	0.000
g_R =	0.000		
R =	0.000		
G =	0.000		

h = 65.0 ft

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Nominal Wind Pressures

Wind Loads - Components & Cladding : Alternate design 60'<h<90'

Kh (case 1) = 0.87 h = 65.0 ft
 Base pressure (qh) = **17.7 psf** a = 15.0 ft
 Minimum parapet ht = 3.0 ft GCpi = +/-0.18
 Roof Angle (θ) = 2.4 deg
 Type of roof = Monoslope

Roof

Area	GCp +/- GCpi			Surface Pressure (psf)			User input	
	10 sf	50 sf	100 sf	10 sf	50 sf	100 sf	75 sf	9350 sf
Negative Zone 1	-1.18	-1.11	-1.08	-20.9	-19.7	-19.1	-19.3	-19.1
Negative Zone 2	-1.98	-1.49	-1.28	-35.1	-26.4	-22.7	-24.2	-22.7
Negative Zone 3	-1.98	-1.49	-1.28	-35.1	-26.4	-22.7	-24.2	-22.7
Positive Zone 1	0.48	0.41	0.38	10.0	10.0	10.0	10.0	10.0
Positive Zones 2 & 3	1.08	0.97	0.92	19.1	17.2	16.3	16.7	14.3
Overhang Zone 1&2	-1.70	-1.63	-1.60	-30.1	-28.9	-28.3	-28.6	-19.5
Overhang Zone 3	-1.70	-1.63	-1.60	-30.1	-28.9	-28.3	-28.6	-19.5

Negative zone 3 = zone 2, since parapet >= 3ft.

Overhang pressures in the table above assume an internal pressure coefficient (Gcpi) of 0.0

Parapet

qp = 17.9 psf

CASE A = pressure towards building (pos)
 CASE B = pressure away from bldg (neg)

Solid Parapet Pressure	Surface Pressure (psf)			User input
	10 sf	100 sf	500 sf	20 sf
CASE A : Interior zone:	48.4	33.0	31.0	43.8
Corner zone:	48.4	33.0	31.0	43.8
CASE B : Interior zone:	-33.9	-28.2	-24.2	-32.2
Corner zone:	-38.8	-30.2	-24.2	-36.2

Walls

Area	GCp +/- GCpi			Surface Pressure (psf)			User input	
	10 sf	100 sf	500 sf	10 sf	100 sf	500 sf	25 sf	200 sf
Negative Zone 4	-1.17	-1.01	-0.90	-20.7	-17.9	-15.9	-19.6	-17.1
Negative Zone 5	-1.44	-1.12	-0.90	-25.5	-19.9	-15.9	-23.3	-18.2
Positive Zone 4 & 5	1.08	0.92	0.81	19.1	16.3	14.3	18.0	15.5

Note: GCp reduced by 10% due to roof angle <= 10 deg.

Company

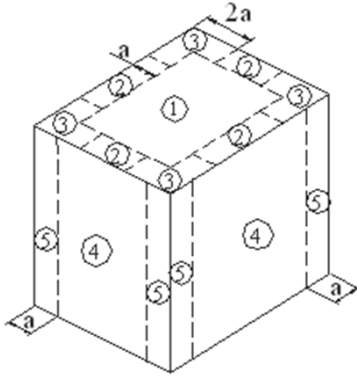
Address
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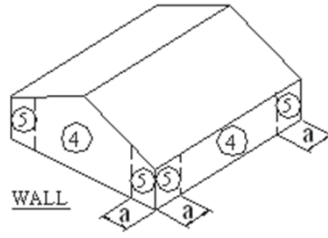
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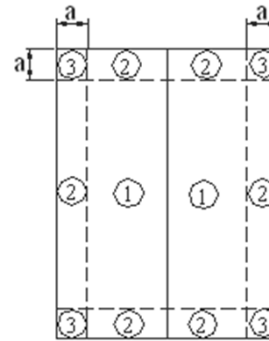
DATE _____
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Nominal Wind Pressures**Location of C&C Wind Pressure Zones**

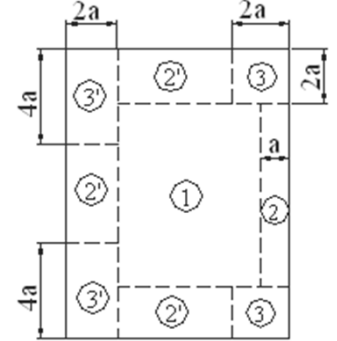
Roofs w/ $\theta \leq 10^\circ$
and all walls
 $h > 60'$



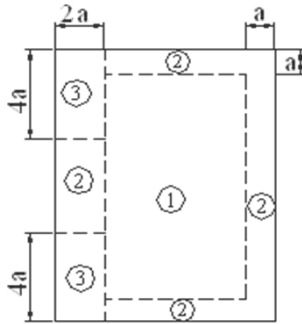
Walls $h \leq 60'$
& alt design $h < 90'$



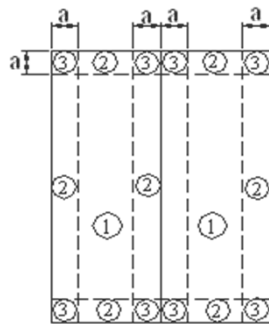
Gable, Sawtooth and
Multispan Gable $\theta \leq 7$ degrees &
Monoslope ≤ 3 degrees
 $h \leq 60'$ & alt design $h < 90'$



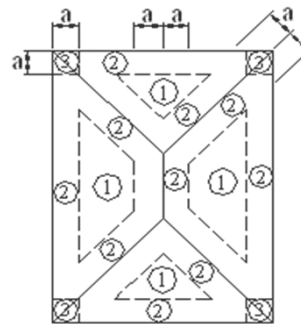
Monoslope roofs
 $3^\circ < \theta \leq 10^\circ$
 $h \leq 60'$ & alt design $h < 90'$



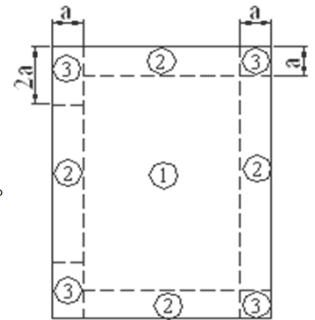
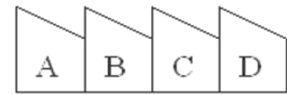
Monoslope roofs
 $10^\circ < \theta \leq 30^\circ$
 $h \leq 60'$ & alt design $h < 90'$



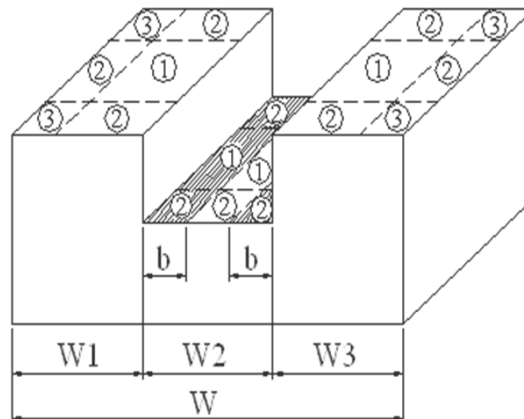
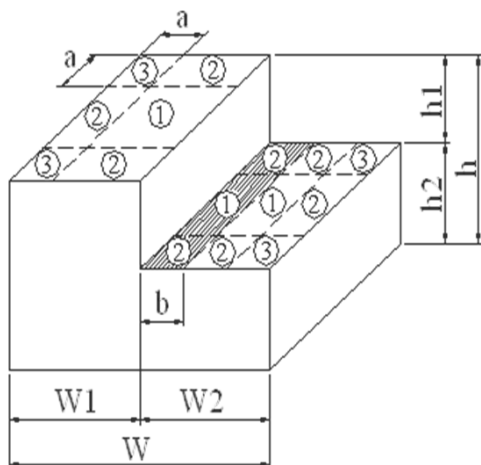
Multispan Gable &
Gable $7^\circ < \theta \leq 45^\circ$



Hip $7^\circ < \theta \leq 27^\circ$



Sawtooth $10^\circ < \theta \leq 45^\circ$
 $h \leq 60'$ & alt design $h < 90'$



Stepped roofs $\theta \leq 3^\circ$
 $h \leq 60'$ & alt design $h < 90'$

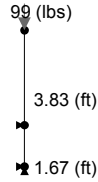
Company: THHinc McClure
 Address: 1901 Pennsylvania Drive
 Country: United States
 State: Missouri
 Zip Code: 65202

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 1-A0402

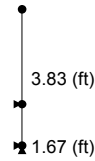
Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

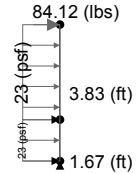
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LOCATION



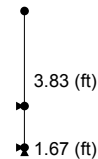
Dead Load



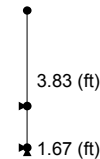
Live Load



Wind Load



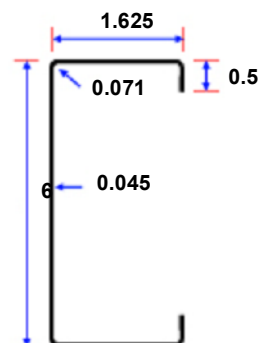
Seismic Load



Snow/Roof Live Load

Gross Section Properties:

Ix (major) (in4)	2.316
Sx (major) (in3)	0.772
rx (major) (in)	2.277
Iy (minor) (in4)	0.148
Sy (minor) (in3)	0.123
ry (minor) (in)	0.576
Area (in²)	0.447
Xo (in)	-1.062
J x 1000 (in4)	0.303
Cw (in6)	1.095
Ro (in)	2.577
Weight (lbs/ft)	1.521



600S162-43mil, 33 ksi

Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	5.5
Stud Spacing (in)	18

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

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Allowable Hl. Deflection L /	360
Absolute Deflection (in)	1
Dead Load (lbs/ft)	0
Wall Own Weight (psf)	12
Max. Bridging Spacing (ft)	5
Deflection calculation method at parapet free end	Absolute value considered

Span Loads:

Span	Wind Load (psf)
1	23
2	23

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K ϕ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	0.316	0.099	0
2	-0.59	0	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0.099	0
Dead Load	2	0	0	0
Live Load	1	0	0	0
Live Load	2	0	0	0
Wind Load	1	0.316	0	0
Wind Load	2	-0.59	0	0
Seismic Load	1	0	0	0
Seismic Load	2	0	0	0
Snow/Roof Live Load	1	0	0	0
Snow/Roof Live Load	2	0	0	0

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Note:Applied Members Loads are calculated from Wall Loads

Joint Supports:

Joint	Support Type
1	Hinged
2	Roller
3	Unsupported

Joint Loads:

#	Load Case	Axial (lbs)	Lateral (lbs)	M (lbs.ft)
3	Dead Load	99	0	0
3	Wind Load	0	84.12	0

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Member Loads:

#	Load Case	Axial	Lateral	Moment	X/L
1	Wind Load	0 (lbs/ft)	34.5 (lbs/ft)	0.0 (lbs/ft)	Uniform
2	Wind Load	0 (lbs/ft)	34.5 (lbs/ft)	0.0 (lbs/ft)	Uniform

Load Combination Factors:

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength
3	1	0	0	0	1	Strength
4	1	0.75	0	0	0.75	Strength
5	1	0	1	0	0	Strength
6	1	0	0	0.7	0	Strength
7	1	0.75	0.75	0	0.75	Strength
8	1	0.75	0	0.525	0.75	Strength
9	0	0	0.42	0	0	Deflection
10	0	0	0	0.7	0	Deflection

Capacity Check:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hx. Deflection (in)	Crippling (kips)
1	Actual	6.903	0.373	N/A	0.099	0.001	N/A
	Allowable	14.674	1.416	9.131	4.916	0.056	N/A
	Act./All.	0.470	0.264	N/A	0.020	0.019	N/A
	X/L	1.000	1.000	N/A	0.000	N/A	N/A
2	Actual	6.903	0.216	N/A	0.099	0.039	N/A
	Allowable	14.292	1.416	8.532	3.607	0.255	N/A
	Act./All.	0.483	0.153	N/A	0.027 *	0.154	N/A
	X/L	0.000	0.000	N/A	0.300	N/A	N/A

Effective Section Properties:

Member	Value
1	Ae(Comp.) (in ²) 0.447
	Sxe (in3) 0.772
	Ixe (in4) 2.316
	Fy Design (ksi) 36.302
2	Ae(Comp.) (in ²) 0.266
	Sxe (in3) 0.772
	Ixe (in4) 2.316
	Fy Design (ksi) 36.302

Design for Web Crippling is Disabled

Interaction Check (kips.in, kips):

Member		Combined (M,V)	Combined (M,Pcr)	Combined (M,T)	Combined (M,P)
1	Moment(Mx)	6.903	Moment(Mx) N/A	Moment(Mx) N/A	Moment(Mx) 6.903
	Shear(Vy)	-0.373	Pcr (Crippling) N/A	Tension (T) N/A	Comp. (P) -0.099
	Act./All.	0.491	Act./All. N/A	Act./All. N/A	Act./All. 0.491
	X/L	1.000	X/L N/A	X/L N/A	X/L 1.000
2	Moment(Mx)	6.903	Moment(Mx) N/A	Moment(Mx) N/A	Moment(Mx) 6.903
	Shear(Vy)	0.216	Pcr (Crippling) N/A	Tension (T) N/A	Comp. (P) -0.099
	Act./All.	0.441	Act./All. N/A	Act./All. N/A	Act./All. 0.510
	X/L	0.000	X/L N/A	X/L N/A	X/L 0.000

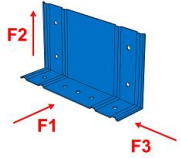
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Connection Data:

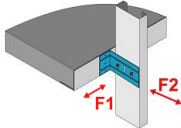
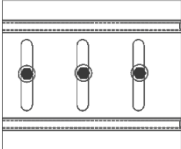
1	Clip Data	Clip Position	Base Connection @ Wall	  
		Clip Type	StiffClip AL600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.866	
		F2 (kips)	2.091	
		F3 (kips)	3.015	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.28	
		Screw Tension (kips)	0.124	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	0.316	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.183	
		Screw Tension (kips)	0.000	
	Interaction	Clip Linear Interaction ratio	0.105	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	NW Concrete, $f_c = 4000$ psi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	1	
		Min. Edge Distance for Shear (in)	2.75	
		Min. Edge Distance for Tension (in)	2.75	
		Min. Fastener Spacing for Shear (in)	2.75	
		Min. Fastener Spacing for Tension (in)	2.75	
		Allowable Shear (kips)	0.225	
		Allowable Tension (kips)	0.17	
	Fastener Design Load	Actual Shear (kips)	0.158	
		Actual Tension (kips)	0.049	
		Interaction Ratio	0.992	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

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2	Clip Data	Clip Position	Bypass Connection @ joint 2	  
		Clip Type	VertiClip SLB600	
		Screws	3 (#12)	
	Allowable Loads	F1 (kips)	0.124	
		F2 (kips)	0.841	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.590	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.701	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.000	
		Actual Tension (kips)	0.487	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.

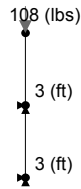
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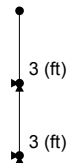
Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

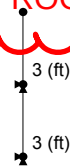
PROVIDE CONNECTION DETAIL TO EDGE ANGLE PER 7/S0302 FOR WIND LOAD FROM CURTAINWALL ABOVE. LOCATION IS FOR KNEE WALL FRAMING BELOW THE HIGH POP-UP ROOF CURTAINWALL. SEE SKETCH.



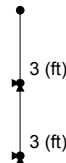
Dead Load



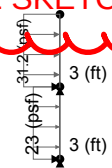
Seismic Load



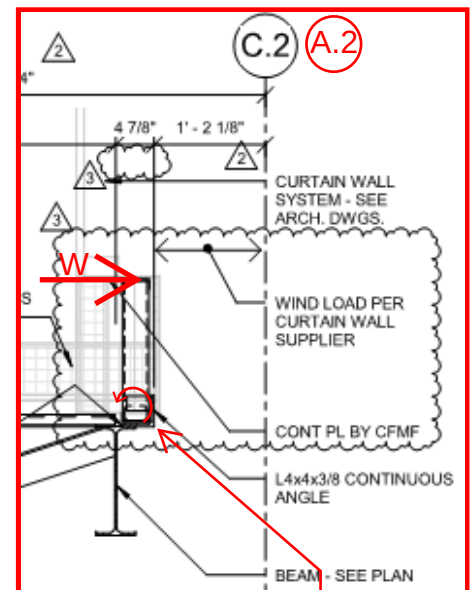
Live Load



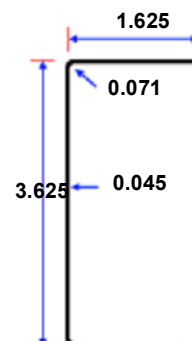
Snow/Roof Live Load



Wind Load



DESIGN CONN FOR MOMENT FROM CURTAINWALL ABOVE. SECTION IS BLDG SIDE OF LOW SLOPED ROOF



362S162-43mil, 33 ksi

Gross Section Properties:

Ix (major) (in4)	0.71
Sx (major) (in3)	0.392
rx (major) (in)	1.445
Iy (minor) (in4)	0.127
Sy (minor) (in3)	0.117
ry (minor) (in)	0.611
Area (in²)	0.34
Xo (in)	-1.297
J x 1000 (in4)	0.23
Cw (in6)	0.376
Ro (in)	2.036
Weight (lbs/ft)	1.156

Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	6
Stud Spacing (in)	18

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

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State: Missouri
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Allowable Hl. Deflection L /	360
Absolute Deflection (in)	1
Dead Load (lbs/ft)	0
Wall Own Weight (psf)	12
Max. Bridging Spacing (ft)	5
Deflection calculation method at parapet free end	Relative value considered

Span Loads:

Span	Wind Load (psf)
1	23
2	31.2

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K ϕ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	0.018	0	0
2	-0.262	0.108	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0	0
Dead Load	2	0	0.108	0
Live Load	1	0	0	0
Live Load	2	0	0	0
Wind Load	1	0.018	0	0
Wind Load	2	-0.262	0	0
Seismic Load	1	0	0	0
Seismic Load	2	0	0	0
Snow/Roof Live Load	1	0	0	0
Snow/Roof Live Load	2	0	0	0

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Note:Applied Members Loads are calculated from Wall Loads

Joint Supports:

Joint	Support Type
1	Hinged
2	Hinged
3	Unsupported

Joint Loads:

#	Load Case	Axial (lbs)	Lateral (lbs)	M (lbs.ft)
3	Dead Load	108	0	0

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Member Loads:

#	Load Case	Axial	Lateral	Moment	X/L
1	Wind Load	0 (lbs/ft)	34.5 (lbs/ft)	0.0 (lbs/ft)	Uniform
2	Wind Load	0 (lbs/ft)	46.8 (lbs/ft)	0.0 (lbs/ft)	Uniform

Load Combination Factors:

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength
3	1	0	0	0	1	Strength
4	1	0.75	0	0	0.75	Strength
5	1	0	1	0	0	Strength
6	1	0	0	0.7	0	Strength
7	1	0.75	0.75	0	0.75	Strength
8	1	0.75	0	0.525	0.75	Strength
9	0	0	0.42	0	0	Deflection
10	0	0	0	0.7	0	Deflection

Capacity Check:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hx. Deflection (in)	Crippling (kips)
1	Actual	2.527	0.093	N/A	N/A	0.003	N/A
	Allowable	7.739	0.676	6.122	3.667	0.1	N/A
	Act./All.	0.327	0.138 *	N/A	N/A	0.030	N/A
	X/L	1.000	0.722	N/A	N/A	N/A	N/A
2	Actual	2.527	0.101	N/A	0.108	0.016	N/A
	Allowable	7.739	0.676	6.122	3.504	0.2	N/A
	Act./All.	0.327	0.150 *	N/A	0.031 *	0.082	N/A
	X/L	0.000	0.278	N/A	0.300	N/A	N/A

Effective Section Properties:

Member	Value
1	Ae(Comp.) (in ²) 0.253
	Sxe (in3) 0.392
	Ixe (in4) 0.71
	Fy Design (ksi) 36.302
2	Ae(Comp.) (in ²) 0.255
	Sxe (in3) 0.392
	Ixe (in4) 0.71
	Fy Design (ksi) 36.302

Design for Web Crippling is Disabled

* Forces are calculated for punched-out section

Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	2.527	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A
	Shear(Vy)	-0.122	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	N/A
	Act./All.	0.307	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	X/L	1.000	X/L	N/A	X/L	N/A	X/L	N/A
2	Moment(Mx)	2.527	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	2.527
	Shear(Vy)	0.14	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.108
	Act./All.	0.309	Act./All.	N/A	Act./All.	N/A	Act./All.	0.357
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	0.000

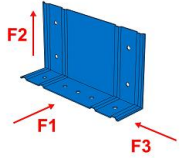
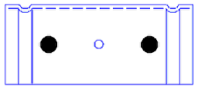
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Country: United States
State: Missouri
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User Defined Curtain Wall Layout

Connection Data:

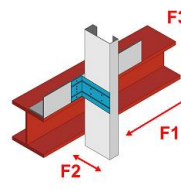
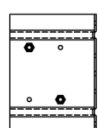
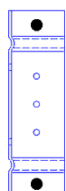
1	Clip Data	Clip Position	Base Connection @ Wall	  
		Clip Type	StiffClip AL362	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.734	
		F2 (kips)	1.557	
		F3 (kips)	2.824	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.28	
		Screw Tension (kips)	0.124	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	0.018	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.014	
		Screw Tension (kips)	0.000	
	Interaction	Clip Linear Interaction ratio	0.007	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	NW Concrete, $f_c = 4000$ psi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.75	
		Min. Edge Distance for Shear (in)	2.75	
		Min. Edge Distance for Tension (in)	2.75	
		Min. Fastener Spacing for Shear (in)	2.75	
		Min. Fastener Spacing for Tension (in)	2.75	
		Allowable Shear (kips)	0.125	
		Allowable Tension (kips)	0.1	
	Fastener Design Load	Actual Shear (kips)	0.009	
		Actual Tension (kips)	0.006	
		Interaction Ratio	0.129	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

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Address: 1901 Pennsylvania Drive
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2	Clip Data	Clip Position	Bypass Connection @ joint 2	  
		Clip Type	StiffClip LB362	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.768	
		F2 (kips)	1.954	
		F3 (kips)	2.658	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.28	
		Screw Tension (kips)	0.124	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.262	
		F3 (kips)	0.108	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.187	
		Screw Tension (kips)	0.000	
	Interaction	Clip Linear Interaction ratio	0.175	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.054	
		Actual Tension (kips)	0.243	
		Interaction Ratio	0.528	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

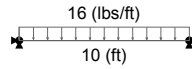
- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.
- Fastener spacing for attachment to the primary structure (1.875(in)) is less than the minimum spacing recommended by fastener manufacturer (Ratio = 0.68).

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 Address:
 Country: United States
 State: Missouri
 Zip Code:

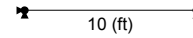
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 Soffit 10ft

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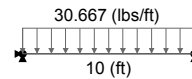
Simple Supported Rafter



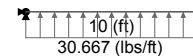
Dead Load



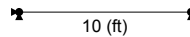
Roof Live Load



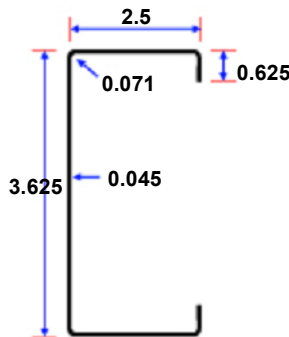
Wind Load(+)



Wind Load(-)



Snow Load



362S250-43mil, 33 ksi

Gross Section Properties

Ix (major) (in4)	0.98
Sx (major) (in3)	0.541
rx (major) (in)	1.51
Iy (minor) (in4)	0.385
Sy (minor) (in3)	0.247
ry (minor) (in)	0.946
Area (in ²)	0.43
Xo (in)	-2.199
J x 1000 (in4)	0.292
Cw (in6)	1.23
Ro (in)	2.83
Weight (lbs/ft)	1.463

Roof Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Roof Horizontal Length (ft)	10
Rafter Spacing (in)	16
Lr/SL Allowable Deflection L /	360
TL Allowable Deflection L /	360
Absolute Deflection (in)	1
Rafter Slope (X/12)	0.000

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

Sections Effective Properties

Member	Value
1 Ae(Comp.) (in ²)	0.362
1 Sxe (in3)	0.493
1 Ixe(in4)	0.973
Fy Design (ksi)	33

Bracing Data:

Axial Compression Lateral Bracing (in)	None
Axial Compression Torsional Bracing (in)	None
Top Flange Lateral Bracing (in)	None

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Simple Supported Rafter

Top Flange Torsional Bracing (in)	None
Bottom Flange Lateral Bracing (in)	None
Bottom Flange Torsional Bracing (in)	None
K _φ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0.000

Maximum Positive Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	0	0.233	0
2	0	0.233	0

Maximum Negative Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	0	-0.105	0
2	0	-0.105	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0.08	0
Dead Load	2	0	0.08	0
Roof Live Load	1	0	0	0
Roof Live Load	2	0	0	0
Wind Load (+)	1	0	0.153	0
Wind Load (+)	2	0	0.153	0
Wind Load (-)	1	0	-0.153	0
Wind Load (-)	2	0	-0.153	0
Snow Load	1	0	0	0
Snow Load	2	0	0	0

Load Combination Factors:

#	Dead	Roof Live	Wind(+)	Wind(-)	Snow	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength
3	1	0	0	0	1	Strength
4	1	0	1	0	0	Strength
5	1	0.75	0.75	0	0	Strength
6	1	0	0.75	0	0.75	Strength
7	0.6	0	0	1	0	Strength
8	0	1	0	0	0	Deflection
9	0	0	0	0	1	Deflection
10	1	1	0	0	0	Deflection
11	1	0	0	0	1	Deflection

Span Loads (psf):

Span	Dead Load	Roof Live Load	Wind Load(+)	Wind Load(-)	Snow Load
1	12	0.000	23	23	0.000

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Capacity Check:

Member	Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Lr/SL Deflection (in)	TL Deflection (in)	Crippling (kips)
Actual	7	0.194	N/A	N/A	0.000	0.125	N/A

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 Address:
 Country: United States
 State: Missouri
 Zip Code:

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Simple Supported Rafter

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Lr/SL Deflection (in)	TL Deflection (in)	Crippling (kips)
1	Allowable	7.192	0.676	8.152	1.296	0.333	0.333	N/A
	Act./All.	0.973 *	0.288 *	N/A	N/A	0.000	0.376	N/A
	X/L	0.500	0.083	N/A	N/A	N/A	N/A	N/A

Design for Web Crippling is Disabled

* Forces are calculated for punched-out section

Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	6.72	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A
	Shear(Vy)	-0.047	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	N/A
	Act./All.	0.760	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	X/L	0.400	X/L	N/A	X/L	N/A	X/L	N/A

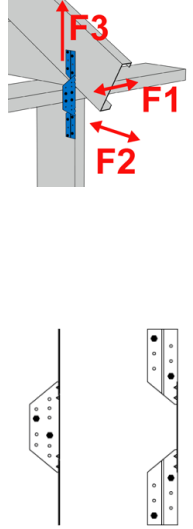
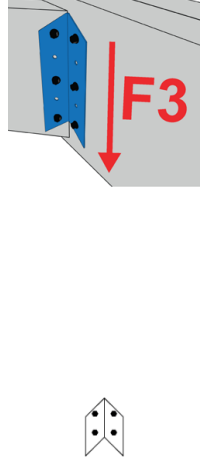
Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

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Soffit 10ft

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Simple Supported Rafter

Connection Data:

1	Clip Data	Clip Position	Clip @ joint 1	
		Clip Type	StiffClip RT1300-33	
		Screws	2 (#12)	
	Clip Allowable Loads	F1 (kips)	0.175	
		F2 (kips)	0.128	
		F3 (kips)	0.453	
		M1 (kips.in)	N/A	
	Clip Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	0.233	
		M1 (kips.in)	N/A	
	Clip Interaction	Linear Interaction ratio	0.515	
	Clip Long Leg Screws Actual Loads	Shear (kips)	0.14	
		Tension (kips)	0.000	
	Clip Short Leg Screws Actual Loads	Shear (kips)	0.18	
		Tension (kips)	0.000	
2	Clip Data	Clip Position	Clip @ joint 2	
		Clip Type	StiffClip HC362/400-43	
		Screws	2 (#12)	
	Clip Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	0.502	
		M1 (kips.in)	N/A	
	Clip Actual Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	0.233	
		M1 (kips.in)	N/A	
	Clip Interaction	Linear Interaction ratio	0.465	
	Clip Screws Actual Loads	Shear (kips)	N/A	
		Tension (kips)	N/A	
		Shear (kips)	N/A	
		Tension (kips)	N/A	
	Clip Screws Allowable Loads	Shear (kips)	N/A	
		Tension (kips)	N/A	
	Screw Interaction	Linear Interaction ratio	N/A	

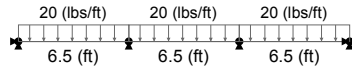
- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.

Company: THHinc McClure
 Address:
 Country: United States
 State: Missouri
 Zip Code:

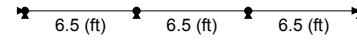
Webster ISB
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Date: Wed, Sep 21 16

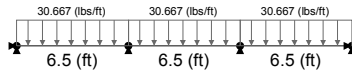
User-Defined Rafter



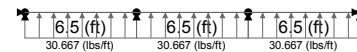
Dead Load



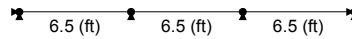
Roof Live Load



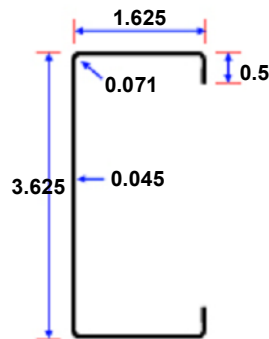
Wind Load(+)



Wind Load(-)



Snow Load



362S162-43mil, 33 ksi

Gross Section Properties

Ix (major) (in4)	0.71
Sx (major) (in3)	0.392
rx (major) (in)	1.445
Iy (minor) (in4)	0.127
Sy (minor) (in3)	0.117
ry (minor) (in)	0.611
Area (in ²)	0.34
Xo (in)	-1.297
J x 1000 (in4)	0.23
Cw (in6)	0.376
Ro (in)	2.036
Weight (lbs/ft)	1.156

Roof Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Number of Spans	3
Roof Horizontal Length (ft)	19.5
Rafter Spacing (in)	16
Lr/SL Allowable Deflection L /	360
TL Allowable Deflection L /	360
Absolute Deflection (in)	1
Rafter Slope (X/12)	0.000

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

Company: THHinc McClure
 Address:
 Country: United States
 State: Missouri
 Zip Code:

Webster ISB
 1-A0406

Date: Wed, Sep 21 16

User-Defined Rafter

Deflection calculation method at parapet free end

Relative value considered

Bracing Data:

Axial Compression Lateral Bracing (in)	None
Axial Compression Torsional Bracing (in)	None
Top Flange Lateral Bracing (in)	None
Top Flange Torsional Bracing (in)	None
Bottom Flange Lateral Bracing (in)	None
Bottom Flange Torsional Bracing (in)	None
K_{ϕ} Distortional Buckling Rotational Stiffness (lbf-in./in.)	0.000

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Maximum Positive Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	0	0.132	0
2	0	0.362	0
3	0	0.362	0
4	0	0.132	0

Maximum Negative Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	0	-0.049	0
2	0	-0.133	0
3	0	-0.133	0
4	0	-0.049	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0.052	0
Dead Load	2	0	0.143	0
Dead Load	3	0	0.143	0
Dead Load	4	0	0.052	0
Roof Live Load	1	0	0	0
Roof Live Load	2	0	0	0
Roof Live Load	3	0	0	0
Roof Live Load	4	0	0	0
Wind Load (+)	1	0	0.08	0
Wind Load (+)	2	0	0.219	0
Wind Load (+)	3	0	0.219	0
Wind Load (+)	4	0	0.08	0
Wind Load (-)	1	0	-0.08	0
Wind Load (-)	2	0	-0.219	0
Wind Load (-)	3	0	-0.219	0
Wind Load (-)	4	0	-0.08	0
Snow Load	1	0	0	0
Snow Load	2	0	0	0
Snow Load	3	0	0	0
Snow Load	4	0	0	0

Joint Loads:

Joint	Load Case	Load (lbs)	M (lbs.ft)
-------	-----------	------------	------------

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
1-A0406

Date: Wed, Sep 21 16

User-Defined Rafter

Joint	Load Case	Load (lbs)	M (lbs.ft)

Span Uniform Loads (psf):

Span	Dead	Roof Live	Wind(+)	Wind(-)	Snow
1	15	0.000	23	23	0.000
2	15	0.000	23	23	0.000
3	15	0.000	23	23	0.000

Span Concentrated Loads:

#	Load Case	Load (lbs)	Moment (lbs.ft)	X/L

Span Non-Uniform Loads:

Span	Load Case	Start pt.	Load (lbs/ft)	End pt.	Load (lbs/ft)

Load Combination Factors:

#	Dead	Roof Live	Wind(+)	Wind(-)	Snow	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength
3	1	0	0	0	1	Strength
4	1	0	1	0	0	Strength
5	1	0.75	0.75	0	0	Strength
6	1	0	0.75	0	0.75	Strength
7	0.6	0	0	1	0	Strength
8	0	1	0	0	0	Deflection
9	0	0	0	0	1	Deflection
10	1	1	0	0	0	Deflection
11	1	0	0	0	1	Deflection

Capacity Check:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Comp. (kips)	Lr/SL Defl. (in)	TL Defl. (in)	Crippling (kips)
1	Act.	2.569	0.155	N/A	N/A	0.000	0.02	N/A
	All.	7.739	0.676	6.122	1.818	0.217	0.217	N/A
	Act./All.	0.332	0.230 *	N/A	N/A	0.000	0.092	N/A
	X/L	1.000	0.872	N/A	N/A	N/A	N/A	N/A
2	Act.	2.569	0.122	N/A	N/A	0.000	0.002	N/A
	All.	7.739	0.676	6.122	1.818	0.217	0.217	N/A
	Act./All.	0.332	0.181 *	N/A	N/A	0.000	0.007	N/A
	X/L	0.000	0.128	N/A	N/A	N/A	N/A	N/A
3	Act.	2.569	0.132	N/A	N/A	0.000	0.02	N/A
	All.	7.739	0.676	6.122	1.818	0.217	0.217	N/A
	Act./All.	0.332	0.195 *	N/A	N/A	0.000	0.092	N/A
	X/L	0.000	0.200	N/A	N/A	N/A	N/A	N/A

Sections Effective Properties:

Member	Value
1	Ae(Comp.) (in ²) 0.272
	Sxe (in3) 0.392
	Ixe (in4) 0.71
	Fy Design (ksi) 36.302
2	Ae(Comp.) (in ²) 0.272
	Sxe (in3) 0.392
	Ixe (in4) 0.71
	Fy Design (ksi) 36.302
3	Ae(Comp.) (in ²) 0.272
	Sxe (in3) 0.392
	Ixe (in4) 0.71
	Fy Design (ksi) 36.302

Design for Web Crippling is Disabled

* Forces are calculated for punched-out section

Interaction Check (kips.in, kips):

Member		Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)
1	Moment(Mx)	-2.569	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A
	Shear(Vy)	0.198	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	N/A
	Act./All.	0.324	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	X/L	1.000	X/L	N/A	X/L	N/A	X/L	N/A
2	Moment(Mx)	-2.569	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A
	Shear(Vy)	-0.165	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	N/A
	Act./All.	0.318	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	N/A

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
1-A0406

Date: Wed, Sep 21 16

User-Defined Rafter

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
3	Moment(Mx)	-2.569	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A
	Shear(Vy)	-0.198	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	N/A
	Act./All.	0.324	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	N/A

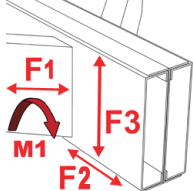
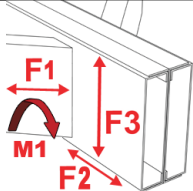
Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
1-A0406

Date: Wed, Sep 21 16

User-Defined Rafter

Connection Data:

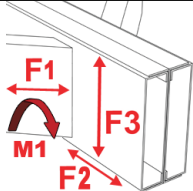
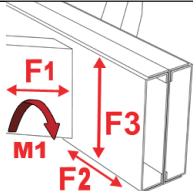
1	Clip Data	Clip Position	Clip @ joint 1	
		Clip Type	None	
		Screws	N/A	
	Clip Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
	Clip Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	0.132	
		M1 (kips.in)	0.000	
	Clip Interaction	Linear Interaction ratio	N/A	
	Clip Screws Actual Loads	Shear (kips)	N/A	
		Tension (kips)	N/A	
2	Clip Data	Clip Position	Clip @ joint 2	
		Clip Type	None	
		Screws	N/A	
	Clip Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
	Clip Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	0.362	
		M1 (kips.in)	0.000	
	Clip Interaction	Linear Interaction ratio	N/A	
	Clip Screws Actual Loads	Shear (kips)	N/A	
		Tension (kips)	N/A	
		Shear (kips)	N/A	
		Tension (kips)	N/A	
	Clip Screws Allowable Loads	Shear (kips)	N/A	
		Tension (kips)	N/A	
	Screw Interaction	Linear Interaction ratio	N/A	

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
1-A0406

Date: Wed, Sep 21 16

User-Defined Rafter

3	Clip Data	Clip Position	Clip @ joint 3	
		Clip Type	None	
		Screws	N/A	
	Clip Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
	Clip Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	0.362	
		M1 (kips.in)	0.000	
	Clip Interaction	Linear Interaction ratio	N/A	
	Clip Screws Actual Loads	Shear (kips)	N/A	
		Tension (kips)	N/A	
		Shear (kips)	N/A	
		Tension (kips)	N/A	
4	Clip Data	Clip Position	Clip @ joint 4	
		Clip Type	None	
		Screws	N/A	
	Clip Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
	Clip Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	0.132	
		M1 (kips.in)	0.000	
	Clip Interaction	Linear Interaction ratio	N/A	
	Clip Screws Actual Loads	Shear (kips)	N/A	
		Tension (kips)	N/A	
		Shear (kips)	N/A	
		Tension (kips)	N/A	
	Clip Screws Allowable Loads	Shear (kips)	N/A	
		Tension (kips)	N/A	
	Screw Interaction	Linear Interaction ratio	N/A	

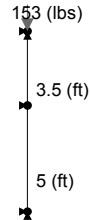
- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.

Company: THHinc McClure
Address: 1901 Pennsylvania Drive
Country: United States
State: Missouri
Zip Code: 65202

Webster ISB
2-A402

Date: Wed, Sep 21 16

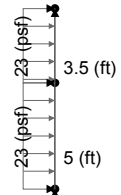
User Defined Curtain Wall Layout



Dead Load

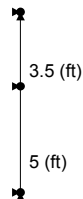


Live Load



Wind Load

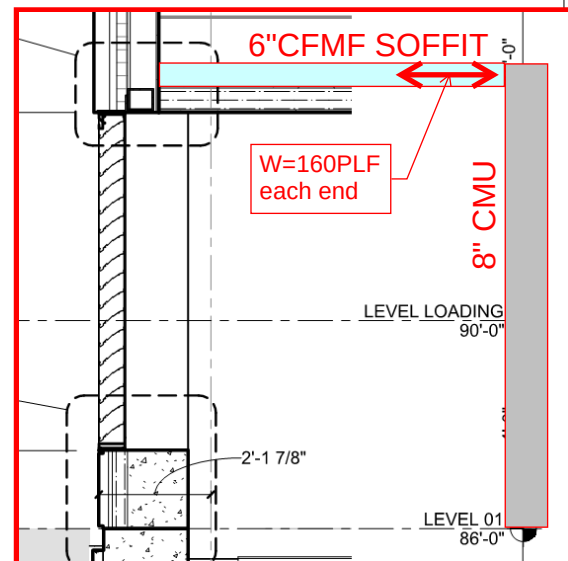
PROVIDE CONNECTION DETAILS FOR SOFFIT FRAMING
BEHIND LOUVER FROM EXT WALL TO MASONRY WALL.
SERVICE LOAD OF 160PLF HORIZONTAL (AXIAL LOAD).



Seismic Load

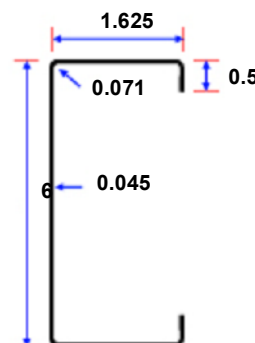


Snow/Roof Live Load



Gross Section Properties:

Ix (major) (in4)	2.316
Sx (major) (in3)	0.772
rx (major) (in)	2.277
Iy (minor) (in4)	0.148
Sy (minor) (in3)	0.123
ry (minor) (in)	0.576
Area (in²)	0.447
Xo (in)	-1.062
J x 1000 (in4)	0.303
Cw (in6)	1.095
Ro (in)	2.577
Weight (lbs/ft)	1.521



600S162-43mil, 33 ksi

Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	8.5
Stud Spacing (in)	18

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

Company: THHinc McClure
 Address: 1901 Pennsylvania Drive
 Country: United States
 State: Missouri
 Zip Code: 65202

Webster ISB
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Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Allowable Hl. Deflection L /	360
Absolute Deflection (in)	1
Dead Load (lbs/ft)	0
Wall Own Weight (psf)	12
Max. Bridging Spacing (ft)	5
Deflection calculation method at parapet free end	Relative value considered

Span Loads:

Span	Wind Load (psf)
1	23
2	23

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K ϕ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	-0.069	0	0
2	-0.188	0	0
3	-0.036	0.153	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0	0
Dead Load	2	0	0	0
Dead Load	3	0	0.153	0
Live Load	1	0	0	0
Live Load	2	0	0	0
Live Load	3	0	0	0
Wind Load	1	-0.069	0	0
Wind Load	2	-0.188	0	0
Wind Load	3	-0.036	0	0
Seismic Load	1	0	0	0
Seismic Load	2	0	0	0
Seismic Load	3	0	0	0
Snow/Roof Live Load	1	0	0	0
Snow/Roof Live Load	2	0	0	0
Snow/Roof Live Load	3	0	0	0

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Note:Applied Members Loads are calculated from Wall Loads

Company: THHinc McClure
Address: 1901 Pennsylvania Drive
Country: United States
State: Missouri
Zip Code: 65202

Webster ISB
2-A402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Joint Supports:

Joint	Support Type
1	Hinged
2	Roller
3	Hinged

Joint Loads:

#	Load Case	Axial (lbs)	Lateral (lbs)	M (lbs.ft)
3	Dead Load	153	0	0

Member Loads:

#	Load Case	Axial	Lateral	Moment	X/L
1	Wind Load	0 (lbs/ft)	34.5 (lbs/ft)	0.0 (lbs/ft)	Uniform
2	Wind Load	0 (lbs/ft)	34.5 (lbs/ft)	0.0 (lbs/ft)	Uniform

Load Combination Factors:

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength
3	1	0	0	0	1	Strength
4	1	0.75	0	0	0.75	Strength
5	1	0	1	0	0	Strength
6	1	0	0	0.7	0	Strength
7	1	0.75	0.75	0	0.75	Strength
8	1	0.75	0	0.525	0.75	Strength
9	0	0	0.42	0	0	Deflection
10	0	0	0	0.7	0	Deflection

Capacity Check:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hz. Deflection (in)	Crippling (kips)
1	Actual	1.022	0.103	N/A	N/A	0.002	N/A
	Allowable	15.15	1.416	8.532	3.002	0.167	N/A
	Act./All.	0.067	0.073	N/A	N/A	0.009	N/A
	X/L	1.000	1.000	N/A	N/A	N/A	N/A
2	Actual	1.022	0.085	N/A	N/A	0.000	N/A
	Allowable	14.674	1.416	8.532	3.766	0.117	N/A
	Act./All.	0.070	0.060	N/A	N/A	0.001	N/A
	X/L	0.000	0.000	N/A	N/A	N/A	N/A

Effective Section Properties:

Member	Value
1	Ae(Comp.) (in ²)
	Sxe (in3)
	Ixe (in4)
	Fy Design (ksi)
2	Ae(Comp.) (in ²)
	Sxe (in3)
	Ixe (in4)
	Fy Design (ksi)

Design for Web Crippling is Disabled

Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	1.022	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A
	Shear(Vy)	-0.103	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	N/A
	Act./All.	0.095	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	X/L	1.000	X/L	N/A	X/L	N/A	X/L	N/A
2	Moment(Mx)	1.022	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A
	Shear(Vy)	0.085	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	N/A
	Act./All.	0.086	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	N/A

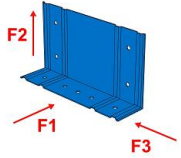
Company: THHinc McClure
Address: 1901 Pennsylvania Drive
Country: United States
State: Missouri
Zip Code: 65202

Webster ISB
2-A402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Connection Data:

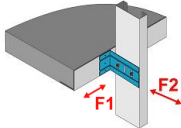
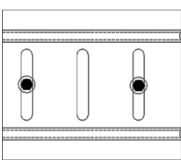
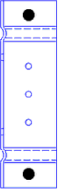
1	Clip Data	Clip Position	Base Connection @ Wall	  
		Clip Type	StiffClip AL600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.866	
		F2 (kips)	2.091	
		F3 (kips)	3.015	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.28	
		Screw Tension (kips)	0.124	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	-0.069	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.04	
		Screw Tension (kips)	0.000	
	Interaction	Clip Linear Interaction ratio	0.023	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	NW Concrete, $f_c = 4000$ psi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.75	
		Min. Edge Distance for Shear (in)	2.75	
		Min. Edge Distance for Tension (in)	2.75	
		Min. Fastener Spacing for Shear (in)	2.75	
		Min. Fastener Spacing for Tension (in)	2.75	
		Allowable Shear (kips)	0.125	
		Allowable Tension (kips)	0.1	
	Fastener Design Load	Actual Shear (kips)	0.035	
		Actual Tension (kips)	0.011	
		Interaction Ratio	0.385	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

Company: THHinc McClure
Address: 1901 Pennsylvania Drive
Country: United States
State: Missouri
Zip Code: 65202

Webster ISB
2-A402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

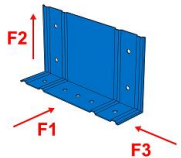
2	Clip Data	Clip Position	Bypass Connection @ joint 2	  
		Clip Type	VertiClip SLB600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.124	
		F2 (kips)	0.561	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.188	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.335	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.000	
		Actual Tension (kips)	0.155	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

Company: THHinc McClure
Address: 1901 Pennsylvania Drive
Country: United States
State: Missouri
Zip Code: 65202

Webster ISB
2-A402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

3	Clip Data	Clip Position	Head connection @ Wall	
		Clip Type	StiffClip AL600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.866	
		F2 (kips)	2.091	
		F3 (kips)	3.015	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.28	
		Screw Tension (kips)	0.124	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	-0.036	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.021	
		Screw Tension (kips)	0.000	
	Interaction	Clip Linear Interaction ratio	0.012	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	NW Concrete, $f_c = 4000$ psi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.75	
		Min. Edge Distance for Shear (in)	2.75	
		Min. Edge Distance for Tension (in)	2.75	
		Min. Fastener Spacing for Shear (in)	2.75	
		Min. Fastener Spacing for Tension (in)	2.75	
		Allowable Shear (kips)	0.125	
		Allowable Tension (kips)	0.1	
	Fastener Design Load	Actual Shear (kips)	0.018	
		Actual Tension (kips)	0.006	
		Interaction Ratio	0.201	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

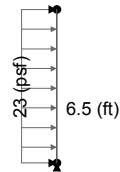
- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.

Company: THHinc McClure
 Address:
 Country: United States
 State: Missouri
 Zip Code:

Webster ISB
 362 studs

Date: Wed, Sep 21 16

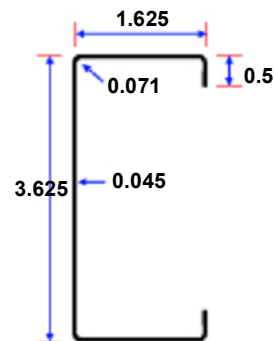
Simple Stud



Wind Load

Gross Section Properties:

Ix (major) (in4)	0.71
Sx (major) (in3)	0.392
rx (major) (in)	1.445
Iy (minor) (in4)	0.127
Sy (minor) (in3)	0.117
ry (minor) (in)	0.611
Area (in ²)	0.34
Xo (in)	-1.297
J x 1000 (in4)	0.23
Cw (in6)	0.376
Ro (in)	2.036
Weight (lbs/ft)	1.156



Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	6.5
Stud Spacing (in)	16
Allowable H. Deflection L /	600
Absolute Deflection (in)	1
Dead Load (lbs)	N/A
Live Load (lbs)	N/A
Max. Bridging Spacing (ft)	5

362S162-43mil, 33 ksi

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

Span Loads:

Span	Wind Load (psf)
1	23

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K ϕ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	-0.1	0	0
2	-0.1	0	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Wind Load	1	-0.1	0	0
Wind Load	2	-0.1	0	0

Company: THHinc McClure	Webster ISB	Date: Wed, Sep 21 16
Address:	362 studs	
Country: United States		
State: Missouri		
Zip Code:	Simple Stud	

Load Factors:

Wind Load Strength Factor	1
Wind Load Deflection Factor	0.7
Dead Load Strength Factor	N/A
Live Load Strength Factor	N/A

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Capacity Check:
Effective Section Properties:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hz. Deflection (in)	Crippling (kips)	Member	Value
1	Actual	1.944	0.074	N/A	N/A	0.041	N/A	Ae(Comp.) (in ²)	0.263
	Allowable	6.599	0.676	6.122	2.513	0.13	N/A	Sxe (in ³)	0.373
	Act./All.	0.295 *	0.110 *	N/A	N/A	0.317	N/A	Ixe (in ⁴)	0.71
	X/L	0.500	0.128	N/A	N/A	N/A	N/A	Fy Design (ksi)	33

Design for Web Crippling is Disabled

*** Forces are calculated for punched-out section**

Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	-1.866	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A
	Shear(Vy)	0.02	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	N/A
	Act./All.	0.256	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	X/L	0.400	X/L	N/A	X/L	N/A	X/L	N/A

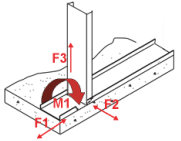
Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
362 studs

Date: Wed, Sep 21 16

Simple Stud

Connection Data:

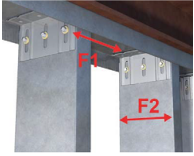
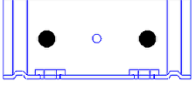
1	Clip Data	Clip Position	Base Connection @ Wall	
		Clip Type	None	
		Screws	N/A	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.100	
		F3 (kips)	0.000	
		M1 (kips.in)	0.000	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	N/A	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	N/A	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	N/A	
		Quantity	N/A	
		Min. Penetration (in)	N/A	
		Min. Edge Distance for Shear (in)	N/A	
		Min. Edge Distance for Tension (in)	N/A	
		Min. Fastener Spacing for Shear (in)	N/A	
		Min. Fastener Spacing for Tension (in)	N/A	
		Allowable Shear (kips)	N/A	
		Allowable Tension (kips)	N/A	
	Fastener Design Load	Actual Shear (kips)	N/A	
		Actual Tension (kips)	N/A	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	N/A	
		Shear Strength Reduction Factor	N/A	

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
362 studs

Date: Wed, Sep 21 16

Simple Stud

2	Clip Data	Clip Position	Head connection @ Wall	  
		Clip Type	VertiClip SL362	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.248	
		F2 (kips)	0.561	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.100	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.178	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.05	
		Actual Tension (kips)	0.054	
		Interaction Ratio	0.171	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.

Company: THHinc McClure
 Address:
 Country: United States
 State: Missouri
 Zip Code:

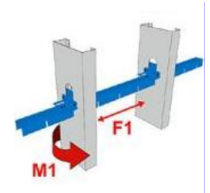
Webster ISB
 362 studs

Date: Wed, Sep 21 16

Simple Stud

Bridging Data:

1	Bridging Member	Type of Bridging Member	TSN BridgeBar
		Bridge Spacing (ft)	5
		Bridging Row Anchored @ (ft)	16
		Allowable Bending Moment (M1)(kips.in)	0.79
		Actual Bending Moment (M1) (kips.in)	0.18
		Allowable Axial Load (F1) (kips)	1.172
		Actual Axial Load (F1) (kips)	0.000
		Interaction Ratio	N/A
	Clip Data	Type of Bridging Clip	BridgeClip (1 Screw)
		Bridging Clip Allowable Bending Moment (kips.in)	0.18
		Bridging Clip Actual Bending Moment (kips.in)	0.18
		Allowable Tension on Clip (kips)	0.075
		Actual Tension on Clip (kips)	0.000
		Clip Interaction Ratio	N/A
	Connection of Clip to Wall Stud	Allowable tension of #10 screws (kips)	N/A
		Actual tension on #10 screws (kips)	N/A
		Act./All.	N/A
		Required quantity of #10 screws	N/A
	Connection of Clip to Bridging Member	Allowable shear of #10 screws (kips)	0.255
		Actual shear on #10 screws (kips)	0.000
		Act./All.	N/A
		Required quantity of #10 screws	1

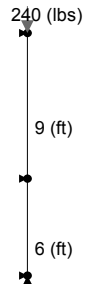


Company: THHinc McClure
 Address:
 Country: United States
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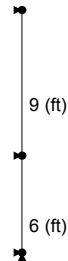
Webster ISB
 3-A0402

Date: Wed, Sep 21 16

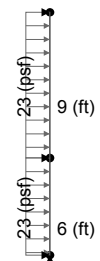
User Defined Curtain Wall Layout



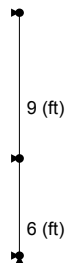
Dead Load



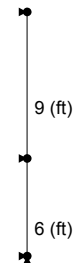
Live Load



Wind Load



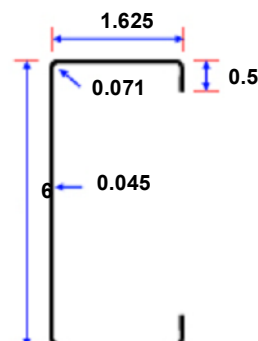
Seismic Load



Snow/Roof Live Load

Gross Section Properties:

Ix (major) (in4)	2.316
Sx (major) (in3)	0.772
rx (major) (in)	2.277
Iy (minor) (in4)	0.148
Sy (minor) (in3)	0.123
ry (minor) (in)	0.576
Area (in²)	0.447
Xo (in)	-1.062
J x 1000 (in4)	0.303
Cw (in6)	1.095
Ro (in)	2.577
Weight (lbs/ft)	1.521



600S162-43mil, 33 ksi

Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	15
Stud Spacing (in)	16

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

Company: THHinc McClure
 Address:
 Country: United States
 State: Missouri
 Zip Code:

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 3-A0402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Allowable Hl. Deflection L /	600
Absolute Deflection (in)	1
Dead Load (lbs/ft)	0
Wall Own Weight (psf)	12
Max. Bridging Spacing (ft)	5
Deflection calculation method at parapet free end	Relative value considered

Span Loads:

Span	Wind Load (psf)
1	23
2	23

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K ϕ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	-0.052	0.24	0
2	-0.297	0	0
3	-0.111	0	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0.24	0
Dead Load	2	0	0	0
Dead Load	3	0	0	0
Live Load	1	0	0	0
Live Load	2	0	0	0
Live Load	3	0	0	0
Wind Load	1	-0.052	0	0
Wind Load	2	-0.297	0	0
Wind Load	3	-0.111	0	0
Seismic Load	1	0	0	0
Seismic Load	2	0	0	0
Seismic Load	3	0	0	0
Snow/Roof Live Load	1	0	0	0
Snow/Roof Live Load	2	0	0	0
Snow/Roof Live Load	3	0	0	0

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Note:Applied Members Loads are calculated from Wall Loads

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
3-A0402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Joint Supports:

Joint	Support Type
1	Hinged
2	Roller
3	Roller

Joint Loads:

#	Load Case	Axial (lbs)	Lateral (lbs)	M (lbs.ft)
3	Dead Load	240	0	0

Member Loads:

#	Load Case	Axial	Lateral	Moment	X/L
1	Wind Load	0 (lbs/ft)	30.667 (lbs/ft)	0.0 (lbs/ft)	Uniform
2	Wind Load	0 (lbs/ft)	30.667 (lbs/ft)	0.0 (lbs/ft)	Uniform

Load Combination Factors:

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength
3	1	0	0	0	1	Strength
4	1	0.75	0	0	0.75	Strength
5	1	0	1	0	0	Strength
6	1	0	0	0.7	0	Strength
7	1	0.75	0.75	0	0.75	Strength
8	1	0.75	0	0.525	0.75	Strength
9	0	0	0.7	0	0	Deflection
10	0	0	0	0.7	0	Deflection

Capacity Check:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hz. Deflection (in)	Crippling (kips)
1	Actual	2.899	0.132	N/A	0.24	0.002	N/A
	Allowable	14.481	1.416	8.532	3.002	0.12	N/A
	Act./All.	0.200	0.093	N/A	0.080 *	0.016	N/A
	X/L	1.000	1.000	N/A	0.200	N/A	N/A
2	Actual	2.899	0.165	N/A	0.24	0.025	N/A
	Allowable	14.674	1.416	8.532	3.002	0.18	N/A
	Act./All.	0.198	0.116	N/A	0.080 *	0.138	N/A
	X/L	0.000	0.000	N/A	0.100	N/A	N/A

Effective Section Properties:

Member	Value
1	Ae(Comp.) (in ²) 0.274
	Sxe (in3) 0.772
	Ixe (in4) 2.316
	Fy Design (ksi) 36.302
2	Ae(Comp.) (in ²) 0.274
	Sxe (in3) 0.772
	Ixe (in4) 2.316
	Fy Design (ksi) 36.302

Design for Web Crippling is Disabled

* Forces are calculated for punched-out section

Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	2.899	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	2.899
	Shear(Vy)	-0.132	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.240
	Act./All.	0.197	Act./All.	N/A	Act./All.	N/A	Act./All.	0.280
	X/L	1.000	X/L	N/A	X/L	N/A	X/L	1.000
2	Moment(Mx)	2.899	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	2.899
	Shear(Vy)	0.165	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.240
	Act./All.	0.209	Act./All.	N/A	Act./All.	N/A	Act./All.	0.277
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	0.000

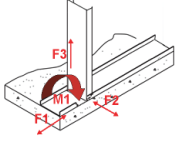
Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
3-A0402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Connection Data:

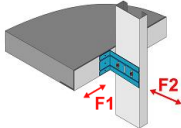
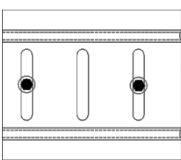
1	Clip Data	Clip Position	Base Connection @ Wall	
		Clip Type	None	
		Screws	N/A	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.052	
		F3 (kips)	0.24	
		M1 (kips.in)	0.000	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	N/A	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	N/A	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	N/A	
		Quantity	N/A	
		Min. Penetration (in)	N/A	
		Min. Edge Distance for Shear (in)	N/A	
		Min. Edge Distance for Tension (in)	N/A	
		Min. Fastener Spacing for Shear (in)	N/A	
		Min. Fastener Spacing for Tension (in)	N/A	
		Allowable Shear (kips)	N/A	
		Allowable Tension (kips)	N/A	
	Fastener Design Load	Actual Shear (kips)	N/A	
		Actual Tension (kips)	N/A	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	N/A	
		Shear Strength Reduction Factor	N/A	

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
3-A0402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

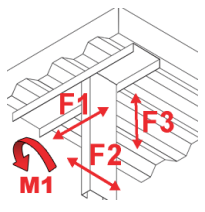
2	Clip Data	Clip Position	Bypass Connection @ joint 2	  
		Clip Type	VertiClip SLB600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.124	
		F2 (kips)	0.561	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.297	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.530	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.000	
		Actual Tension (kips)	0.246	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

Company: THHinc McClure
 Address:
 Country: United States
 State: Missouri
 Zip Code:

Webster ISB
 3-A0402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

3	Clip Data	Clip Position	Head connection @ Wall	
		Clip Type	None	
		Screws	N/A	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.111	
		F3 (kips)	0.000	
		M1 (kips.in)	0.000	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	N/A	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	N/A	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	N/A	
		Quantity	N/A	
		Min. Penetration (in)	N/A	
		Min. Edge Distance for Shear (in)	N/A	
		Min. Edge Distance for Tension (in)	N/A	
		Min. Fastener Spacing for Shear (in)	N/A	
		Min. Fastener Spacing for Tension (in)	N/A	
		Allowable Shear (kips)	N/A	
		Allowable Tension (kips)	N/A	
	Fastener Design Load	Actual Shear (kips)	N/A	
		Actual Tension (kips)	N/A	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	N/A	
		Shear Strength Reduction Factor	N/A	

- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

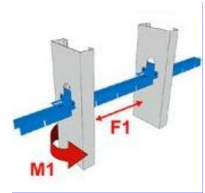
Webster ISB
3-A0402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Bridging Data:

1	Bridging Member	Type of Bridging Member	TSN BridgeBar
		Bridge Spacing (ft)	5
		Bridging Row Anchored @ (ft)	16
		Allowable Bending Moment (M1)(kips.in)	0.79
		Actual Bending Moment (M1) (kips.in)	0.154
		Allowable Axial Load (F1) (kips)	1.172
		Actual Axial Load (F1) (kips)	0.029
		Interaction Ratio	0.220
	Clip Data	Type of Bridging Clip	BridgeClip (1 Screw)
		Bridging Clip Allowable Bending Moment (kips.in)	0.18
		Bridging Clip Actual Bending Moment (kips.in)	0.154
		Allowable Tension on Clip (kips)	0.075
		Actual Tension on Clip (kips)	0.005
		Clip Interaction Ratio	0.921
	Connection of Clip to Wall Stud	Allowable tension of #10 screws (kips)	N/A
		Actual tension on #10 screws (kips)	N/A
		Act./All.	N/A
		Required quantity of #10 screws	N/A
	Connection of Clip to Bridging Member	Allowable shear of #10 screws (kips)	0.255
		Actual shear on #10 screws (kips)	0.005
		Act./All.	0.019
		Required quantity of #10 screws	1



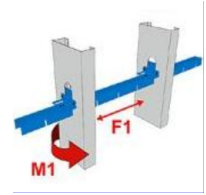
Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
3-A0402

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

2	Bridging Member	Type of Bridging Member	TSN BridgeBar
		Bridge Spacing (ft)	5
		Bridging Row Anchored @ (ft)	16
		Allowable Bending Moment (M1)(kips.in)	0.79
		Actual Bending Moment (M1) (kips.in)	0.154
		Allowable Axial Load (F1) (kips)	1.172
		Actual Axial Load (F1) (kips)	0.029
		Interaction Ratio	0.220
	Clip Data	Type of Bridging Clip	BridgeClip (1 Screw)
		Bridging Clip Allowable Bending Moment (kips.in)	0.18
		Bridging Clip Actual Bending Moment (kips.in)	0.154
		Allowable Tension on Clip (kips)	0.075
		Actual Tension on Clip (kips)	0.005
		Clip Interaction Ratio	0.921
	Connection of Clip to Wall Stud	Allowable tension of #10 screws (kips)	N/A
		Actual tension on #10 screws (kips)	N/A
		Act./All.	N/A
		Required quantity of #10 screws	N/A
	Connection of Clip to Bridging Member	Allowable shear of #10 screws (kips)	0.255
		Actual shear on #10 screws (kips)	0.005
		Act./All.	0.019
		Required quantity of #10 screws	1



Company: THHinc McClure
 Address:
 Country: United States
 State: Missouri
 Zip Code:

Webster ISB
 Door, proof typ stud is allowable as jamb

Date: Wed, Sep 21 16

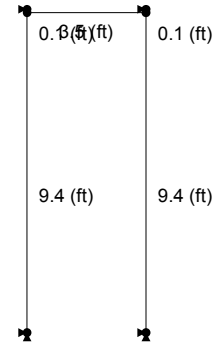
Simple Stud Door

Design Data:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD

Wall Data:

Wall Height (ft)	9.5
Max. Bridging Spacing (ft)	5
Stud Spacing (in)	16
Horizontal Deflection L /	600
Header Vertical Deflection L /	600
Absolute Deflection (in)	1
Wind Load Distribution	Two Way Fixed in Jamb
Wind Load Strength Factor	1
Wind Load Deflection Factor	0.7
Dead Load Strength Factor	1
Dead Load Deflection Factor	1
Deflection calculation method at parapet free end	N/A



Bracing Data:

Jamb Lateral Bracing (in)	@ Bridging Spacing
Jamb Torsional Bracing (in)	@ Bridging Spacing
Header Lateral Bracing-Lateral Ld (in)	@ Stud Spacing
Header Torsional Bracing-Lateral Ld (in)	@ Stud Spacing
Header Lateral Bracing-Gravity Ld (in)	16
Header Torsional Bracing-Gravity Ld (in)	None
K _φ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0.000

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	24
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4
° Jamb Member Extends to Parapet	N/A

Wind Load / Span (psf):

1	23
---	----

Dead Load / Span (lbs/ft):

1	0.000
---	-------

Dimensions (ft):

Span	Jamb Height	Door Height	Door Width
1	9.5	9.4	3.5

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	0.262	0	0
2	0.262	0	0
5	0.264	0	0
6	0.264	0	0

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
Door, proof typ stud is allowable as jamb

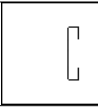
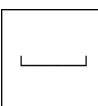
Date: Wed, Sep 21 16

Simple Stud Door

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Wind Load	1	0.262	0	0
Wind Load	2	0.262	0	0
Wind Load	5	0.264	0	0
Wind Load	6	0.264	0	0
Dead Load	1	0	0	0
Dead Load	2	0	0	0
Dead Load	5	0	0	0
Dead Load	6	0	0	0

Sections Data:

1	Jamb	Stud Section	1 x 600S162-43mil, 33 ksi	
		Track Section	N/A	
	Header	Horizontal Stud	N/A	
		Horizontal Track	1 x 600T125-33, 33 ksi	
		Closure Track	N/A	
		Vertical Stud	N/A	
		Vertical Track	N/A	

Member Check:

Span #	Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hz. Deflection (in)	V.Deflection (in)	Crippling (kips)
1	Jamb	Actual	7.524	0.258	N/A	N/A	0.104	N/A	N/A
		Allowable	14.177	1.24	8.532	3.002	0.19	N/A	N/A
		Act./All.	0.531 *	0.208	N/A	N/A	0.549	N/A	N/A
	Header Strong Direction	Actual	0.021	0.002	N/A	N/A	0.000	N/A	N/A
		Allowable	5.873	0.622	N/A	N/A	0.07	N/A	N/A
		Act./All.	0.004	0.003	N/A	N/A	0.001	N/A	N/A
	Header Weak Direction	Actual	N/A	N/A	N/A	N/A	N/A	0.000	N/A
		Allowable	0.6	0.975	N/A	N/A	N/A	0.07	N/A
		Act./All.	N/A	N/A	N/A	N/A	N/A	0.000	N/A

Design for Web Crippling is Disabled

* Forces are calculated for punched-out section

Interaction Check (kips.in, kips):

Span#	Member	Moment, Shear		Moment, Crippling		Moment, Tension		Moment, Compression	
1	Jamb	Mx	-7.524	Mx	N/A	Mx	N/A	Mx	N/A
		Vy	-0.003	Pcr	N/A	T	N/A	P	N/A
		Act./All.	0.451	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	Header Strong Direction	Mx	-0.020	Mx	N/A	Mx	N/A	Mx	N/A
		Vy	0.000	Pcr1	N/A	T	N/A	P	N/A
		Act./All.	0.004	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	Header Weak Direction	My	N/A	My	N/A	My	N/A	My	N/A
		Vx	N/A	Pcr2	N/A	T	N/A	P	N/A
		Act./All.	N/A	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A

Combined Mx, My for Headers:

Span	Mx (kips.in)	My (kips.in)	Act./All.
------	--------------	--------------	-----------

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
Door, proof typ stud is allowable as jamb

Date: Wed, Sep 21 16

Simple Stud Door

1	N/A	N/A	N/A
---	-----	-----	-----

Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

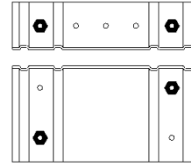
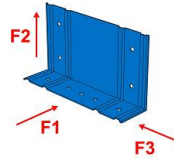
Webster ISB
Door, proof typ stud is allowable as jamb

Date: Wed, Sep 21 16

Simple Stud Door

Allowable Screws Loads:

Span	Attachment of Header to Jamb	
1	Clip Type	StiffClip AL600
	Allowable F1 (kips)	0.866
	Allowable F2 (kips)	2.091
	Allowable F3 (kips)	3.015
	Actual F1 (kips)	0.000
	Actual F2 (kips)	0.000
	Actual F3 (kips)	0.002
	Linear Interaction Ratio	0.001
	Attachment to Jamb	
	All. Screw Shear (kips)	0.28
	All. Screw tension (kips)	0.124
	Act. Screw Shear (kips)	0.001
	Act. Screw Tension (kips)	0.000
	Linear Interaction Ratio	0.006
	F2 Screws Qty.	2 (#12)
	Attachment to Header	
	All. Screw Shear (kips)	0.188
	All. Screw tension (kips)	0.095
	Act. Screw Shear (kips)	0.001
	Act. Screw Tension (kips)	0.000
	Linear Interaction Ratio	N/A
	F3 Screws Qty.	2 (#12)



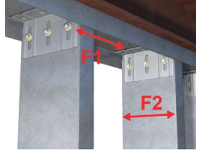
Company: THHinc McClure
Address:
Country: United States
State: Missouri
Zip Code:

Webster ISB
Door, proof typ stud is allowable as jamb

Date: Wed, Sep 21 16

Simple Stud Door

Connection Data:

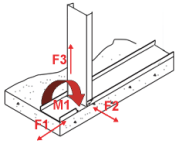
1	Clip Data	Clip Position	Head Connection @ Jamb	  
		Clip Type	VertiClip SL600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.248	
		F2 (kips)	0.561	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.262	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.467	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.131	
		Actual Tension (kips)	0.079	
		Interaction Ratio	0.330	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

Company: THHinc McClure
 Address:
 Country: United States
 State: Missouri
 Zip Code:

Webster ISB
 Door, proof typ stud is allowable as jamb

Date: Wed, Sep 21 16

Simple Stud Door

2	Clip Data	Clip Position	Base Connection @ Jamb	
		Clip Type	None	
		Screws	N/A	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.264	
		F3 (kips)	0.000	
		M1 (kips.in)	0.000	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	N/A	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	N/A	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	N/A	
		Quantity	N/A	
		Min. Penetration (in)	N/A	
		Min. Edge Distance for Shear (in)	N/A	
		Min. Edge Distance for Tension (in)	N/A	
		Min. Fastener Spacing for Shear (in)	N/A	
		Min. Fastener Spacing for Tension (in)	N/A	
		Allowable Shear (kips)	N/A	
		Allowable Tension (kips)	N/A	
	Fastener Design Load	Actual Shear (kips)	N/A	
		Actual Tension (kips)	N/A	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	N/A	
		Shear Strength Reduction Factor	N/A	

- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Post 2-A0453

Date: Wed, Sep 21 16

User Defined Load Bearing Wall Layout

24 (lbs)
1.5 (ft)

1.5 (ft)

255 (lbs)
64 (lbs)
1.5 (ft)

Dead Load

Live Load

Wind Load

1.5 (ft)

1.5 (ft)

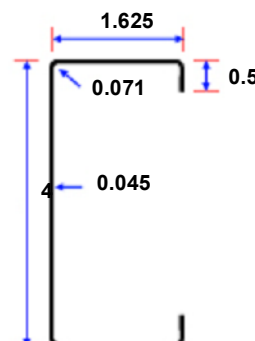
SEE COMMENTS NOTED ON
CALC FOR 1/A0404.
THE CURTAINWALL IS HUNG
FROM THE HIGH ROOF.

Seismic Load

Snow/Roof Live Load

Gross Section Properties:

Ix (major) (in4)	0.892
Sx (major) (in3)	0.446
rx (major) (in)	1.581
Iy (minor) (in4)	0.131
Sy (minor) (in3)	0.118
ry (minor) (in)	0.606
Area (in ²)	0.357
Xo (in)	-1.252
J x 1000 (in4)	0.242
Cw (in6)	0.46
Ro (in)	2.106
Weight (lbs/ft)	1.214



Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	1.5
Stud Spacing (in)	16

400S162-43mil, 33 ksi

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Post 2-A0453

Date: Wed, Sep 21 16

User Defined Load Bearing Wall Layout

Allowable Hl. Deflection L /	600
Absolute Deflection (in)	1
Dead Loads (lbs/ft)	0
Wall Own Weight (psf)	12
Max. Bridging Spacing (ft)	5

Span Loads:

Span	Wind Load (psf)
1	31.2

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K _φ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	-0.031	0.279	0
2	-0.095	0	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0.024	0
Dead Load	2	0	0	0
Live Load	1	0	0	0
Live Load	2	0	0	0
Wind Load	1	-0.031	0.255	0
Wind Load	2	-0.095	0	0
Seismic Load	1	0	0	0
Seismic Load	2	0	0	0
Snow/Roof Live Load	1	0	0	0
Snow/Roof Live Load	2	0	0	0

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. K _v	5.34
° X (in)	4

Note: Applied Members Loads are calculated from Wall Loads

Joint Supports:

Joint	Support Type
1	Hinged
2	Roller

Joint Loads:

#	Load Case	Axial (lbs)	Lateral (lbs)	M (lbs.ft)
2	Dead Load	24	0	0
2	Wind Load	255	64	0

Member Loads:

#	Load Case	Axial	Lateral	Moment	X/L
1	Wind Load	0.0 (lbs/ft)	41.6 (lbs/ft)	0.0 (lbs.ft)	Uniform

Load Combination Factors:

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Post 2-A0453

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User Defined Load Bearing Wall Layout

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
3	1	0	0	0	1	Strength
4	1	0.75	0	0	0.75	Strength
5	1	0	1	0	0	Strength
6	1	0	0	0.7	0	Strength
7	1	0.75	0.75	0	0.75	Strength
8	1	0.75	0	0.525	0.75	Strength
9	0	0	0.7	0	0	Deflection
10	0	0	0	0.7	0	Deflection

Capacity Check:

Effective Section Properties:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hx. Deflection (in)	Crippling (kips)	Member	Value
1	Actual	0.14	0.031	N/A	0.279	0.000	N/A	Ae(Comp.) (in ²)	0.287
	Allowable	8.545	1.739	7.349	4.986	0.03	N/A	Sxe (in3)	0.446
	Act./All.	0.016	0.018	N/A	0.056	0.004	N/A	Ixe (in4)	0.892
	X/L	0.500	0.000	N/A	0.000	N/A	N/A	Fy Design (ksi)	36.302

Design for Web Crippling is Disabled

Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	-0.051	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	-0.140
	Shear(Vy)	0.025	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.279
	Act./All.	0.015	Act./All.	N/A	Act./All.	N/A	Act./All.	0.072
	X/L	0.100	X/L	N/A	X/L	N/A	X/L	0.500

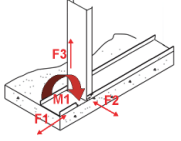
Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Post 2-A0453

Date: Wed, Sep 21 16

User Defined Load Bearing Wall Layout

Connection Data:

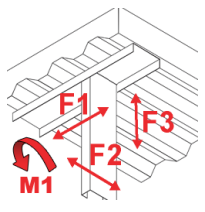
1	Clip Data	Clip Position	Base Connection @ Wall	
		Clip Type	None	
		Screws	N/A	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.031	
		F3 (kips)	0.279	
		M1 (kips.in)	0.000	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	N/A	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	N/A	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	N/A	
		Quantity	N/A	
		Min. Penetration (in)	N/A	
		Min. Edge Distance for Shear (in)	N/A	
		Min. Edge Distance for Tension (in)	N/A	
		Min. Fastener Spacing for Shear (in)	N/A	
		Min. Fastener Spacing for Tension (in)	N/A	
		Allowable Shear (kips)	N/A	
		Allowable Tension (kips)	N/A	
	Fastener Design Load	Actual Shear (kips)	N/A	
		Actual Tension (kips)	N/A	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	N/A	
		Shear Strength Reduction Factor	N/A	

Company:
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User Defined Load Bearing Wall Layout

2	Clip Data	Clip Position	Head connection @ Wall	
		Clip Type	None	
		Screws	N/A	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.095	
		F3 (kips)	0.000	
		M1 (kips.in)	0.000	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	N/A	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	N/A	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	N/A	
		Quantity	N/A	
		Min. Penetration (in)	N/A	
		Min. Edge Distance for Shear (in)	N/A	
		Min. Edge Distance for Tension (in)	N/A	
		Min. Fastener Spacing for Shear (in)	N/A	
		Min. Fastener Spacing for Tension (in)	N/A	
		Allowable Shear (kips)	N/A	
		Allowable Tension (kips)	N/A	
	Fastener Design Load	Actual Shear (kips)	N/A	
		Actual Tension (kips)	N/A	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	N/A	
		Shear Strength Reduction Factor	N/A	

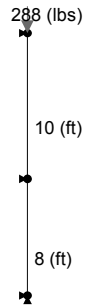
- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 4-A0401 Top Part

Date: Wed, Sep 21 16

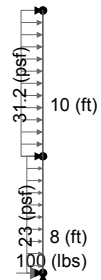
User Defined Curtain Wall Layout



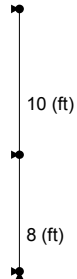
Dead Load



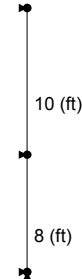
Live Load



Wind Load



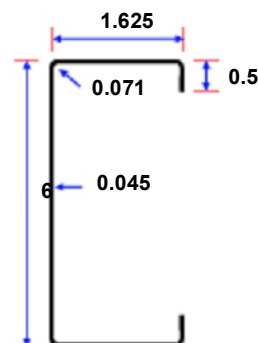
Seismic Load



Snow/Roof Live Load

Gross Section Properties:

Ix (major) (in4)	2.316
Sx (major) (in3)	0.772
rx (major) (in)	2.277
Iy (minor) (in4)	0.148
Sy (minor) (in3)	0.123
ry (minor) (in)	0.576
Area (in²)	0.447
Xo (in)	-1.062
J x 1000 (in4)	0.303
Cw (in6)	1.095
Ro (in)	2.577
Weight (lbs/ft)	1.521



600S162-43mil, 33 ksi

Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	18
Stud Spacing (in)	16

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

Company:
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Wall 4-A0401 Top Part

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Allowable Hl. Deflection L /	360
Absolute Deflection (in)	1
Dead Load (lbs/ft)	0
Wall Own Weight (psf)	12
Max. Bridging Spacing (ft)	5
Deflection calculation method at parapet free end	Relative value considered

Span Loads:

Span	Wind Load (psf)
1	23
2	31.2

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K ϕ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	-0.173	0.288	0
2	-0.42	0	0
3	-0.168	0	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0.288	0
Dead Load	2	0	0	0
Dead Load	3	0	0	0
Live Load	1	0	0	0
Live Load	2	0	0	0
Live Load	3	0	0	0
Wind Load	1	-0.173	0	0
Wind Load	2	-0.42	0	0
Wind Load	3	-0.168	0	0
Seismic Load	1	0	0	0
Seismic Load	2	0	0	0
Seismic Load	3	0	0	0
Snow/Roof Live Load	1	0	0	0
Snow/Roof Live Load	2	0	0	0
Snow/Roof Live Load	3	0	0	0

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Note:Applied Members Loads are calculated from Wall Loads

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 4-A0401 Top Part

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User Defined Curtain Wall Layout

Joint Supports:

Joint	Support Type
1	Hinged
2	Roller
3	Roller

Joint Loads:

#	Load Case	Axial (lbs)	Lateral (lbs)	M (lbs.ft)
3	Dead Load	288	0	0
1	Wind Load	0	100	0

Member Loads:

#	Load Case	Axial	Lateral	Moment	X/L
1	Wind Load	0 (lbs/ft)	30.667 (lbs/ft)	0.0 (lbs/ft)	Uniform
2	Wind Load	0 (lbs/ft)	41.6 (lbs/ft)	0.0 (lbs/ft)	Uniform

Load Combination Factors:

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength
3	1	0	0	0	1	Strength
4	1	0.75	0	0	0.75	Strength
5	1	0	1	0	0	Strength
6	1	0	0	0.7	0	Strength
7	1	0.75	0.75	0	0.75	Strength
8	1	0.75	0	0.525	0.75	Strength
9	0	0	0.7	0	0	Deflection
10	0	0	0	0.7	0	Deflection

Capacity Check:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hz. Deflection (in)	Crippling (kips)
1	Actual	4.776	0.172	N/A	0.288	0.004	N/A
	Allowable	14.371	1.416	8.532	3.002	0.267	N/A
	Act./All.	0.332	0.122	N/A	0.096 *	0.017	N/A
	X/L	1.000	1.000	N/A	0.200	N/A	N/A
2	Actual	4.776	0.248	N/A	0.288	0.052	N/A
	Allowable	14.674	1.416	8.532	3.002	0.333	N/A
	Act./All.	0.325	0.175	N/A	0.096 *	0.156	N/A
	X/L	0.000	0.000	N/A	0.100	N/A	N/A

Effective Section Properties:

Member	Value
1	Ae(Comp.) (in ²)
	Sxe (in3)
	Ixe (in4)
	Fy Design (ksi)
2	Ae(Comp.) (in ²)
	Sxe (in3)
	Ixe (in4)
	Fy Design (ksi)

Design for Web Crippling is Disabled

* Forces are calculated for punched-out section

Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	4.776	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	4.776
	Shear(Vy)	-0.172	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.288
	Act./All.	0.311	Act./All.	N/A	Act./All.	N/A	Act./All.	0.428
	X/L	1.000	X/L	N/A	X/L	N/A	X/L	1.000
2	Moment(Mx)	4.776	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	4.776
	Shear(Vy)	0.248	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.288
	Act./All.	0.336	Act./All.	N/A	Act./All.	N/A	Act./All.	0.421
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	0.000

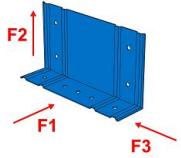
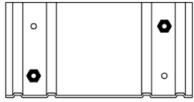
Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 4-A0401 Top Part

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Connection Data:

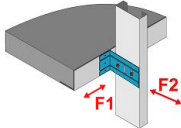
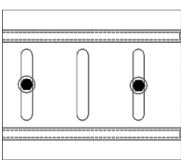
1	Clip Data	Clip Position	Base Connection @ Wall	  
		Clip Type	StiffClip AL600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.866	
		F2 (kips)	2.091	
		F3 (kips)	3.015	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.28	
		Screw Tension (kips)	0.124	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	-0.173	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.1	
		Screw Tension (kips)	0.000	
	Interaction	Clip Linear Interaction ratio	0.057	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	NW Concrete, $f_c = 4000$ psi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.75	
		Min. Edge Distance for Shear (in)	2.75	
		Min. Edge Distance for Tension (in)	2.75	
		Min. Fastener Spacing for Shear (in)	2.75	
		Min. Fastener Spacing for Tension (in)	2.75	
		Allowable Shear (kips)	0.125	
		Allowable Tension (kips)	0.1	
	Fastener Design Load	Actual Shear (kips)	0.086	
		Actual Tension (kips)	0.027	
		Interaction Ratio	0.963	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 4-A0401 Top Part

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User Defined Curtain Wall Layout

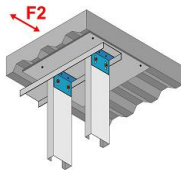
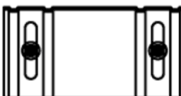
2	Clip Data	Clip Position	Bypass Connection @ joint 2	  
		Clip Type	VertiClip SLB600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.124	
		F2 (kips)	0.561	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.420	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.749	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.000	
		Actual Tension (kips)	0.347	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

Company:
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Country: United States
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Webster ISB
Wall 4-A0401 Top Part

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User Defined Curtain Wall Layout

3	Clip Data	Clip Position	Head connection @ Wall	
		Clip Type	VertiClip SLD600	
		Screws	2 (#8)	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	0.405	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	N/A	
		F2 (kips)	-0.168	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.415	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	NW Concrete, fc = 4000 psi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	1	
		Min. Edge Distance for Shear (in)	2.75	
		Min. Edge Distance for Tension (in)	2.75	
		Min. Fastener Spacing for Shear (in)	2.75	
		Min. Fastener Spacing for Tension (in)	2.75	
		Allowable Shear (kips)	0.225	
		Allowable Tension (kips)	0.17	
	Fastener Design Load	Actual Shear (kips)	0.084	
		Actual Tension (kips)	0.054	
		Interaction Ratio	0.690	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.

Company:
Address:
Country: United States
State: Alabama
Zip Code:

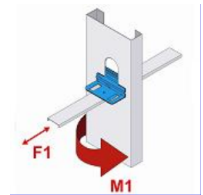
Webster ISB
Wall 4-A0401 Top Part

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Bridging Data:

1	Bridging Member	Type of Bridging Member	Cold-Rolled Channel
		Bridge Spacing (ft)	5
		Bridging Row Anchored @ (ft)	16
		Allowable Bending Moment (M1)(kips.in)	1.23
		Actual Bending Moment (M1) (kips.in)	0.154
		Allowable Axial Load (F1) (kips)	1.332
		Actual Axial Load (F1) (kips)	0.035
		Interaction Ratio	0.151
	Clip Data	Type of Bridging Clip	BridgeClip (1 Screw)
		Bridging Clip Allowable Bending Moment (kips.in)	0.18
		Bridging Clip Actual Bending Moment (kips.in)	0.154
		Allowable Tension on Clip (kips)	0.075
		Actual Tension on Clip (kips)	0.006
		Clip Interaction Ratio	0.933
	Connection of Clip to Wall Stud	Allowable tension of #10 screws (kips)	N/A
		Actual tension on #10 screws (kips)	N/A
		Act./All.	N/A
		Required quantity of #10 screws	N/A
	Connection of Clip to Bridging Member	Allowable shear of #10 screws (kips)	0.376
		Actual shear on #10 screws (kips)	0.006
		Act./All.	0.015
		Required quantity of #10 screws	1



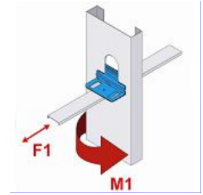
Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 4-A0401 Top Part

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

2	Bridging Member	Type of Bridging Member	Cold-Rolled Channel
		Bridge Spacing (ft)	5
		Bridging Row Anchored @ (ft)	16
		Allowable Bending Moment (M1)(kips.in)	1.23
		Actual Bending Moment (M1) (kips.in)	0.209
		Allowable Axial Load (F1) (kips)	1.332
		Actual Axial Load (F1) (kips)	0.035
		Interaction Ratio	0.196
	Clip Data	Type of Bridging Clip	BridgeClip (3 Screw)
		Bridging Clip Allowable Bending Moment (kips.in)	0.34
		Bridging Clip Actual Bending Moment (kips.in)	0.209
		Allowable Tension on Clip (kips)	0.36
		Actual Tension on Clip (kips)	0.000
		Clip Interaction Ratio	N/A
	Connection of Clip to Wall Stud	Allowable tension of #10 screws (kips)	0.109
		Actual tension on #10 screws (kips)	0.000
		Act./All.	N/A
		Required quantity of #10 screws	2
	Connection of Clip to Bridging Member	Allowable shear of #10 screws (kips)	0.376
		Actual shear on #10 screws (kips)	0.006
		Act./All.	0.015
		Required quantity of #10 screws	1

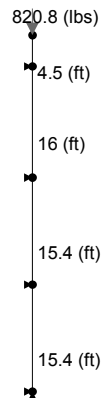


Company:
Address:
Country: United States
State: Alabama
Zip Code:

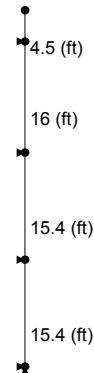
Webster ISB
Wall 4-A0403

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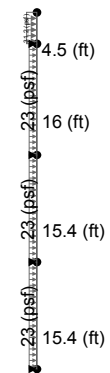
User Defined Curtain Wall Layout



Dead Load



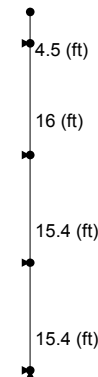
Live Load



Wind Load



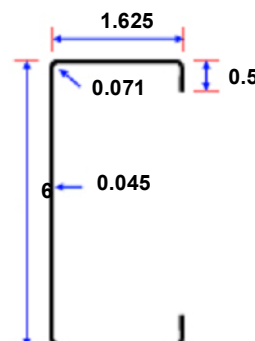
Seismic Load



Snow/Roof Live Load

Gross Section Properties:

Ix (major) (in4)	2.316
Sx (major) (in3)	0.772
rx (major) (in)	2.277
Iy (minor) (in4)	0.148
Sy (minor) (in3)	0.123
ry (minor) (in)	0.576
Area (in²)	0.447
Xo (in)	-1.062
J x 1000 (in4)	0.303
Cw (in6)	1.095
Ro (in)	2.577
Weight (lbs/ft)	1.521



600S162-43mil, 33 ksi

Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	51.3
Stud Spacing (in)	16

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

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User Defined Curtain Wall Layout

Allowable Hl. Deflection L /	600
Absolute Deflection (in)	1
Dead Load (lbs/ft)	0
Wall Own Weight (psf)	12
Max. Bridging Spacing (ft)	5
Deflection calculation method at parapet free end	Relative value considered

Span Loads:

Span	Wind Load (psf)
1	23
2	23
3	23
4	31.2

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K ϕ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	-0.188	0.821	0
2	-0.527	0	0
3	-0.49	0	0
4	-0.418	0	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0.821	0
Dead Load	2	0	0	0
Dead Load	3	0	0	0
Dead Load	4	0	0	0
Live Load	1	0	0	0
Live Load	2	0	0	0
Live Load	3	0	0	0
Live Load	4	0	0	0
Wind Load	1	-0.188	0	0
Wind Load	2	-0.527	0	0
Wind Load	3	-0.49	0	0
Wind Load	4	-0.418	0	0
Seismic Load	1	0	0	0
Seismic Load	2	0	0	0
Seismic Load	3	0	0	0
Seismic Load	4	0	0	0
Snow/Roof Live Load	1	0	0	0
Snow/Roof Live Load	2	0	0	0
Snow/Roof Live Load	3	0	0	0
Snow/Roof Live Load	4	0	0	0

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1

Company:
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° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Note:Applied Members Loads are calculated from Wall Loads

Joint Supports:

Joint	Support Type
1	Hinged
2	Roller
3	Roller
4	Roller
5	Unsupported

Joint Loads:

#	Load Case	Axial (lbs)	Lateral (lbs)	M (lbs.ft)
5	Dead Load	820.8	0	0

Member Loads:

#	Load Case	Axial	Lateral	Moment	X/L
1	Wind Load	0 (lbs/ft)	30.667 (lbs/ft)	0.0 (lbs/ft)	Uniform
2	Wind Load	0 (lbs/ft)	30.667 (lbs/ft)	0.0 (lbs/ft)	Uniform
3	Wind Load	0 (lbs/ft)	30.667 (lbs/ft)	0.0 (lbs/ft)	Uniform
4	Wind Load	0 (lbs/ft)	41.6 (lbs/ft)	0.0 (lbs/ft)	Uniform

Load Combination Factors:

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength
3	1	0	0	0	1	Strength
4	1	0.75	0	0	0.75	Strength
5	1	0	1	0	0	Strength
6	1	0	0	0.7	0	Strength
7	1	0.75	0.75	0	0.75	Strength
8	1	0.75	0	0.525	0.75	Strength
9	0	0	0.7	0	0	Deflection
10	0	0	0	0.7	0	Deflection

Capacity Check:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hx. Deflection (in)	Crippling (kips)
1	Actual	8.943	0.259	N/A	0.821	0.203	N/A
	Allowable	14.385	1.24	8.532	2.919	0.308	N/A
	Act./All.	0.622	0.209 *	N/A	0.281 *	0.661	N/A
	X/L	1.000	0.946	N/A	0.100	N/A	N/A
2	Actual	8.943	0.216	N/A	0.821	0.03	N/A
	Allowable	14.244	1.24	8.532	2.919	0.308	N/A
	Act./All.	0.628	0.174 *	N/A	0.281 *	0.097	N/A
	X/L	0.000	0.054	N/A	0.100	N/A	N/A
3	Actual	7.872	0.234	N/A	0.821	0.158	N/A
	Allowable	14.396	1.24	8.532	2.885	0.32	N/A
	Act./All.	0.547	0.189 *	N/A	0.284 *	0.494	N/A
	X/L	0.000	0.052	N/A	0.100	N/A	N/A
4	Actual	5.055	0.187	N/A	0.821	0.036	N/A
	Allowable	14.22	1.416	8.532	3.266	0.18	N/A
	Act./All.	0.355	0.132	N/A	0.251 *	0.203	N/A
	X/L	0.000	0.000	N/A	0.200	N/A	N/A

Effective Section Properties:

Member	Value
1	Ae(Comp.) (in ²) 0.275
	Sxe (in3) 0.772
	Ixe (in4) 2.316
	Fy Design (ksi) 36.302
2	Ae(Comp.) (in ²) 0.275
	Sxe (in3) 0.772
	Ixe (in4) 2.316
	Fy Design (ksi) 36.302
3	Ae(Comp.) (in ²) 0.276
	Sxe (in3) 0.772
	Ixe (in4) 2.316
	Fy Design (ksi) 36.302
4	Ae(Comp.) (in ²) 0.27
	Sxe (in3) 0.772
	Ixe (in4) 2.316
	Fy Design (ksi) 36.302

Design for Web Crippling is Disabled

* Forces are calculated for punched-out section

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Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	8.943	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	8.943
	Shear(Vy)	-0.285	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.821
	Act./All.	0.573	Act./All.	N/A	Act./All.	N/A	Act./All.	0.953
	X/L	1.000	X/L	N/A	X/L	N/A	X/L	1.000
2	Moment(Mx)	8.943	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	8.943
	Shear(Vy)	0.242	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.821
	Act./All.	0.563	Act./All.	N/A	Act./All.	N/A	Act./All.	0.960
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	0.000
3	Moment(Mx)	7.872	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	7.872
	Shear(Vy)	0.26	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.821
	Act./All.	0.506	Act./All.	N/A	Act./All.	N/A	Act./All.	0.879
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	0.000
4	Moment(Mx)	5.055	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	5.055
	Shear(Vy)	0.187	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.821
	Act./All.	0.331	Act./All.	N/A	Act./All.	N/A	Act./All.	0.616
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	0.000

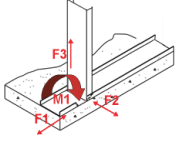
Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 4-A0403

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User Defined Curtain Wall Layout

Connection Data:

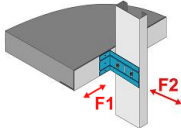
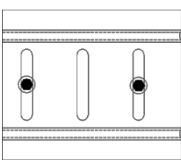
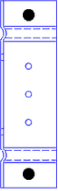
1	Clip Data	Clip Position	Base Connection @ Wall	
		Clip Type	None	
		Screws	N/A	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.188	
		F3 (kips)	0.821	
		M1 (kips.in)	0.000	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	N/A	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	N/A	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	N/A	
		Quantity	N/A	
		Min. Penetration (in)	N/A	
		Min. Edge Distance for Shear (in)	N/A	
		Min. Edge Distance for Tension (in)	N/A	
		Min. Fastener Spacing for Shear (in)	N/A	
		Min. Fastener Spacing for Tension (in)	N/A	
		Allowable Shear (kips)	N/A	
		Allowable Tension (kips)	N/A	
	Fastener Design Load	Actual Shear (kips)	N/A	
		Actual Tension (kips)	N/A	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	N/A	
		Shear Strength Reduction Factor	N/A	

Company:
Address:
Country: United States
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Zip Code:

Webster ISB
Wall 4-A0403

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User Defined Curtain Wall Layout

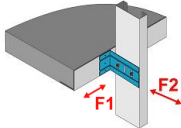
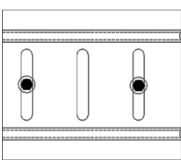
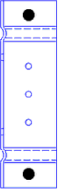
2	Clip Data	Clip Position	Bypass Connection @ joint 2	  
		Clip Type	VertiClip SLB600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.124	
		F2 (kips)	0.561	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.527	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.939	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.000	
		Actual Tension (kips)	0.435	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

Company:
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Country: United States
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Webster ISB
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User Defined Curtain Wall Layout

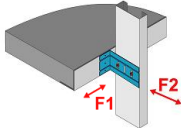
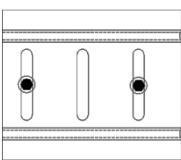
3	Clip Data	Clip Position	Bypass Connection @ joint 3	  
		Clip Type	VertiClip SLB600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.124	
		F2 (kips)	0.561	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.490	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.874	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.000	
		Actual Tension (kips)	0.405	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

Company:
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User Defined Curtain Wall Layout

4	Clip Data	Clip Position	Bypass Connection @ joint 4	  
		Clip Type	VertiClip SLB600	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.124	
		F2 (kips)	0.561	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.418	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.745	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.000	
		Actual Tension (kips)	0.345	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.

Company:
Address:
Country: United States
State: Alabama
Zip Code:

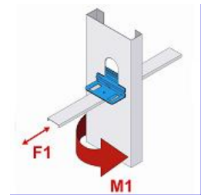
Webster ISB
Wall 4-A0403

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User Defined Curtain Wall Layout

Bridging Data:

1	Bridging Member	Type of Bridging Member	Cold-Rolled Channel
		Bridge Spacing (ft)	5
		Bridging Row Anchored @ (ft)	16
		Allowable Bending Moment (M1)(kips.in)	1.23
		Actual Bending Moment (M1) (kips.in)	0.154
		Allowable Axial Load (F1) (kips)	1.332
		Actual Axial Load (F1) (kips)	0.098
		Interaction Ratio	0.199
	Clip Data	Type of Bridging Clip	BridgeClip (3 Screw)
		Bridging Clip Allowable Bending Moment (kips.in)	0.34
		Bridging Clip Actual Bending Moment (kips.in)	0.154
		Allowable Tension on Clip (kips)	0.36
		Actual Tension on Clip (kips)	0.000
		Clip Interaction Ratio	N/A
	Connection of Clip to Wall Stud	Allowable tension of #10 screws (kips)	0.109
		Actual tension on #10 screws (kips)	0.000
		Act./All.	N/A
		Required quantity of #10 screws	2
	Connection of Clip to Bridging Member	Allowable shear of #10 screws (kips)	0.376
		Actual shear on #10 screws (kips)	0.016
		Act./All.	0.044
		Required quantity of #10 screws	1



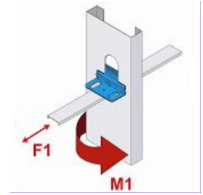
Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 4-A0403

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

2	Bridging Member	Type of Bridging Member	Cold-Rolled Channel
		Bridge Spacing (ft)	5
		Bridging Row Anchored @ (ft)	16
		Allowable Bending Moment (M1)(kips.in)	1.23
		Actual Bending Moment (M1) (kips.in)	0.154
		Allowable Axial Load (F1) (kips)	1.332
		Actual Axial Load (F1) (kips)	0.098
		Interaction Ratio	0.199
	Clip Data	Type of Bridging Clip	BridgeClip (3 Screw)
		Bridging Clip Allowable Bending Moment (kips.in)	0.34
		Bridging Clip Actual Bending Moment (kips.in)	0.154
		Allowable Tension on Clip (kips)	0.36
		Actual Tension on Clip (kips)	0.000
		Clip Interaction Ratio	N/A
	Connection of Clip to Wall Stud	Allowable tension of #10 screws (kips)	0.109
		Actual tension on #10 screws (kips)	0.000
		Act./All.	N/A
		Required quantity of #10 screws	2
	Connection of Clip to Bridging Member	Allowable shear of #10 screws (kips)	0.376
		Actual shear on #10 screws (kips)	0.016
		Act./All.	0.044
		Required quantity of #10 screws	1



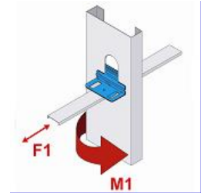
Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 4-A0403

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

3	Bridging Member	Type of Bridging Member	Cold-Rolled Channel
		Bridge Spacing (ft)	5
		Bridging Row Anchored @ (ft)	16
		Allowable Bending Moment (M1)(kips.in)	1.23
		Actual Bending Moment (M1) (kips.in)	0.154
		Allowable Axial Load (F1) (kips)	1.332
		Actual Axial Load (F1) (kips)	0.098
		Interaction Ratio	0.199
	Clip Data	Type of Bridging Clip	BridgeClip (3 Screw)
		Bridging Clip Allowable Bending Moment (kips.in)	0.34
		Bridging Clip Actual Bending Moment (kips.in)	0.154
		Allowable Tension on Clip (kips)	0.36
		Actual Tension on Clip (kips)	0.000
		Clip Interaction Ratio	N/A
	Connection of Clip to Wall Stud	Allowable tension of #10 screws (kips)	0.109
		Actual tension on #10 screws (kips)	0.000
		Act./All.	N/A
		Required quantity of #10 screws	2
	Connection of Clip to Bridging Member	Allowable shear of #10 screws (kips)	0.376
		Actual shear on #10 screws (kips)	0.016
		Act./All.	0.044
		Required quantity of #10 screws	1

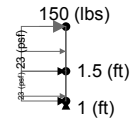
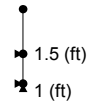
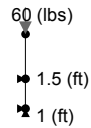


Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 1

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

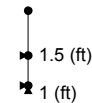
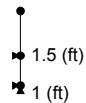


Dead Load

Live Load

Wind Load

DESIGN AS PURE CANTILEVERS SITTING ON THE BENT PLATE.
CURTAINWALL IS HUNG FROM HIGH ROOF. MOMENT
CONNECTORS OR CLIPS TO BOTH THE HORIZ AND VERT LEGS.
SEE ASI #023

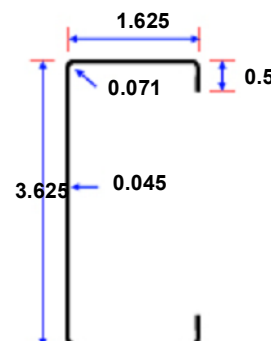


Seismic Load

Snow/Roof Live Load

Gross Section Properties:

Ix (major) (in4)	0.71
Sx (major) (in3)	0.392
rx (major) (in)	1.445
Iy (minor) (in4)	0.127
Sy (minor) (in3)	0.117
ry (minor) (in)	0.611
Area (in²)	0.34
Xo (in)	-1.297
J x 1000 (in4)	0.23
Cw (in6)	0.376
Ro (in)	2.036
Weight (lbs/ft)	1.156



Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	2.5
Stud Spacing (in)	24

362S162-43mil, 33 ksi

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 1

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Allowable Hl. Deflection L /	600
Absolute Deflection (in)	1
Dead Load (lbs/ft)	0
Wall Own Weight (psf)	12
Max. Bridging Spacing (ft)	5
Deflection calculation method at parapet free end	Relative value considered

Span Loads:

Span	Wind Load (psf)
1	23
2	23

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K ϕ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	0.254	0.06	0
2	-0.519	0	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0.06	0
Dead Load	2	0	0	0
Live Load	1	0	0	0
Live Load	2	0	0	0
Wind Load	1	0.254	0	0
Wind Load	2	-0.519	0	0
Seismic Load	1	0	0	0
Seismic Load	2	0	0	0
Snow/Roof Live Load	1	0	0	0
Snow/Roof Live Load	2	0	0	0

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. Kv	5.34
° X (in)	4

Note:Applied Members Loads are calculated from Wall Loads

Joint Supports:

Joint	Support Type
1	Hinged
2	Roller
3	Unsupported

Joint Loads:

#	Load Case	Axial (lbs)	Lateral (lbs)	M (lbs.ft)
3	Dead Load	60	0	0
3	Wind Load	0	150	0

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 1

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Member Loads:

#	Load Case	Axial	Lateral	Moment	X/L
1	Wind Load	0 (lbs/ft)	46 (lbs/ft)	0.0 (lbs/ft)	Uniform
2	Wind Load	0 (lbs/ft)	46 (lbs/ft)	0.0 (lbs/ft)	Uniform

Load Combination Factors:

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength
3	1	0	0	0	1	Strength
4	1	0.75	0	0	0.75	Strength
5	1	0	1	0	0	Strength
6	1	0	0	0.7	0	Strength
7	1	0.75	0.75	0	0.75	Strength
8	1	0.75	0	0.525	0.75	Strength
9	0	0	0.7	0	0	Deflection
10	0	0	0	0.7	0	Deflection

Capacity Check:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hz. Deflection (in)	Crippling (kips)
1	Actual	3.321	0.3	N/A	0.06	0.001	N/A
	Allowable	7.739	1.739	7.015	5.072	0.02	N/A
	Act./All.	0.429	0.172	N/A	0.012	0.049	N/A
	X/L	1.000	1.000	N/A	0.000	N/A	N/A
2	Actual	3.321	0.219	N/A	0.06	0.011	N/A
	Allowable	7.739	1.739	7.015	4.875	0.06	N/A
	Act./All.	0.429	0.126	N/A	0.012	0.191	N/A
	X/L	0.000	0.000	N/A	0.000	N/A	N/A

Effective Section Properties:

Member	Value
1	Ae(Comp.) (in ²)
	Sxe (in3)
	Ixe (in4)
	Fy Design (ksi)
2	Ae(Comp.) (in ²)
	Sxe (in3)
	Ixe (in4)
	Fy Design (ksi)

Design for Web Crippling is Disabled

Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	3.321	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	3.321
	Shear(Vy)	-0.300	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.060
	Act./All.	0.429	Act./All.	N/A	Act./All.	N/A	Act./All.	0.441
	X/L	1.000	X/L	N/A	X/L	N/A	X/L	1.000
2	Moment(Mx)	3.321	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	3.321
	Shear(Vy)	0.219	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	-0.060
	Act./All.	0.412	Act./All.	N/A	Act./All.	N/A	Act./All.	0.441
	X/L	0.000	X/L	N/A	X/L	N/A	X/L	0.000

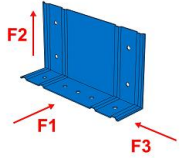
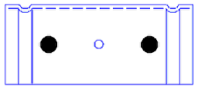
Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 1

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

Connection Data:

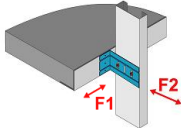
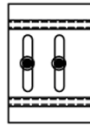
1	Clip Data	Clip Position	Base Connection @ Wall	  
		Clip Type	StiffClip AL362	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.734	
		F2 (kips)	1.557	
		F3 (kips)	2.824	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.28	
		Screw Tension (kips)	0.124	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	0.254	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	0.187	
		Screw Tension (kips)	0.000	
	Interaction	Clip Linear Interaction ratio	0.090	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	NW Concrete, $f_c = 4000$ psi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	1.25	
		Min. Edge Distance for Shear (in)	2.75	
		Min. Edge Distance for Tension (in)	2.75	
		Min. Fastener Spacing for Shear (in)	2.75	
		Min. Fastener Spacing for Tension (in)	2.75	
		Allowable Shear (kips)	0.31	
		Allowable Tension (kips)	0.28	
	Fastener Design Load	Actual Shear (kips)	0.127	
		Actual Tension (kips)	0.076	
		Interaction Ratio	0.681	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 1

Date: Wed, Sep 21 16

User Defined Curtain Wall Layout

2	Clip Data	Clip Position	Bypass Connection @ joint 2	  
		Clip Type	VertiClip SLB362	
		Screws	2 (#12)	
	Allowable Loads	F1 (kips)	0.124	
		F2 (kips)	0.56	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.519	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	0.926	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	Steel with fy >= 36 ksi	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	X-U, 0.157(in)	
		Quantity	2	
		Min. Penetration (in)	0.188	
		Min. Edge Distance for Shear (in)	0.5	
		Min. Edge Distance for Tension (in)	0.5	
		Min. Fastener Spacing for Shear (in)	1	
		Min. Fastener Spacing for Tension (in)	1	
		Allowable Shear (kips)	0.72	
		Allowable Tension (kips)	0.535	
	Fastener Design Load	Actual Shear (kips)	0.000	
		Actual Tension (kips)	0.429	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	1.000	
		Shear Strength Reduction Factor	1.000	

- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.
- Fastener spacing for attachment to the primary structure (1.875(in)) is less than the minimum spacing recommended by fastener manufacturer (Ratio = 0.68).

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 2

Date: Wed, Sep 21 16

User Defined Load Bearing Wall Layout

50.4 (lbs)
2.1 (ft)

2.1 (ft)

415.6 (lbs)
2.1 (ft)

Dead Load

Live Load

Wind Load

2.1 (ft)

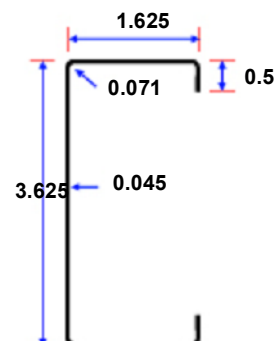
2.1 (ft)

Seismic Load

Snow/Roof Live Load

Gross Section Properties:

Ix (major) (in4)	0.71
Sx (major) (in3)	0.392
rx (major) (in)	1.445
Iy (minor) (in4)	0.127
Sy (minor) (in3)	0.117
ry (minor) (in)	0.611
Area (in²)	0.34
Xo (in)	-1.297
J x 1000 (in4)	0.23
Cw (in6)	0.376
Ro (in)	2.036
Weight (lbs/ft)	1.156



Wall Information:

Design Code	2009 IBC w/ AISI S100-07
Design Method	ASD
Wall Height (ft)	2.1
Stud Spacing (in)	24

362S162-43mil, 33 ksi

Material Properties:

Fy (ksi)	33
Fu (ksi)	45
E (ksi)	29500
G (ksi)	11300

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 2

Date: Wed, Sep 21 16

User Defined Load Bearing Wall Layout

Allowable Hl. Deflection L /	600
Absolute Deflection (in)	1
Dead Loads (lbs/ft)	0
Wall Own Weight (psf)	12
Max. Bridging Spacing (ft)	5

Span Loads:

Span	Wind Load (psf)
1	0

Bracing Data:

Lateral Bracing (in)	@ Bridging Spacing
Torsional Bracing (in)	@ Bridging Spacing
K _φ Distortional Buckling Rotational Stiffness (lbf-in./in.)	0

Reactions:

Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
1	0	0.206	0
2	-0.411	0	0

Unfactored Reactions:

Load Case	Joint	Rx (kips)	Ry (kips)	Rm (kips.in)
Dead Load	1	0	0.05	0
Dead Load	2	0	0	0
Live Load	1	0	0	0
Live Load	2	0	0	0
Wind Load	1	0	0.156	0
Wind Load	2	-0.411	0	0
Seismic Load	1	0	0	0
Seismic Load	2	0	0	0
Snow/Roof Live Load	1	0	0	0
Snow/Roof Live Load	2	0	0	0

Design Options:

° Section Layout	Single
° Fastener Spacing (in)	N/A
° Standard Punchout	Considered
° Strength Increase from Cold Work of Forming (AISI, Sec. A7.2)	Considered
° CMx	1
° Cb	1
° Shear Coeff. K _v	5.34
° X (in)	4

Note: Applied Members Loads are calculated from Wall Loads

Joint Supports:

Joint	Support Type
1	Hinged
2	Roller

Joint Loads:

#	Load Case	Axial (lbs)	Lateral (lbs)	M (lbs.ft)
2	Dead Load	50.4	0	0
2	Wind Load	156	410.6	0

Member Loads:

#	Load Case	Axial	Lateral	Moment	X/L
1	Wind Load	0.0 (lbs/ft)	0.0 (lbs/ft)	0.0 (lbs.ft)	Uniform

Load Combination Factors:

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
1	1	0	0	0	0	Strength
2	1	1	0	0	0	Strength

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 2

Date: Wed, Sep 21 16

User Defined Load Bearing Wall Layout

#	Dead	Live	Wind	Seismic	Snow/Roof Live Load	Used For
3	1	0	0	0	1	Strength
4	1	0.75	0	0	0.75	Strength
5	1	0	1	0	0	Strength
6	1	0	0	0.7	0	Strength
7	1	0.75	0.75	0	0.75	Strength
8	1	0.75	0	0.525	0.75	Strength
9	0	0	0.7	0	0	Deflection
10	0	0	0	0.7	0	Deflection

Capacity Check:

Effective Section Properties:

Member		Moment (kips.in)	Shear (kips)	Tension (kips)	Compression (kips)	Hz. Deflection (in)	Crippling (kips)
1	Actual	N/A	N/A	N/A	0.206	0.000	N/A
	Allowable	7.344	0.676	6.122	4.084	0.042	N/A
	Act./All.	N/A	N/A	N/A	0.051 *	0.000	N/A
	X/L	N/A	N/A	N/A	0.400	N/A	N/A

Member	Value
1 Ae(Comp.) (in ²)	0.251
1 Sxe (in ³)	0.372
1 Ixe (in ⁴)	0.710
Fy Design (ksi)	33.000

Design for Web Crippling is Disabled

* Forces are calculated for punched-out section

Interaction Check (kips.in, kips):

Member	Combined (M,V)		Combined (M,Pcr)		Combined (M,T)		Combined (M,P)	
1	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A	Moment(Mx)	N/A
	Shear(Vy)	N/A	Pcr (Crippling)	N/A	Tension (T)	N/A	Comp. (P)	N/A
	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A	Act./All.	N/A
	X/L	N/A	X/L	N/A	X/L	N/A	X/L	N/A

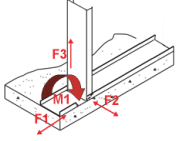
Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 2

Date: Wed, Sep 21 16

User Defined Load Bearing Wall Layout

Connection Data:

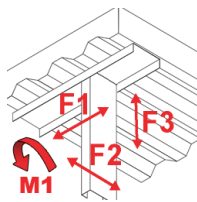
1	Clip Data	Clip Position	Base Connection @ Wall	
		Clip Type	None	
		Screws	N/A	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	0.000	
		F3 (kips)	0.206	
		M1 (kips.in)	0.000	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	N/A	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	N/A	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	N/A	
		Quantity	N/A	
		Min. Penetration (in)	N/A	
		Min. Edge Distance for Shear (in)	N/A	
		Min. Edge Distance for Tension (in)	N/A	
		Min. Fastener Spacing for Shear (in)	N/A	
		Min. Fastener Spacing for Tension (in)	N/A	
		Allowable Shear (kips)	N/A	
		Allowable Tension (kips)	N/A	
	Fastener Design Load	Actual Shear (kips)	N/A	
		Actual Tension (kips)	N/A	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	N/A	
		Shear Strength Reduction Factor	N/A	

Company:
Address:
Country: United States
State: Alabama
Zip Code:

Webster ISB
Wall 7-S0302 Part 2

Date: Wed, Sep 21 16

User Defined Load Bearing Wall Layout

2	Clip Data	Clip Position	Head connection @ Wall	
		Clip Type	None	
		Screws	N/A	
	Allowable Loads	F1 (kips)	N/A	
		F2 (kips)	N/A	
		F3 (kips)	N/A	
		M1 (kips.in)	N/A	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Actual Loads	F1 (kips)	0.000	
		F2 (kips)	-0.411	
		F3 (kips)	0.000	
		M1 (kips.in)	0.000	
		Screw Shear (kips)	N/A	
		Screw Tension (kips)	N/A	
	Interaction	Clip Linear Interaction ratio	N/A	
		Screws Linear Interaction ratio	N/A	
	Base Material	Material	N/A	
		Concrete Compressive Strength (psi)	N/A	
	Attachment to Structure	Fastener Designation	N/A	
		Quantity	N/A	
		Min. Penetration (in)	N/A	
		Min. Edge Distance for Shear (in)	N/A	
		Min. Edge Distance for Tension (in)	N/A	
		Min. Fastener Spacing for Shear (in)	N/A	
		Min. Fastener Spacing for Tension (in)	N/A	
		Allowable Shear (kips)	N/A	
		Allowable Tension (kips)	N/A	
	Fastener Design Load	Actual Shear (kips)	N/A	
		Actual Tension (kips)	N/A	
		Interaction Ratio	N/A	
		Tensile Strength Reduction Factor	N/A	
		Shear Strength Reduction Factor	N/A	

- When more than one load affect a connection, simple linear relationship is used to check the interaction of multiple loads acting on the connection.
- Fastener attachment of connectors to the primary structure should be reviewed by a design professional.
- Displayed actual & allowable are for one fastener.

Stud Bearing on Track (Not Deflection Track)

For track thickness greater than or equal to stud thickness

$$P_{nst} = C t^2 F_y (1 - C_R \sqrt{R/t})(1 + C_N \sqrt{N/t})(1 - C_h \sqrt{h/t})$$

Equation C4.2-1

C3.4.1-1

For track thickness less than or equal to stud thickness (take worst case both equations)

$$P_{nst} = 0.6 t_t w_{st} F_{ut}$$

Equation C4.2-2

Variables and Inputs (Shaded)

Stud Gauge	18GA	
Track Gauge	18GA	
Stud Depth	6	in.
Flange Width	1.625	in. (Not Used In Calculation)
No of Studs	1	
Track Depth	1.25	
F_y	33	yield strength of material
C	3.7	web crippling coeff = 3.7
C_R	0.19	inside bend radius coeff = 0.19
C_N	0.74	bearing length coeff = 0.74
C_h	0.019	web slenderness coeff = 0.019
R	0.0712	stud inside bend radius
N	1.125	stud bearing length (measured vertically along track flange)
h	5.7674	depth of flat portion of stud web measured along plane of web
t	0.0451	stud design thickness
t_t	0.0451	design track thickness
w_{st}	1.462	$20t_t + 0.56\alpha$
F_{ut}	45	tensile strength of track (45ksi for grade 33 and 65ksi for grade 50)
α	1	coeff for conversion units: 1.0 for tt in inches, 25.4 when tt is in mm
Ω	1.7	
Φ	0.9	

Equation C4.2-1

$P_{nst} = 0.697066$

Equation C4.2-2

$P_{nst} = 1.780277$

$P_{allowabl}$ 0.41004 KIP Divide Capacity by 2 if track not continuous

VALUE ENGINEERED STUD BYPASS/TOP OF WALL CONNECTIONS

This spreadsheet calculates **BYPASS CAPACITY** checks based upon inputs from design (material thickness and loads) and allowable load tables provided by manufacturers for clips and connections. Refer to appendix for load table values

$$Clip\ Cap. = \frac{Vert.\ Load}{Vert.\ Load\ allow} + \frac{Horz.\ Load}{Horz.\ Load\ Allow} < 1.0$$

$$Connector\ Cap. = \frac{Vert.\ Load}{Vert.\ Load\ Allow * quantity} + \frac{Horz.\ Load}{Horz.\ Load\ Allow * quantity} < 1.0$$

Note: Weld capacity given
lb/in, and '# of connectors' is
length of weld in inches

[illegible]



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By: _____

Description:

Misc. Connections

Date: _____

Page _____ / _____

1/A406

MAX Vert. R_xN. = 362 lb

• SCREWS in 18GA. = 263 lb shear/Ea.

$$362 < (2) 263 = 526 \text{ lb OK}$$

• PAF tension

Assume 3/16 (conservative) = 535 lb/Ea.

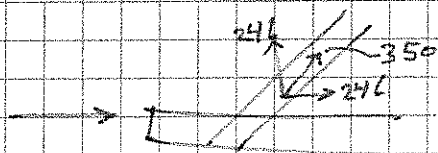
$$535 > 362 \text{ lb} \Rightarrow \text{USE (2) for stability}$$

Lateral

$$W_L \text{ from above} = 23 \cdot 1.33' \cdot 2' = 62$$

$$W_L \text{ from below} = 23 \cdot 1.33' \cdot 6' = 184$$

$$T_d J = 246 \text{ lb}$$



$$\bullet \text{ SCREWS} = 350 < (2) 263 = 526 \text{ lb OK}$$

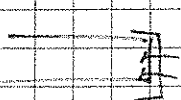
• Stud 350 lb T/C < capacity by observation

• Clip - screws (2) OK from above

$$\text{PAF to beam} = \frac{246}{2 \cdot 535} + \frac{246}{2 \cdot 720} = .4 < 1 \text{ OK}$$

1/A405

Loads less than 1/A406 connection (Gravity) OK.



• same lateral load as 1/A406

$$\text{PAF} = \frac{246}{(2) 535} + \frac{233}{720(2)} = .39 < 1 \text{ OK}$$

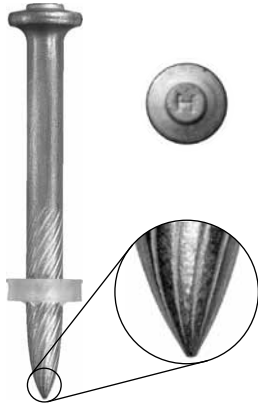
3.2.3 X-U Universal Knurled Shank Fasteners

3.2.3.1 Product Description

3.2.3.2 Material Specifications

3.2.3.3 Technical Data

3.2.3.4 Ordering Information



3.2.3.1 Product Description

The Hilti X-U universal knurled shank fastener is designed as a high performance solution to simplify powder-actuated fastener selection. The X-U is one fastener type that performs equally well on both high and standard strength concrete and steel.

To help ensure reliable fastenings, the X-U fastener has matched tolerance to all Hilti powder-actuated tools using 8 mm fastener guides and drive pistons through an 8 mm nail head diameter and an 8 mm plastic guidance washer set near the nail tip. The X-U program also includes fasteners with pre-mounted steel washers of 15 mm or 36 mm.

Product Features

- A 0.157" shank diameter for high performance in both tension and shear applications
- Unique knurling design offering higher pullout strength and anchorage in concrete and steel
- Full range of fasteners in single or collated configurations to maximize productivity
- No requirement for unique drive pistons or special equipment
- Recognized for horizontal wood deck diaphragms subjected to wind or seismic forces (Reference ICC-ES ESR-2269)

Listings/Approvals

ICC-ES (International Code Council)
ESR-2269

COLA (City of Los Angeles)
RR 25675



3.2.3.2 Material Specifications

Fastener Designation	Fastener Material	Fastener Plating	Fastener Hardness
X-U	Carbon Steel	5 µm Zinc ¹	58 HRC

¹ ASTM B633, SC 1, Type III. Refer to Section 2.3.3.1 for more information.

3.2.3.3 Technical Data

Allowable Loads in Normal Weight Concrete¹

Fastener	Shank Diameter in. (mm)	Minimum Embedment in. (mm)	Concrete Compressive Strength					
			2000 psi		4000 psi		6000 psi	
			Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
X-U	0.157 (4.0)	3/4 (19)	100 (0.44)	125 (0.57)	100 (0.44)	125 (0.57)	105 (0.47)	205 (0.91)
		1 (25)	165 (0.73)	190 (0.85)	170 (0.76)	225 (1.00)	110 (0.49)	280 (1.25)
		1-1/4 (32)	240 (1.07)	310 (1.38)	280 (1.25)	310 (1.38)	180 (0.80)	425 (1.89)
		1-1/2 (38)	275 (1.22)	420 (1.87)	325 (1.45)	420 (1.87)	–	–

¹ The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.

Allowable Loads in Normal Weight Concrete Using DX-Kwik^{1,2}

Fastener	Shank Diameter in. (mm)	Minimum Embedment in. (mm)	Concrete Compressive Strength			
			4000 psi		6000 psi	
			Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
X-U 47 P8 w/DX-KWIK	0.157 (4.0)	1-1/2 (38)	395 (1.76)	405 (1.80)	360 (1.60)	570 (2.54)

¹ X-U Fastener is installed using the DX-KWIK drilled pilot hole installation procedure shown in Section 3.2.1.1.10.

² The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.

X-U Universal Knurled Shank Fasteners 3.2.3

Allowable Loads in Minimum $f'_c = 3000$ psi Structural Lightweight Concrete^{1,4}

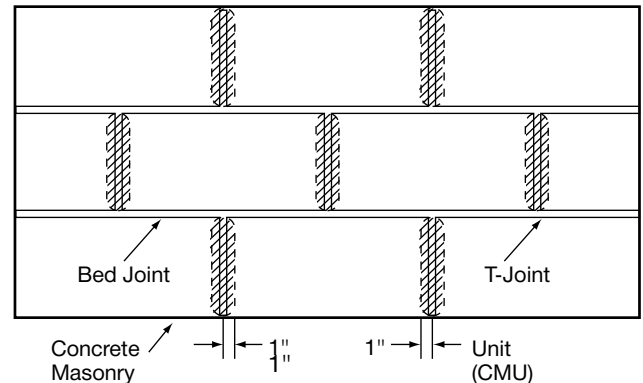
Fastener	Shank Dia. in. (mm)	Minimum Embed. in. (mm)	Fastener Location							
			Installed into Concrete		Installed Through Metal Deck into Concrete					
					3 Inch Deep Composite Floor Deck ²				1-1/2 Inch Deep Composite Floor Deck ³	
					Tension lb (kN)	Shear lb (kN)	Tension lb (kN)		Shear lb (kN)	Tension lb (kN)
			Upper Flute	Lower Flute			Upper Flute	Lower Flute		
X-U	0.157 (4.0)	3/4 (19)	125 (0.56)	115 (0.51)	130 (0.58)	95 (0.42)	245 (1.09)	95 (0.42)	95 (0.42)	370 (1.65)
		1 (25)	205 (0.91)	260 (1.16)	215 (0.96)	155 (0.69)	330 (1.47)	125 (0.56)	125 (0.56)	415 (1.85)
		1-1/4 (32)	315 (1.40)	435 (1.93)	295 (1.31)	200 (0.89)	375 (1.67)	-	-	-
		1-1/2 (38)	425 (1.89)	475 (2.11)	400 (1.78)	260 (1.16)	430 (1.91)	-	-	-

- The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.
- The steel deck profile for the 3" deep composite floor deck has a minimum thickness of 20 gauge (0.0358") and a minimum $F_y = 33$ ksi. Lower and upper flute width must be a minimum of 3-7/8". Figure 1 in Section 3.2.1.1.6 shows the nominal flute dimensions, fastener locations and load orientations for the deck profile. Structural lightweight concrete fill above top of steel deck must be minimum 3-1/4".
- The steel deck profile for the 1-1/2" deep composite floor deck has a minimum thickness of 20 gauge (0.0358") and a minimum $F_y = 33$ ksi. Lower flute and upper flute widths must be a minimum of 1-3/4" and 3-1/2", respectively. This deck may also be inverted as shown in Figure 3 in Section 3.2.1.1.6. Figures 2 and 3 in Section 3.2.1.1.6 show the nominal flute dimensions, fastener locations and load orientations for the deck profile. Structural lightweight concrete fill above top of steel deck must be minimum 2-1/2".
- Multiple fasteners are recommended for any attachment.

Allowable Loads in Concrete Masonry Units^{1,2,3,4,5,10}

Fastener	Shank Dia. in. (mm)	Minimum Embed. in. (mm)	Hollow CMU				Grout-Filled CMU					
			Face Shell ⁶		Mortar Joint ⁶		Face Shell ⁶		Mortar Joint ⁶		Top of Grouted Cell ⁸	
			Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear ⁷ lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear ⁷ lb (kN)	Tension lb (kN)	Shear ⁹ lb (kN)
X-U	0.157 (4.0)	1 (25)	70 (0.31)	85 (0.38)	25 (0.11)	70 (0.31)	225 (1.00)	220 (0.98)	150 (0.67)	190 (0.85)	165 (0.73)	240 (1.07)

- The tabulated allowable load values are for the low-velocity fastener into concrete masonry units only, using a safety factor equal to or greater than 5.0, calculated in accordance with ICC-ES AC70. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.
- The tabulated allowable load values are for low-velocity fasteners installed in normal weight or lightweight concrete masonry units conforming to ASTM C90.
- The tabulated allowable load values are for low-velocity fasteners installed in concrete masonry units with mortar conforming to ASTM C270, Type S.
- The tabulated allowable load values are for low-velocity fasteners installed in concrete masonry units with grout conforming to ASTM C476.
- The tabulated allowable load values are for one low-velocity fastener installed in an individual masonry unit cell and at least 4" from the edge of the wall.
- Fastener can be located anywhere on the face shell or mortar joints as shown in the figure to the right.
- Shear load direction can be horizontal or vertical (Bed Joint or T-Joint) along the CMU wall plane.
- Fastener located in center of grouted cell installed vertically.
- Shear load can be in any direction in top of grouted cell application.
- Multiple fasteners are recommended for any attachment.



Acceptable Locations (NON-SHADED AREAS) for X-U Universal Knurled Shank Fasteners in CMU Walls

Allowable Loads in Minimum ASTM A36 ($F_y \geq 36$ ksi; $F_u \geq 58$ ksi) Steel^{1,2,4}

Fastener	Shank Dia. in. (mm)	Steel Thickness in.									
		3/16		1/4		3/8		1/2		$\geq 3/4$ ³	
		Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
X-U	0.157 (4.0)	535 (2.38)	720 (3.20)	775 (3.45)	720 (3.20)	935 (4.16)	720 (3.20)	900 (4.00)	720 (3.20)	350 (1.56)	375 (1.67)

- The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.
- Low-velocity fasteners shall be driven to where the point of the fastener penetrates the steel base material, except as noted.
- Tabulated allowable load values provided for $\geq 3/4$ " steel are based upon minimum point penetration of 1/2". If 1/2" point penetration is not achieved, but a point penetration of at least 3/8" is obtained, the tabulated tension value should be reduced by 20 percent and the tabulated shear load should be reduced by 8 percent.
- Multiple fasteners are recommended for any attachment.

3.2.3 X-U Universal Knurled Shank Fasteners

Allowable Tensile Pullover and Shear Bearing Load Capacities for Steel Framing with X-U Powder-Actuated Fasteners^{1,2,3,4}

Fastener Description	Fastener	Head Dia. in. (mm)	Sheet Steel Thickness													
			14 ga.		16 ga.		18 ga.		20 ga.		22 ga.		24 ga.		25/26 ga.	
			Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
0.157" shank with or w/o plastic washers or MX collation	X-U	0.322 (8.2)	825 (3.67)	1,085 (4.83)	685 (3.05)	720 (3.20)	490 (2.18)	525 (2.34)	360 (1.60)	445 (1.98)	300 (1.33)	330 (1.47)	205 (0.91)	255 (1.13)	120 (0.53)	145 (0.64)

1 Allowable load values are based on a safety factor of 3.0 in accordance with the AISI S100.

2 Allowable pullover capacities of sheet steel should be compared to allowable fastener tensile load capacities in concrete, steel, or masonry to determine controlling resistance load.

3 Allowable shear load bearing capacities of sheet steel should be compared to allowable fastener shear capacities in concrete, steel or masonry to determine controlling resistance load.

4 Data is based on the following minimum sheet steel properties, $F_y = 33$ ksi, $F_u = 45$ ksi (ASTM A653 material).

3.2.3.4 Ordering Information

Fastener Description	Shank Length in. (mm)	Shank Ø in. (mm)	Washer Ø	Packaging Qty
X-U 16	5/8 (16)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 19	3/4 (19)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 22	7/8 (22)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 27	1 (27)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 32	1-1/4 (32)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 37	1-1/2 (37)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 42	1-5/8 (42)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 47	1-7/8 (47)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 52	2 (52)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 57	2-1/4 (57)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 62	2-1/2 (62)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
X-U 72	2-7/8 (72)	0.157 (4.0)	Plastic 8 mm or collated	100 pcs / box
Fastener Description	Shank Length in. (mm)	Shank Ø in. (mm)	Washer Ø	Packaging Qty
X-U 22 P8 S15	7/8 (22)	0.157 (4.0)	Plastic 8 mm & Steel 15 mm	100 pcs / box
X-U 27 P8 S15	1 (27)	0.157 (4.0)	Plastic 8 mm & Steel 15 mm	100 pcs / box
X-U 32 P8 S15	1-1/4 (32)	0.157 (4.0)	Plastic 8 mm & Steel 15 mm	100 pcs / box
X-U 32 P8 S36	1-1/4 (32)	0.157 (4.0)	Plastic 8 mm & Steel 36 mm	100 pcs / box
X-U 72 P8 S36	2-7/8 (72)	0.157 (4.0)	Plastic 8 mm & Steel 36 mm	100 pcs / box
Fastener Description	Shank Length in. (mm)	Shank Ø in. (mm)	Washer Ø	Packaging Qty
X-U 16 P8 TH	5/8 (16)	0.157 (4.0)	8 mm plastic & metal "tophat"	100 pcs / box
X-U 19 P8 TH	3/4 (19)	0.157 (4.0)	8 mm plastic & metal "tophat"	100 pcs / box
X-U 27 P8 TH	1 (27)	0.157 (4.0)	8 mm plastic & metal "tophat"	100 pcs / box





Screw and Weld Capacities

Screw Capacities

Table Notes

- Capacities based on AISI S100 Section E4.
- When connecting materials of different steel thicknesses or tensile strengths, use the lowest values. Tabulated values assume two sheets of equal thickness are connected.
- Capacities are based on Allowable Strength Design (ASD) and include safety factor of 3.0.
- Where multiple fasteners are used, screws are assumed to have a center-to-center spacing of at least 3 times the nominal diameter (d).
- Screws are assumed to have a center-of-screw to edge-of-steel dimension of at least 1.5 times the nominal diameter (d) of the screw.
- Pull-out capacity is based on the lesser of pull-out capacity in sheet closest to screw tip or tension strength of screw.
- Pull-over capacity is based on the lesser of pull-over capacity for sheet closest to screw header or tension strength of screw.
- Values are for pure shear or tension loads. See AISI Section E4.5 for combined shear and pull-over.
- Screw Shear (Pss), tension (Pts), diameter, and head diameter are from CFSEI Tech Note (F701-12).
- Screw shear strength is the average value, and tension strength is the lowest value listed in CFSEI Tech Note (F701-12).
- Higher values for screw strength (Pss, Pts), may be obtained by specifying screws from a specific manufacturer.

Allowable Screw Connection Capacity (lbs)

Thickness (Mils)	Design Thickness	Fy Yield (ksi)	Fu Tensile (ksi)	#6 Screw (Pss = 643 lbs, Pts = 419 lbs)			#8 Screw (Pss = 1278 lbs, Pts = 586 lbs)			#10 Screw (Pss = 1644 lbs, Pts = 1158 lbs)			#12 Screw (Pss = 2330 lbs, Pts = 2325 lbs)			1/4" Screw (Pss = 3048 lbs, Pts = 3201 lbs)		
				0.138" dia, 0.272" Head			0.164" dia, 0.272" Head			0.190" dia, 0.340" Head			0.216" dia, 0.340" Head			0.250" dia, 0.409" Head		
				Shear	Pull-Out	Pull-Over	Shear	Pull-Out	Pull-Over	Shear	Pull-Out	Pull-Over	Shear	Pull-Out	Pull-Over	Shear	Pull-Out	Pull-Over
18	0.0188	33	33	44	24	84	48	29	84	52	33	105	55	38	105	60	44	127
27	0.0283	33	33	82	37	127	89	43	127	96	50	159	102	57	159	110	66	191
30	0.0312	33	33	95	40	140	103	48	140	111	55	175	118	63	175	127	73	211
33	0.0346	33	45	151	61	140	164	72	195	177	84	265	188	95	265	203	110	318
43	0.0451	33	45	214	79	140	244	94	195	263	109	345	280	124	345	302	144	415
54	0.0566	33	45	214	100	140	344	118	195	370	137	386	394	156	433	424	180	521
68	0.0713	33	45	214	125	140	426	149	195	523	173	386	557	196	545	600	227	656
97	0.1017	33	45	214	140	140	426	195	195	548	246	386	777	280	775	1,016	324	936
118	0.1242	33	45	214	140	140	426	195	195	548	301	386	777	342	775	1,016	396	1,067
54	0.0566	50	65	214	140	140	426	171	195	534	198	386	569	225	625	613	261	752
68	0.0713	50	65	214	140	140	426	195	195	548	249	386	777	284	775	866	328	948
97	0.1017	50	65	214	140	140	426	195	195	548	356	386	777	405	775	1,016	468	1,067
118	0.1242	50	65	214	140	140	426	195	195	548	386	386	777	494	775	1,016	572	1,067

Weld Capacities

Table Notes

- Capacities based on the AISI S100 Specification Sections E2.4 for fillet welds and E2.5 for flare groove welds.
- When connecting materials of different steel thicknesses or tensile strengths, use the lowest values.
- Capacities are based on Allowable Strength Design (ASD).
- Weld capacities are based on E60 electrodes. For material thinner than 68 mil, 0.030" to 0.035" diameter wire electrodes may provide best results.
- Longitudinal capacity is considered to be loading in the direction of the length of the weld.
- Transverse capacity is loading in perpendicular direction of the length of the weld.
- For flare groove welds, the effective throat of weld is conservatively assumed to be less than 2t.
- For longitudinal fillet welds, a minimum value of EQ E2.4-1, E2.4-2, and E2.4-4 was used.
- For transverse fillet welds, a minimum value of EQ E2.4-3 and E2.4-4 was used.
- For longitudinal flare groove welds, a minimum value of EQ E2.5-2 and E2.5-3 was used.

Allowable Weld Capacity (lbs / in)

Thickness (Mils)	Design Thickness	Fy Yield (ksi)	Fu Tensile (ksi)	Fillet Welds		Flare Groove Welds	
				Longitudinal	Transverse	Longitudinal	Transverse
43	0.0451	33	45	499	864	544	663
54	0.0566	33	45	626	1084	682	832
68	0.0713	33	45	789	1365	859	1048
97	0.1017	33	45	1125	1269	- ¹	- ¹
54	0.0566	50	65	905	1566	985	1202
68	0.0713	50	65	1140	1972	1241	1514
97	0.1017	50	65	1269	1269	- ¹	- ¹

¹Weld capacity for material thickness greater than 0.10" requires engineering judgment to determine leg of welds, W1 and W2.

StiffClip® AL

Multi-Directional Load Resistant Angle

The Steel Network, Inc.

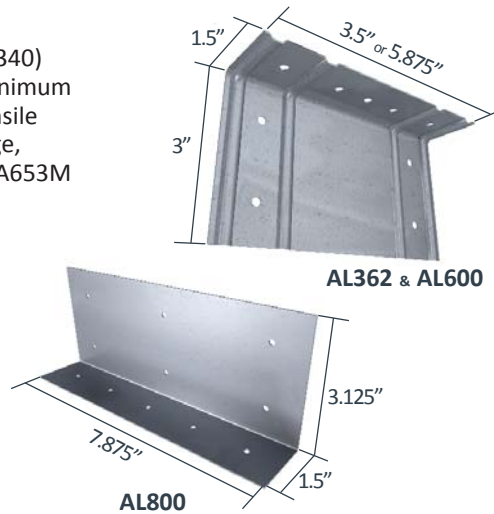
www.steelnetwork.com

1-888-474-4876



Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 68mil minimum thickness (14 gauge, 0.0713" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

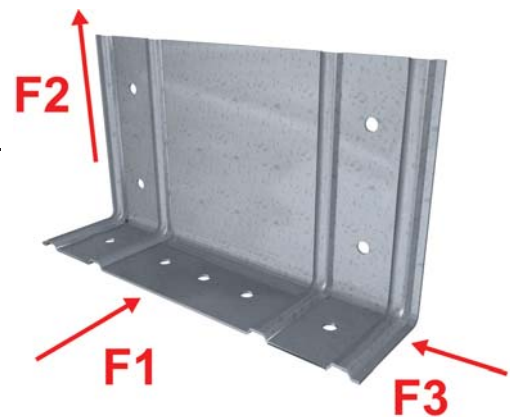


StiffClip AL Allowable Loads

StiffClip® AL, Recommended Allowable Load (lbs): F1 & F2													
Stud		F1 Load Direction			F2 Load Direction								
Thickness Mils (ga)	Yield Strength (ksi)	AL362	AL600	AL800	AL362			AL600			AL800		
		w/3 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/4 #12 Screws	w/6 #12 Screws
33 (20)	33	191	191	191	377	490	754	377	463	752	377	754	1,131
33 (20)	50	275	275	275	544	708	1,089	544	670	1,089	544	1,089	1,633
43 (18)	33	248	248	248	561	729	1,122	560	690	1,120	561	1,122	1,683
43 (18)	50	359	359	359	810	1,053	1,470	810	997	1,620	810	1,620	2,430
54 (16)	33	312	312	312	789	1,025	1,470	788	970	1,577	789	1,577	2,366
54 (16)	50	450	450	450	1,139	1,470	1,470	1,138	1,401	2,091	1,139	2,278	2,516
68 (14)	50	567	567	567	1,470	1,470	1,470	1,610	1,981	2,091	1,610	2,516	2,516
97 (12)	50	809	809	809	1,470	1,470	1,470	1,698	2,089	2,091	1,698	2,516	2,516
118 (10)	50	856	856	856	1,470	1,470	1,470	1,698	2,089	2,091	1,698	2,516	2,516
Max Allowable Clip Load		975	866	1,768	1,470			2,091			2,516		

StiffClip® AL, Recommended Allowable Load (lbs): F3										
Stud		F3 Load Direction								
Thickness Mils (ga)	Yield Strength (ksi)	AL362			AL600			AL800		
		w/2 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/4 #12 Screws	w/6 #12 Screws
33 (20)	33	256	409	511	324	495	650	347	692	987
33 (20)	50	370	591	738	468	716	939	501	999	1,426
43 (18)	33	381	609	760	482	737	967	516	1,029	1,469
43 (18)	50	551	879	1,098	697	1,065	1,398	745	1,487	2,123
54 (16)	33	536	856	1,069	678	1,037	1,360	726	1,447	2,066
54 (16)	50	775	1,236	1,543	980	1,498	1,965	1,048	2,090	2,984
68 (14)	50	1,095	1,747	2,182	1,385	2,118	2,778	1,482	2,955	4,219
97 (12)	50	1,155	1,842	2,301	1,460	2,233	2,929	1,562	3,116	4,449
118 (10)	50	1,155	1,842	2,301	1,460	2,233	2,929	1,562	3,116	4,449
Max Allowable Clip Load		2,458			3,015			6,128		

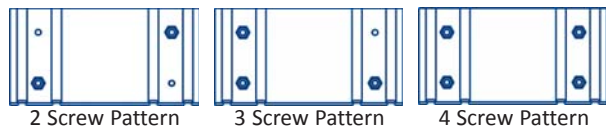
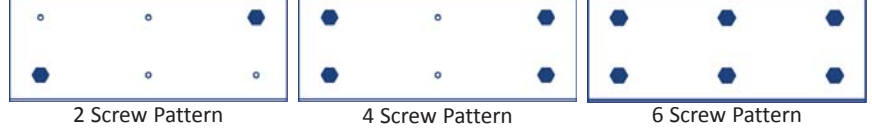
Load Direction



****Important notes for StiffClip AL Allowable Load tables continued on next page.**

Notes:

- Allowable load tables incorporate eccentric loading of fasteners attached 3/4" from the heel of the clip. Values with welded connection may increase.
- The attachment of the 1.5" leg of StiffClip AL is dependent on the allowable loads of the fasteners, and is to be designed by others.
- Fasten within 3/4" from the angle heel (centerline of the 1 1/2" leg).
- All guide holes may not require fasteners. Number of fasteners used is to be determined by designer.
- Stiffening ribs are not present in the AL800.
- StiffClip AL is tested to resist loads in horizontal, vertical, and lateral directions.
- Loads listed reflect force in a single direction. When multiple loads react on the connection, it is the responsibility of the designer to check the interaction of forces.
- Allowable loads are for attachment through 3" leg only. Attachment through 1.5" leg should be engineered. (See material composition above for calculation purposes.)
- Allowable loads have not been increased for wind, seismic, or other factors.
- Torsional effects are considered on screw group for F2 & F3 allowable loads. It is assumed that half of the torsional moment is taken by the connection to the structure and half is taken by the connection to the stud.

Screw Patterns**AL362/600****AL800****Nomenclature**

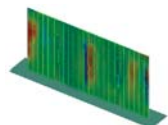
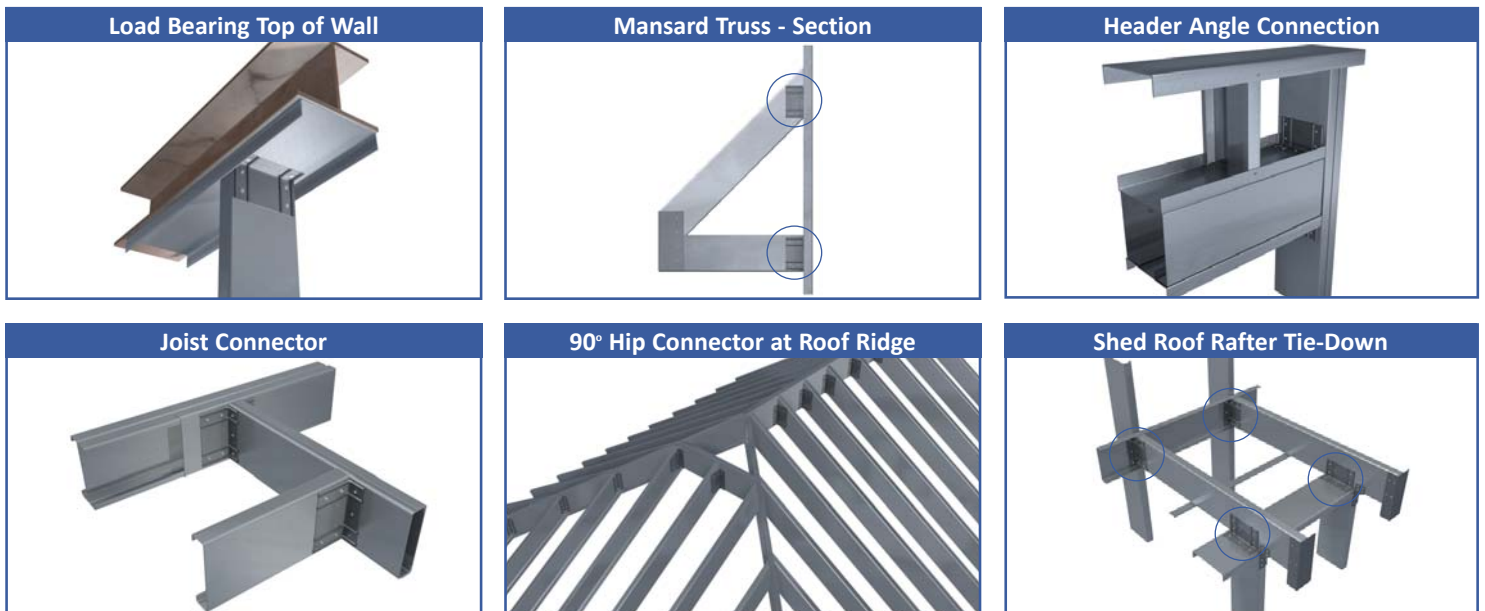
StiffClip AL is available for various stud depths. To specify, multiply stud depth by 100.*

Example: 6" stud depth

Designate: StiffClip® AL600

* The AL362 fits 3 5/8" and 4" member depths

** Stiffening ribs are not present in the AL800.

Example Details

StiffClip AL Series
Blast and Seismic Design data
www.steelnetwork.com

** For more information or to review a copy of this report, please visit our website at <http://www.steelnetwork.com/Site/TechnicalData>

StiffClip® CL

Floor Tie

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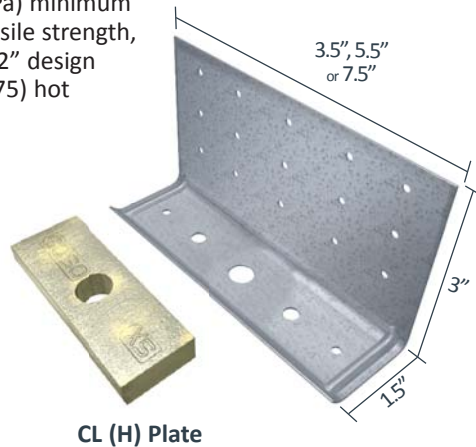
Material Composition

68mil Clip: ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 68mil minimum thickness (14 gauge, 0.0713" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

118mil Clip: ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 118mil minimum thickness (10 gauge, 0.1242" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

"H" Plate: ASTM A27/A27M Grade 65-35 (450-240): 35ksi (240MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, ½" minimum thickness with ASTM B633 Zinc Plating.

The attachment of StiffClip to the primary structure may be made with PAFs, screw/bolt anchors or weld and is dependent upon the base material (steel or concrete) and the design configuration.



CL (H) Plate



US Patent #7,533,508

StiffClip CL Allowable Loads

StiffClip® CL362/400, Recommended Allowable Load (lbs and inches): F1, F2, F3, M1 & Stiffness																
Stud		CL362/400-68					CL362/400-118					CL362/400-118 (H)				
Thickness Mils (ga)	Yield Strength (ksi)	4 #12 Screws, Pattern 1					4 #12 Screws, Pattern 1					9 #12 Screws, Pattern 2				
		F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)
33 (20)	33	191	535	754	1,108	85,340	191	535	754	1,108	109,279	286	980	1,696	1,653	169,064
33 (20)	50	275	773	1,089	1,601		275	773	1,089	1,601		413	1,415	2,450	2,388	
43 (18)	33	248	796	1,122	1,649		248	796	1,122	1,649		373	1,458	2,524	2,460	
43 (18)	50	359	1,150	1,151	1,804		359	1,150	1,620	2,383		538	2,107	3,646	3,554	
54 (16)	33	312	1,120	1,151	1,804		312	1,120	1,577	2,319		468	2,050	3,549	3,459	
54 (16)	50	450	1,617	1,151	1,804		450	1,617	2,225	3,350		676	2,961	5,126	4,996	
68 (14)	50	567	1,917	1,151	1,804		567	2,287	2,225	3,936		851	4,187	5,713	6,716	
97 (12)	50	809	1,917	1,151	1,804		809	2,411	2,225	3,936		1,214	4,415	5,713	6,716	
118 (10)	50	856	1,917	1,151	1,804		856	2,411	2,225	3,936		1,284	4,415	5,713	6,716	
Max Allowable Clip Load		1,416	1,917	1,151	1,804		2,423	4,107	2,225	3,936		2,598	4,978	5,713	6,716	

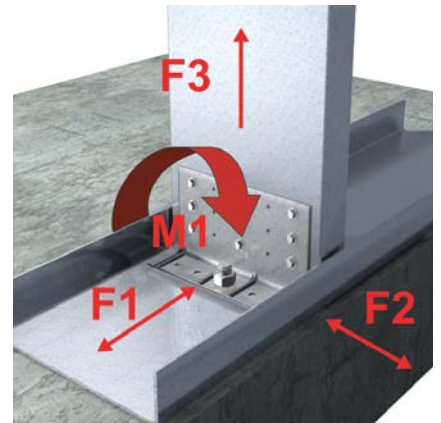
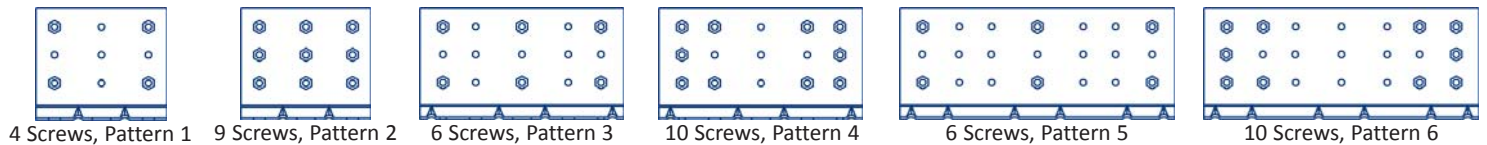
StiffClip® CL600, Recommended Allowable Load (lbs and inches): F1, F2, F3, M1 & Stiffness																
Stud		CL600-68					CL600-118					CL600-118 (H)				
Thickness Mils (ga)	Yield Strength (ksi)	6 #12 Screws, Pattern 3					6 #12 Screws, Pattern 3					10 #12 Screws, Pattern 4				
		F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)
33 (20)	33	286	874	1,130	1,713	119,025	286	874	1,130	1,713	182,790	381	1,481	1,884	3,140	568,854
33 (20)	50	413	1,263	1,207	2,475		413	1,263	1,633	2,475		550	2,139	2,722	4,537	
43 (18)	33	373	1,301	1,207	2,549		373	1,301	1,682	2,549		497	2,204	2,804	4,673	
43 (18)	50	538	1,880	1,207	3,110		538	1,880	2,225	3,683		718	3,184	4,051	6,222	
54 (16)	33	468	1,830	1,207	3,110		468	1,830	2,225	3,585		624	3,099	3,943	6,222	
54 (16)	50	676	2,510	1,207	3,110		676	2,642	2,225	5,177		901	4,476	5,695	6,222	
68 (14)	50	851	2,510	1,207	3,110		851	3,736	2,225	5,702		1,134	6,329	6,007	6,222	
97 (12)	50	1,214	2,510	1,207	3,110		1,214	3,939	2,225	5,702		1,618	6,455	6,007	6,222	
118 (10)	50	1,284	2,510	1,207	3,110		1,284	3,939	2,225	5,702		1,712	6,455	6,007	6,222	
Max Allowable Clip Load		1,421	2,510	1,207	3,110		2,580	4,107	2,225	5,702		4,158	6,455	6,007	6,222	

****StiffClip CL Allowable Load tables and important notes continued on next page.**

StiffClip® CL800, Recommended Allowable Load (lbs and inches): F1, F2, F3, M1 & Stiffness																
Stud		CL800-68					CL800-118					CL800-118 (H)				
Thickness Mils (ga)	Yield Strength (ksi)	6 #12 Screws, Pattern 5					6 #12 Screws, Pattern 5					10 #12 Screws, Pattern 6				
		F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)	F1 (lbs)	F2 (lbs)	F3 (lbs)	M1 (in-lbs)	Stiffness (in-lbs/rad)
33 (20)	33	286	976	1,077	2,479	150,779	286	976	1,130	2,479	469,941	381	1,664	1,884	4,710	581,080
33 (20)	50	413	1,410	1,077	2,860		413	1,410	1,633	3,582		550	2,404	2,722	6,805	
43 (18)	33	373	1,452	1,077	2,860		373	1,452	1,682	3,689		497	2,476	2,804	7,010	
43 (18)	50	538	2,098	1,077	2,860		538	2,098	2,431	5,330		718	3,577	4,051	10,128	
54 (16)	33	468	2,042	1,077	2,860		468	2,042	2,366	5,188		624	3,482	3,943	9,858	
54 (16)	50	676	2,662	1,077	2,860		676	2,950	2,666	7,493		901	5,029	5,695	11,143	
68 (14)	50	851	2,662	1,077	2,860		851	4,171	2,666	8,229		1,134	7,110	7,446	11,143	
97 (12)	50	1,214	2,662	1,077	2,860		1,214	4,398	2,666	8,229		1,618	7,497	7,446	11,143	
118 (10)	50	1,284	2,662	1,077	2,860		1,284	4,398	2,666	8,229		1,712	7,497	7,446	11,143	
Max Allowable Clip Load		1,435	2,662	1,077	2,860		3,356	6,410	2,666	8,229		4,816	8,274	7,446	11,143	

Notes:

- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
- Fasten within ¼" from the angle heel (centerline of the 1½" leg), using pre-drilled holes.
- Center hole is .563" in diameter for ½" anchor. Middle guide holes are .313" in diameter. Outer guide holes and guide holes in 3" leg are .141" in diameter.
- StiffClip CL resists vertical, horizontal, and torsional loads.
- Guide holes are in place for fastener installation efficiency. All guide holes may not require fasteners. Fastener amount determined by the designer. Screw fasteners should be symmetrically placed in guide holes. Refer to screw pattern diagrams below for placement.
- Loads listed reflect force in a single direction. When multiple loads react on the connection, it is the responsibility of the designer to check the interaction of forces.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Torsional effects are considered on screw group for F2 & F3 allowable loads. It is assumed that half of the torsional moment is taken by the connection to the structure and half is taken by the connection to the stud.
- M1 Loads are reported as Max. Load/Factor of Safety. Loads must be limited by serviceability load taken as Stiffness times the serviceability limit in radians.
- Stiffness is the Max Allowable Clip Moment divided by the clip rotation measured at the Max Allowable Clip Moment.

Load Direction**Screw Patterns****Nomenclature**

To specify StiffClip CL on drawings, multiply stud depth by 100, followed by the appropriate material thickness, based on strength required (see load tables). The StiffClip CL118(H) utilizes a plate in the 1½" leg (shown on page 1).

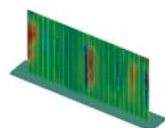
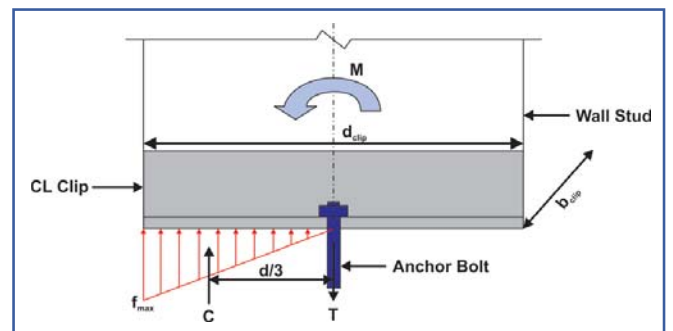
Example: 6" stud, uplift load of 650lbs

Designate: StiffClip® CL600-68

Anchor Bolt Design

The following equation for tension force in the anchor is derived using the assumed bearing stress distribution shown in the figure to the right. This assumed stress distribution provides a conservative anchor force approximation.

$$T = \frac{M}{\left(\frac{2}{3}\right)\left(d_{clip}/2\right)} = \frac{3M}{d_{clip}}$$



StiffClip CL Series
Blast and Seismic Design data
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** For more information or to review a copy of this report, please visit our website at <http://www.steelnetwork.com/Site/TechnicalData>

StiffClip® LB

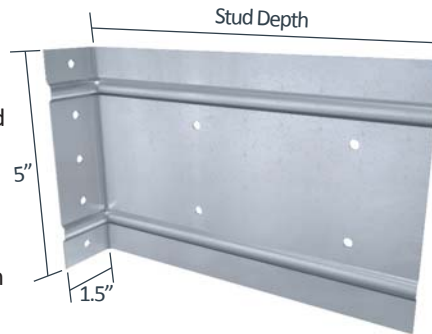
Spandrel Wall Bypass

The Steel Network, Inc. 
www.steelnetwork.com
1-888-474-4876

Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 68mil minimum thickness (14 gauge, 0.0713" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

The attachment of StiffClip to the primary structure may be made with PAFs, screw/bolt anchors or weld and is dependent upon the base material (steel or concrete) and the design configuration.



StiffClip LB Allowable Loads

StiffClip® LB, Recommended Allowable Load (lbs): F1					StiffClip® LB, Recommended Allowable Load (lbs): F2								
Stud		LB362 & LB600	LB800 (Standard 2" Offset)	LB1000 & LB1200 (Standard 2" Offset)	Stud		LB362 & LB600			LB800 (Standard 2" Offset)		LB1000 & LB1200 (Standard 2" Offset)	
Thickness Mils (ga)	Yield Strength (ksi)	w/3 #12 Screws	w/3 #12 Screws	w/3 #12 Screws	Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/3 #12 Screws	w/4 #12 Screws
		Pattern 2	Pattern 4	Pattern 12			Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 12	Pattern 13
33 (20)	33	190	190	190	33 (20)	33	376	477	752	535	752	550	752
33 (20)	50	275	275	275	33 (20)	50	544	689	1,089	773	1,089	795	1,062
43 (18)	33	248	248	248	43 (18)	33	560	709	1,120	796	1,120	819	1,062
43 (18)	50	359	322	359	43 (18)	50	810	1,025	1,620	1,150	1,620	1,062	1,062
54 (16)	33	312	322	312	54 (16)	33	788	988	1,576	1,120	1,576	1,062	1,062
54 (16)	50	450	322	450	54 (16)	50	1,138	1,441	1,954	1,617	1,954	1,062	1,062
68 (14)	50	568	322	532	68 (14)	50	1,610	1,954	1,954	1,954	1,954	1,062	1,062
97 (12)	50	768	322	532	97 (12)	50	1,698	1,954	1,954	1,954	1,954	1,062	1,062
Max Allowable Clip Load		768	322	532	Max Allowable Clip Load		1,954	1,954	1,954	1,954	1,954	1,062	1,062

StiffClip® LB, Recommended Allowable Load (lbs): F3														
Stud		LB362			LB600 (Standard 1" Offset)			LB800 (Standard 2" Offset)				LB800 (4" Offset)		
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/10 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/8 #12 Screws
		Pattern 1	Pattern 2	Pattern 3	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Pattern 8	Pattern 9	Pattern 10
33 (20)	33	235	350	468	216	373	431	320	370	534	793	259	331	417
33 (20)	50	340	506	678	313	539	623	463	536	773	1,149	376	479	604
43 (18)	33	350	522	697	322	555	641	477	552	795	1,182	386	493	622
43 (18)	50	506	753	1,009	466	802	928	689	798	1,150	1,710	559	713	899
54 (16)	33	493	733	981	453	781	902	670	776	1,119	1,663	544	693	875
54 (16)	50	711	1,059	1,417	654	1,128	1,303	968	1,121	1,616	2,401	785	1,001	1,263
68 (14)	50	1,006	1,498	2,004	926	1,594	1,843	1,369	1,586	2,286	3,397	1,111	1,417	1,561
97 (12)	50	1,061	1,579	2,114	976	1,681	1,923	1,443	1,673	2,411	3,583	1,172	1,494	1,561
Max Allowable Clip Load		2,658	2,658	2,658	1,923	1,923	1,923	3,863	3,863	3,863	3,863	1,561	1,561	1,561

****StiffClip LB Allowable Load tables and important notes continued on next page.**

Nomenclature

StiffClip LB is available for various stud depths. To specify, multiply stud depth by 100.

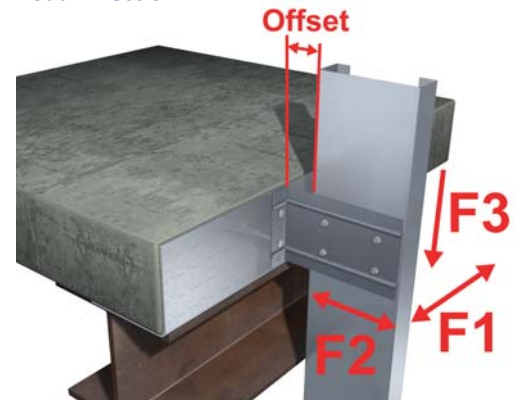
Example: 6" stud depth

Designate: StiffClip® LB600

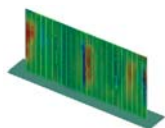
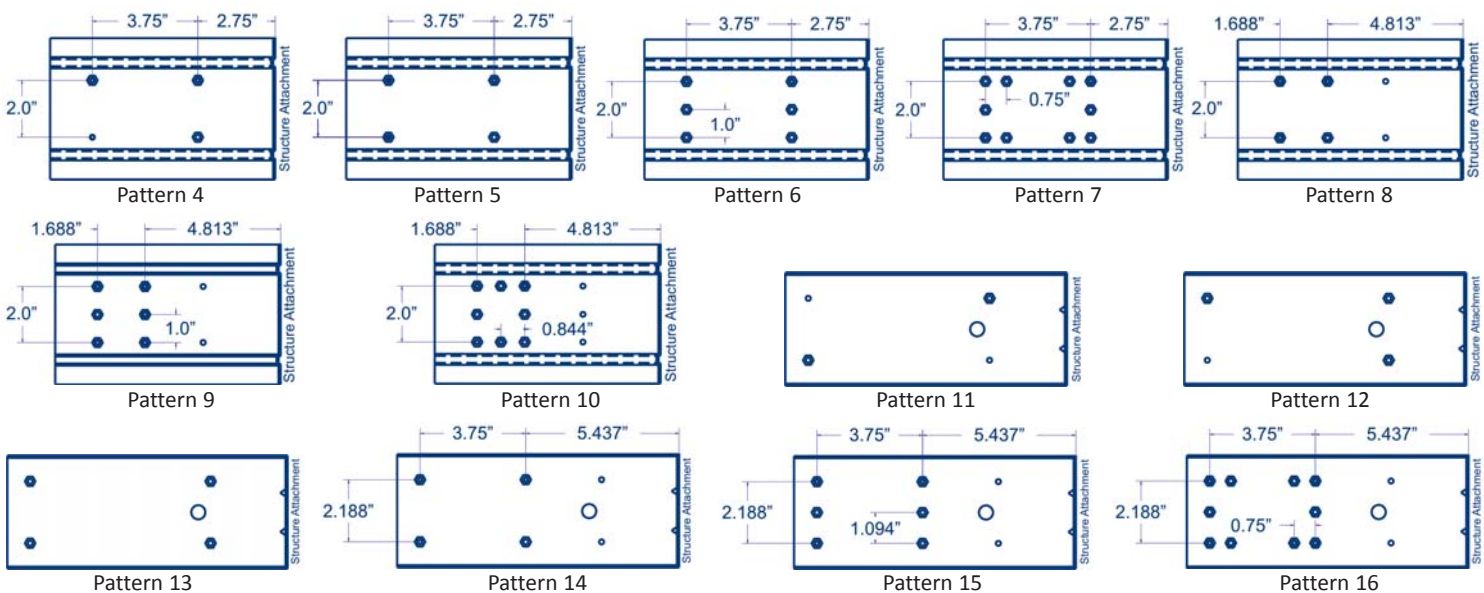
StiffClip® LB, Recommended Allowable Load (lbs): F3										
Stud		LB1000 (Standard 2" Offset)			LB1200 (Standard 2" Offset)			LB1000 (4" Offset)		
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/4 #12 Screws	w/4 #12 Screws	w/6 #12 Screws	w/10 #12 Screws
		Pattern 11	Pattern 12	Pattern 13	Pattern 11	Pattern 12	Pattern 13	Pattern 14	Pattern 15	Pattern 16
33 (20)	33	203	364	406	211	381	421	290	410	602
33 (20)	50	294	525	588	305	550	610	419	593	871
43 (18)	33	302	541	605	314	566	627	431	610	896
43 (18)	50	438	782	875	454	818	907	624	883	1,192
54 (16)	33	426	761	851	441	796	883	607	859	1,192
54 (16)	50	615	1,099	1,229	637	1,150	1,275	876	1,192	1,192
68 (14)	50	869	1,554	1,739	902	1,627	1,803	1,192	1,192	1,192
97 (12)	50	917	1,639	1,793	951	1,715	1,899	1,192	1,192	1,192
Max Allowable Clip Load		1,793	1,793	1,793	1,899	1,899	1,899	1,192	1,192	1,192

Notes:

- Allowable load tables incorporate eccentric loading of fasteners. Values with a welded connection may increase.
- StiffClip LB resists horizontal and vertical loads.
- Allowable loads have not been increased for wind, seismic, or other factors.
- Loads listed reflect force in a single direction. When multiple loads react on the connection, it is the responsibility of the designer to check the interaction of forces.
- Torsional effects are considered on screw group for F2 & F3 allowable loads. It is assumed that half of the torsional moment is taken by the connection to the structure and half is taken by the connection to the stud.
- Design loads consider loads on the clip and #12 screw fasteners to the stud web.
- Strengthening ribs are present in 3-5/8", 6", and 8" sizes. StiffClip LB's 10" and 12" sizes contain ½" return lips on the top and bottom of the leg attaching to the stud for increased stiffness.

Load Direction**Screw Patterns**

****Important Consideration:** Pattern diagrams indicate fastener placement only. Each standard StiffClip LB product comes with 4 guide holes to stud.



StiffClip LB Series
Blast and Seismic Design data
www.steelnetwork.com

** For more information or to review a copy of this report, please visit our website at <http://www.steelnetwork.com/Site/TechnicalData>

VertiClip® SLB

Bypass Slab

The Steel Network, Inc.

www.steelnetwork.com

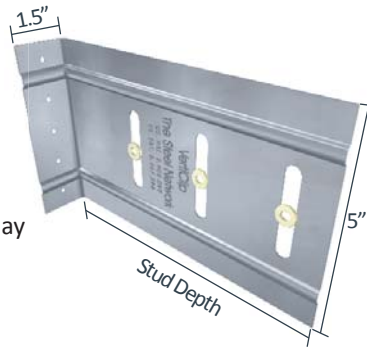
1-888-474-4876



Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 68mil minimum thickness (14 gauge, 0.0713" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

The attachment of VertiClip to the primary structure may be made with PAFs, screw/bolt anchors or weld and is dependent upon the base material (steel or concrete) and the design configuration.



US Patents #5,467,566 & #5,906,080

VertiClip SLB Allowable (Unfactored) Loads¹

VertiClip® SLB, Recommended Allowable Load (lbs): F1 & F2								
Stud		F1 Load Direction			F2 Load Direction			
		SLB362	SLB600	SLB800	SLB 362/400, 600, 800	SLBxxx-10, SLBxxx-12, SLB1000 & SLB1200		
Thickness Mils (ga)	Yield Strength (ksi)	w/2 #12 Screws	w/2-3 #12 Screws	w/2-3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws	w/2 #12 Screws	w/3 #12 Screws
33 (20)	33	95	95	95	376	564	376	564
33 (20)	50	138	138	118	544	817	544	817
43 (18)	33	124	124	118	560	840	560	840
43 (18)	50	179	179	118	810	1,215	810	933
54 (16)	33	156	156	118	788	1,182	788	933
54 (16)	50	225	225	118	1,140	1,600	933	933
68 (14)	50	227	227	118	1,600	1,600	933	933
97 (12)	50	227	227	118	1,600	1,600	933	933
Maximum Allowable Clip Load		227	227	118	1,600	1,600	933	933

Notes:

- Allowable load tables incorporate eccentric loading of fasteners. Values with welded connection may increase.
- Fasten within ¾" from the angle heel (centerline of the 1½" leg) to minimize eccentric load transfer.
- Fasteners attaching clip to structure should be installed symmetrically around the center line of the clip. The allowable load of the clip may be reduced if fasteners are not installed symmetrically.
- Guide holes in the 1½" leg measure 0.172" in diameter for SLB362, 0.141" in diameter for SLB600 and SLB800.
- Total vertical deflection of up to 2" (1" up and 1" down). Deflection requirements greater than 1" up and down are available.
- VertiClip SLB series is designed to support horizontal loads and should not be used in axial-load-bearing wall construction.
- Allowable loads have not been increased for wind, seismic, or other factors.
- #12 screws are provided with each step bushing. Load requirements don't always justify use of a third screw.
- Three slots are standard in 6" and higher web depths to accommodate construction tolerances. Use of a 3rd screw and bushing is dependent upon load configuration. 250 and 362/400 sizes have only 2 slots and 2 screws.
- Use of strengthening ribs and return bends varies with each clip.

¹ For LRFD Design Strengths refer to ICC-ESR-1903.

Load Direction



Nomenclature

VertiClip SLB is designated by multiplying stud depth by 100.

Example: 6" stud.

Designate: VertiClip® SLB600

* Use of strengthening ribs and return bends varies with each clip.

** The VertiClip SLB600-10 and 600-12 accommodate an even greater construction tolerance of studs from structure.

The VertiClip SLB600-10 is 10" in depth and the VertiClip SLB600-12 is 12" in depth with slot spacings designed for a 6" stud

Example Details



Step Bushings and Screws may be installed in the middle and outer slots of SLB600 or 800 to accommodate greater building tolerances. Note that this may affect the F1 and F2 allowable load capacity and may require a row of bridging at a maximum distance of 12" of the connection to resist stud torsional effects. Call TSN Tech Support for test data and recommendations.

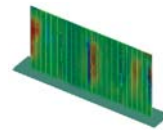
The VertiClip SLB600-10 and 600-12 accommodate an even greater construction tolerance of studs from structure and are now standard products. The VertiClip SLB600-10 is 10" in depth with slot spacing designed for a 6" stud, and the VertiClip SLB600-12 is 12" in depth with slot spacing designed for a 6" stud.



VertiClip SLB600
ICC-ESR-1903
www.icc-es.org



VertiClip SLB Series
LARR #25631
www.ladbs.org



VertiClip SLB Series
Blast and Seismic Design data
www.steelnetwork.com

** For more information or to review a copy of each of these reports, please visit our website at <http://www.steelnetwork.com/Site/TechnicalData>

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

PROJECT NAME	
ADDRESS	
NUMBER	
OWNER	
ARCHITECT / ENGINEER	
SUBMITTED BY	
CONTRACTOR / CM SUBMITTAL NO.	CANNON DESIGN SUBMITTAL NO.
DRAWING / DETAIL REFERENCE	SPECIFICATION SECTION / PARAGRAPH
MANUFACTURER / SUPPLIER	ITEM / PRODUCT ID
REQUIRED DATE	PRIORITY
CRITICAL	

ITEM BEING SUBMITTED (check only one)

- | | | |
|---|--|--|
| ☐ Shop Drawings | ☐ Certification / Qualifications | ☐ Coordination Drawing |
| ☐ Samples (____ copies) | ☐ Record Documents | ☐ Calculations |
| ☐ LEED Submittal | ☐ Product Data | ☐ Schedules |
| ☐ Other _____ | ☐ O&M Manuals | |

ITEM BEING SUBMITTED FOR (check only one)

- ☐ Action ☐ Information Only ☐ Record

REMARKS OR DEVIATIONS

CONTRACTOR / CM CERTIFICATION (SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)

 PARIC CORPORATION SUBMITTAL STAMP THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents. By: Devin D. Gates
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REVIEWED BY	DATE
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To be completed by Reviewer

CANNON DESIGN SUBMITTAL NUMBER
RECEIVED DATE
☐ A. No Exceptions Taken No further review of submittal is required.
☐ B. Make Corrections Noted Incorporate corrections in work; resubmission is not required.
☐ C. Revise and Resubmit Revise as noted, and resubmit for review.
☐ D. Rejected Submittal is not in compliance with Contract Documents; provide new submittal.
☐ E. For Record / Information Only Submittal was reviewed for Record / Information purposes only.
☐ F. Not Required for Review Submittal is not required by Contract Documents and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be affected thereby. This review is null and void if submittal deviates from contract documents and does not indicate or note deviations.

A/E COMMENTS

☐ See attached sheet(s) for additional comments

SHOP DRAWING / SUBMITTAL REVIEW ☐ NO EXCEPTION TAKEN ☒ EXCEPTIONS NOTED, RESUBMITTAL NOT REQUIRED ☐ REJECTED ☐ REVIEWED FOR INFORMATION ONLY ☐ REVISE AND RESUBMIT AS NOTED Checking is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: Dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of the construction, coordination of his work with that of all other trades and the satisfactory performance of his work. DAVID MASON & ASSOCIATES, INC. REVIEW BY: <u>JYW</u> DATE: <u>10.13.2016</u>

JILL WALKER / DMA	10/13/2016
REVIEWED BY	DATE